

Vidmantas Tūtlys, Lina Vaitkutė and Christof Nägele (Editors)

Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25.-26. May 2023

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## Editorial

This collection of conference papers presents the Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training taking place from 25 to 26 May 2023 in Kaunas, Lithuania. The current proceedings continue the tradition that started in Bremen 2015, followed by Rostock 2017, Valencia 2019, Muttentz and Bern in 2021. Like the conference itself, the publication of proceedings follows open access principle in order to facilitate open sharing of knowledge and research ideas in the community of VET researchers.

The Crossing Boundary is a free-of-charge conference of VET research aiming to promote open, multidisciplinary and future-oriented VET research agenda worldwide. The special focus of this conference is on the vocational education and training transformations for digital, sustainable and socially fair future. The proceedings of the 5<sup>th</sup> conference include 56 papers written by more 115 scholars according to the three thematic strands: systems and policy of VET and lifelong learning, educational institutions and institutional settings in the VET and skill formation, VET actors and stakeholders. The topics of conference papers are very diverse and provide insights on the VET development in the conditions of digitalization, changing roles of the VET providers, teachers and learners, sustainability of the VET provision, challenges of the VET provision in the developing economies, empowering effects of VET, changing roles and work of VET teaching staff and many other issues.

Participants were selected based on submitting a proposal for the conference, which went through a double-blind review process. If accepted, a short full paper had to be handed in before the conference to be published in the book of proceedings. Submitting a paper is necessary condition for participation in the conference. Although the conference papers are edited, the responsibility for the papers resides with the authors, as well as the copyright.

We want to thank our VETNET colleagues for their support in the review process, without which the proceedings would not have been ready before the conference. Of course, authors and co-authors are the most important contributors to this volume and, therefore, need to be thanked for their effort.

You will find all papers for download on [www.vetnetsite.org](http://www.vetnetsite.org). A printed book can be ordered through [amazon.com](http://amazon.com).

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## Contents

### Keynote speeches (abstracts)

Skill Formation in Central and Eastern Europe. A Search for Patterns and Directions of Development .....	8
Tūtlys, Vidmantas	
Winterton, Jonathan	
Markowitsch, Jörg	
Changes in Vocational Education and Training in Lithuania: Employers' Perspectives .....	9
Levickis, Vaidotas	
Vocational Education and Training in the Post-War Reconstruction of Ukraine: Challenges and Strategic Directions .....	10
Melnyk, Sergii	

### Papers

Evaluation of Resources for Teaching of Technical and Vocational Education and Training Courses in Technical Colleges in Osun State, Nigeria.....	12
Adebisi, Tajudeen Adewumi	
The Attractiveness of the Industrial Technology Program among Newly Arrived Students in Sweden .....	23
Asghari, Hamid	
AI Pioneers: Developing a Community of Practice for Artificial Intelligence (AI) and Vocational Education and Training.....	30
Attwell, Graham	
Deitmer, Ludger	
Bekiaridis, George	
Investment in Human Capital: Company Expenditures on Continuing Vocational Training in Times of Technological Change in Germany .....	38
Baum, Myriam	
Fournier, Lisa	
Open Content Development as a Challenge and an Opportunity (Hungarian Case) .....	55
Benedek, András	
Sik, David	
Similarities and differences in the evolution of VET in Hungary and Poland 1989–2022.....	61
Benke, Magdolna	
Rachwał, Tomasz	
Promoting VET by Implementing a “Dual System” in Ukraine .....	70
Braun, Vera	
Melnyk, Oksana	
Promoting Citizenship Competence in Italian Vocational Education and Training through Assessment .....	78
Brescianini, Flavio	



Challenges and Helpful Conditions for Vocational Teachers in Europe. Findings from the “VETteach” Project.....	87
Brevik, Birger	
Kaiser, Franz	
Hoppe, Melanie	
A Bootcamp as an Experiential Learning Activity for Nurturing Creative Talent: A Hong Kong Case Study.....	93
Chan, Kara	
Fung, Maggie	
Lau, Justin	
Zhang, Jasmine	
Competence Retention for Non-Routine-Situations in Digital Working Environments (Condition): Studies Based on the Professions of Chemical Technician and Pharmaceutical Technician .....	107
Conein, Stephanie	
The Covid-19 Pandemic Impacts on Apprentices’ Occupational Health in Western Switzerland: Between Invisibilisation of Their Status and Ordinary Suffering.....	115
Descloux, Gilles	
Romanens, Mathilde	
Lamamra, Nadia	
Young Apprentices' Critical Perspectives on the Curriculum of Portuguese Apprenticeship Courses .....	129
Doroftei, Alexandra	
On the Planned Apprenticeship Guarantee for Germany: An Attempt to Reduce the Risk of Social Exclusion During the Transition from School to VET?.....	138
Eckelt, Marcus	
Swiss VET – A Successful Model and its Sacrifices on the Balance of Power Between Company- and School-Based VET in the Political Governance of the Transition to Upper-Secondary Level in Switzerland.....	147
Esposito, Raffaella Simona	
Sitting on the Fence: Adapt or Import? - A study on Training Activities of Foreign Multinationals in Germany.....	155
Finken, Lena	
Pilz, Matthias	
Dual Apprenticeship and Continuous Vocational Training of German Family Businesses in Central and Eastern Europe: Commitment, Motives and Trends.....	165
Gessler, Michael	
Peters, Susanne	
Arts-Based Educational Research in Action in Vocational Education .....	173
Gregson, Daniel	
If it was Going to Work it Would Have Worked by Now .....	179
Gregson, Margaret	

Online and Soft Skills Trainings in Vocational Education in International Context: Reflections about the State-of-the-Art and Future Potential on the Example of China .....	186
Hamann, Karin	
Rickert, Anne	
Yang, Shun	
From Work Force Immigration to inclusion: A study of Vocational Education & Training Development in Relation to Society Changes and Immigration in a Historical Perspective .	196
Herrera, Lázaro Moreno	
Broberg, Åsa	
Osman, Ali	
The Apprentice Perspective: A Blind Spot in the Governance of VET Systems? A German-Danish-Swiss Comparison .....	207
Hippach-Schneider, Ute	
Grobe-Rath, Janine	
How an Apprenticeship Can Direct Learners Beyond the Local Context of Teaching and Learning: Transferable Skills in Germany's Dual System of Vocational Education .....	213
Höhns, Gabriela	
"Making a Virtue of Necessity": Substitution Potentials in the Face of the Shortage of Skilled Workers - Ways to a Sustainable Future Using the Example of the German Vocational Training System .....	222
Ixmeier, Sebastian	
Muenk, Dieter	
Muscati, Nina	
Building Bridges Between Higher Education, Vocational Learning and Employment: Fostering a Sustainable Ecosystem through Practically Based Higher Education (HE) Models.....	229
Kersh, Natasha	
Laczik, Andrea	
Emms, Katherine	
Using Smartphones for Learning: A Case Study on the Impact of Digitalization on Apprenticeship in the Informal Sector in Ghana.....	237
Krichewsky-Wegener, Léna	
Brück, Lukas	
Women in Information and Communication Technology: Creating Opportunities for Career Changers Towards IT and IT-Mixed Professions .....	245
Kühn, Ida Kristina	
Ambrosi, Valerie	
Kaune, Peter	
Comparing Dualised Forms of Initial VET across Countries: Insights from the IEM Survey .....	253
Le Mouillour, Isabelle	
Neff, Daniel	
Klein, Paula	

Quality Management in Vocational Education and Training: A Reflection on Educational Governance in Austria, Germany and Spain.....	265
Li, Junmin	
Schlüter, Ekaterina	
Hautz, Hannes	
Bell, Julián	
Marhuenda, Fernando	
Vocational Students at Risk of Social Exclusion in Estonia: Social Ecology Approach.....	273
Loogma, Krista	
Ümarik, Meril	
Bentsalo, Inna	
Väljataga, Terje	
A Narrative Understanding of Boundary Crossing by Vocational Teachers in their Career Path .....	281
Maret, Aasa	
Loogma, Krista	
Vocational Education and Training offered in Second Chance Schools in Spain: Possibilities and Limits from an Organizational Analysis .....	291
Marhuenda, Fernando	
Gentle Guidance Does it? Are Public Employment Service Recommendations Affecting Adjustment of IVET Capacities in Croatia? .....	300
Matković, Teo	
Social Partners' Conceptions of their Role in School-based Initial Vocational Training of Specialists.....	306
Mičiulienė, Rita	
Defining Green Occupational Groups in the Spanish Vocational Education and Training System: An Emerging Approach.....	316
Moso-Diez, Monica	
Gamboa, Juan P.	
Albizu-Echevarria, Mikel	
Mondaca-Soto, Antonio	
Lecturer Industrial Attachment for TVET Teachers in Kenya: Access, Challenges, Opportunities .....	326
Njenga, Moses	
Innovation in Vocational Training: An Action Research Project .....	332
Ostuni, Chiara	
Instructional Technologies and Training Models in Industry 4.0: An Explorative Literature Review.....	340
Perini, Marco	
Sartori, Riccardo	

Motivation in International VET Cooperation: VET Providers and their Engagement in Transfer .....	349
Peters, Susanne	
Meyne, Lisa	
VET, Patience and the Wealth of Nations.....	355
Peters, Susanne	
Siemer, Christine	
Study Success in Course of TVET- Results of a Mixed-Methods study .....	361
Pletscher, Joana	
Italian Higher Technical Education: Reactive or Proactive Institution in the Skill Ecosystem? .....	366
Potestio, Andrea	
Magni, Francesco	
Bertuletti, Paolo	
Co-creation and Indirect Approach as a Methodology to Improve Student Engagement in Initial and Continuing VET .....	373
Quintana-Murci, Elena	
Salvà-Mut, Francesca	
Pinya Medina, Carme	
Vecina Merchante, Carlos	
Thomàs-Vanrell, Caterina	
Rosselló-Rosselló, Carme	
Vilasís-Pamos, Júlia	
Framing an Environment and Sustainability Lens on Vocational Education and Training (VET): A Laminated System Analysis .....	382
Ramsarup, Presha	
Lotz-Sisitka, Heila	
McGrath, Simon	
Lehrkundsdiaktik and its Potential for Vocational Didactics .....	458
Tyson, Ruhi	
A Sector Qualification Framework (SQF) Level 2-7 for Industrial Shoe Production .....	395
Saniter, Andreas	
Harberts, Vivian	
Hydrogen as a Future Topic in German VET? – Research Design and Initial Findings from the Research Project H2PRO .....	405
Schneider, Maximilian	
Modelling Skills Mismatch Evolution in the European Union .....	407
Sekmokas, Mantas	
Sai, Ashish Rajendra	
Friedel, Maria	
Tilon, Naomi	



Recognizing Foreign Acquired VET Qualifications: Potential to Empower and Challenge Skill Formation Ecosystems .....	424
Serhati, Jehona	
Wanklin, Linda	
The Impact of Collaboration among Vocational Teachers Implementing Teaching Practices During a State of Emergency .....	437
Sirk, Meidi	
Emotional Intelligence and Scholastic Achievement in VET. A Study among Apprentices in Healthcare and Social Care .....	443
Tremonte-Freydefont, Laure	
Fiori, Marina	
Wenger, Matilde	
Vocational Aspects of Empowering At-risk VET Students in the Baltic Countries and Norway for Employment and Lifelong Learning.....	450
Tūtlys, Vidmantas	
Kaminskienė, Lina	
Tikkanen, Tarja	
Gerdien-Bruin, Marieke	
Sloka, Biruta	
Ūmarik, Meril	
Outside-in: Public-Private Partnerships Upgrading the Institutional Equilibrium in Morocco, the Netherlands and Serbia.....	463
Van der Meer, Marc	
Taurelli, Siria	
Avagyan, Aram	
Beyond the Classroom: Exploring Teacher Agency in Making and Breaking Educational Reforms .....	477
Wanklin, Linda	
What Swiss In-Company Trainers Want: Needs, Interests, and Availability for Continuing Education.....	491
Wenger, Matilde	
Lamamra, Nadia	

Tütlys, V., Winterton, J. & Markowitsch, J. (2023). Skill formation in Central and Eastern Europe. A search for patterns and directions of development. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (p. 8). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science.

## **Skill Formation in Central and Eastern Europe. A Search for Patterns and Directions of Development**

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### **Abstract**

This keynote will present an analytical overview of the development of skill formation institutions and processes in the 12 Central and Eastern European countries (Baltic States, Poland, Czech Republic, Slovakia, Hungary, Romania, Bulgaria, Slovenia, Croatia and Ukraine) explored in the book with the same title published by Peter Lang in 2022. It starts with explaining the methodological approach of the study exploring and comparing skill formation processes and institutions in CEE. Special attention is paid to the implications of key critical junctures (post-communist transition to market economy and democratic society, EU accession, and global economic crisis) for national skill systems, specific links between education systems and social stratification, trends of stratification of education, and standardization of education systems through uniformly regulated curricula and qualifications.

Key trends of development of social dialogue over skill formation in the skill formation systems of Central and Eastern Europe (CEE) are also highlighted by making sense of commonalities and differences in social dialogue and collective bargaining over developing skill formation systems in this region, as well as considering the crucial role of adopting neo-liberal approaches to skill formation and Europeanization of economies and societies. After a short overview of major developments and reforms in national systems of education, training and qualifications, the presentation will consider the role of EU accession and Europeanization in developing VET and skill formation, and the implications of policy borrowing and policy learning from, respectively the neo-liberal Anglo-Saxon, and German collective skill formation approaches.

Levickis, V. (2023). Changes in vocational education and training in Lithuania: Employers' perspectives. In V. Tūtlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (p. 9). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science.

## **Changes in Vocational Education and Training in Lithuania: Employers' Perspectives**

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### **Abstract**

This keynote will introduce key recent developments in VET in Lithuania from the employers' viewpoint, taking into account different political, economic, social and cultural aspects of the VET changes. The keynote will discuss the increased attention to VET from national policy makers, and the very active engagement of employers in various processes of skill formation from the development of qualifications and VET curriculum design, to the organisation of work-based learning and competence assessment. These developments are triggered by the changing skills demand in the labour market, most notably a decrease in low-skilled work and growing demand for higher vocational skills. In these conditions permeability between VET and HE is to be strengthened to open possibilities for VET graduates to seek higher education. The current geopolitical situation and growing flows of migrants from nearby regions (Belarus, Ukraine, Russian Federation) make it necessary for VET and vocational qualifications to be more flexible, inclusive and open for different groups of youth and adults. These changes of VET provision also necessitate rethinking the mission of VET schools, promoting VET and increasing its esteem, as well as existing approaches to excellence, inclusiveness and quality of VET provision.

Melnyk, S. (2023). Vocational education and training in the post-war reconstruction of Ukraine: Challenges and strategic directions. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (p. 10). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science.

## Vocational Education and Training in the Post-War Reconstruction of Ukraine: Challenges and Strategic Directions

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### Abstract

Military aggression of the Russian Federation against Ukraine since the 24th of February 2022 is bringing colossal damage to the society and national economy of Ukraine. Recovering of the country starts from the first moments since the liberation of occupied territories and presents by itself an immense and multidimensional process. This includes not only rebuilding civil infrastructure and productive capacity, but also recovering damaged natural ecosystems and helping the population to heal physical and socio-psychological wounds inflicted by the war, especially those directly involved in, or impacted by, the combat.

War also inflicts serious harm for skill formation and VET provision in Ukraine by rupturing the usual education and training processes, reducing the volume of learners and teaching staff, and demolishing infrastructure and resources of VET providers. It implies a need for essential reconstruction of the network of VET providers and adjustment of VET provision processes to the conditions of war and preparation for post-war reconstruction. From this perspective the war and related political-economic processes (e.g., faster EU integration with the acquired EU candidate status) imply a critical juncture in the institutional development of skill formation and VET in Ukraine.

This keynote analyses the critical juncture by outlining tentative vectors of VET reform and change during post-war reconstruction. These vectors could include: 1) strengthening the autonomy and effectiveness of education and training institutions by stronger orientation to skills needs in regions and sectors of the economy; 2) re-orienting VET provision priorities to fields of economic activities crucial for reconstructing the economy oriented to advanced and digitalized technologies; 3) introducing systemic provision of special education and training interventions for training and retraining the adult population, especially the re-integration of ex-military personnel with combat experience to civilian activities; 4) making the provision of VET and skill formation more resilient to external socio-political shocks, and more flexible, transparent and accessible to the population through for example, implementing microcredits recognized at national level, developing digitalized (online) learning opportunities, simplifying or eliminating bureaucratic procedures in accessing training and recognition of learning outcomes; 5) making the national system of qualifications and related institutional settings effective, transparent, and accessible by learning from policies and practices of EU countries.



Adebisi, T. (2023). Evaluation of resources for teaching of technical and vocational education and training courses in technical colleges in Osun State, Nigeria. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 12–22). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7808045>

## Evaluation of Resources for Teaching of Technical and Vocational Education and Training Courses in Technical Colleges in Osun State, Nigeria

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### Abstract

This study investigated adequacy or otherwise of the human resources available for teaching/learning and training in technical colleges. It examined the state of infrastructural and instructional facilities available, and determined the influence of adequacy or non-adequacy of human and/or infrastructural and instructional resources on the teaching/learning and training in technical colleges in Osun State, Nigeria. It used descriptive survey. The population for the study comprised all the teachers and the principals in technical colleges in Osun State, Nigeria. The sample comprised twenty-nine participants. Structured questionnaire (inventory) designed by the researcher was used to collect data. Descriptive and inferential statistics were used to analysed data. The results showed there is inadequacy of teachers and instructors, and infrastructural and instructional materials are not adequately available in VTCs in Osun State, Nigeria.

### Keywords

vocational/technical education, human resources, instructional resources, teaching, training

### 1 Introduction

In Nigerian National Policy on Education (NPE), technical and vocational education and training (TVET) is put under the Post-Basic Education and Career Development (FRN, 2014: iii). Technical colleges are one of the institutions in which learners acquire knowledge and receive their vocational trainings. The goals of TVET are laudably set and the features of the curricular are significantly enumerated in the NPE.

Technical and vocational colleges (TVCs) in Nigeria are established by the government to inculcate work skills into the prospective learners. For the TVET to meet the aspirations of the stakeholders there is need for provision of adequate resources both in terms of human, infrastructural and instructional. In recent times, there has been a serious concern about the capability of the technical colleges to produce adequately trained and skilled college completers who have requisite work skills in the labour market and/or who are equipped enough for self-employment or self-reliance and have ability to create jobs.

Though several studies (Kagara et al, 2017; Ogunode, 2020) have been carried out in the area of technical and vocational studies, there is dearth of literature on evaluation of resources for teaching of technical and vocational education and training courses in technical colleges in Nigeria in general and Osun State in Particular. According to Vo (2018, 140) citing Stufflebeanm, (2003, 34) evaluation is



*“the process of obtaining, providing, and applying descriptive and judgmental information about the merit and worth of some object’s goals, design, implementation, and outcomes to guide improvement decisions, provide accountability reports, inform institutionalization/dissemination decisions, and improvement decisions, and understanding of the involved phenomena”.*

To this end, this study becomes very germane.

## **2 Research objectives and questions**

### **2.1 Objectives**

The main objective of the study is to evaluate resources available for teaching/learning and training courses in technical colleges in Osun State, Nigeria. The specific objectives are to:

- i. Investigate adequacy or otherwise of the human resources available for teaching/learning and training in technical colleges in Osun State, Nigeria;
- ii. Examine the state of infrastructural and instructional facilities available for teaching/learning and training in technical colleges in Osun State, Nigeria; and,
- iii. Determine the influence of adequacy or non-adequacy of human and/or infrastructural and instructional resources on the teaching/learning and training in technical colleges in Osun State, Nigeria.

### **2.2 Research questions**

- i. How adequate are the human resources available for teaching/learning and training in technical colleges in Osun State, Nigeria?
- ii. What is the state of infrastructural and instructional facilities available for teaching/learning and training in technical colleges in Osun State, Nigeria?

**2.3 Research hypothesis:** There is no significant influence of human resources on the learning outcomes of students in technical colleges in Osun State, Nigeria.

## **3 Methodology**

Research design used was descriptive survey. The population for the study comprised all the teachers and the principals in technical colleges in Osun State, Nigeria. There are 9 VTCs in the State. Three technical colleges were randomly selected one from each of the three senatorial districts in the State. The actual population size is not known. According to MaCorr Research Solutions Online (2022), the population size is ignored when it is ‘large’ or unknown. The sample respondents consisted of the three principals and all the teachers in the selected VTCs. Thus, the actual total sample was determined after the actual numbers of Principals, and teachers were ascertained. The actual sample, therefore, comprised three principals and twenty-six teachers totalling 29 participants.

The instrument was an open-ended and structured questionnaire (inventory) designed by the researcher and used to assess the on-site infrastructure and instructional facilities in the VTCs. The questionnaire was termed Evaluation of Resources for Teaching Vocational Education and Training Principal’s Questionnaire (ERTVETPQ), and Evaluation of Resources for Teaching Vocational Education and Training Teacher’s Questionnaire (ERTVETTQ). Section A of the questionnaire contained demographic variables of the respondents while Section B contained the list of recommended facilities expected to be available in the VTCs.

### **3.1 Data analysis**

The data were analysed using appropriate descriptive and inferential statistics.

## 4 Results analysis

Due to the constraint of 2000 words limit for this write-up, tabular analyses of results are put in appendix for necessary perusal.

**4.1 Research question one:** How adequate are the human resources available for teaching/learning and training in technical colleges in Osun State, Nigeria?

**Table 1**

Student-Teacher ratio for assessing the adequacy of human resources for teaching/learning and training courses in technical colleges in Osun State

S/n	Departments	No of Teachers	No of Students	Student-Teacher Ratio	Decision	Principal's Remark
<b>Government Technical College, Town Y</b>						
1.	Carpentry and Woodworks	3	92	1:31	Inadequate	Inadequate
2.	Electrical Engineering	5	184	1:37	Inadequate	Adequate
3.	Automobile Mechanical Engineering	4	142	1:36	Inadequate	Adequate
4.	Catering	0	0	0	Not Applicable	Not Applicable
5.	Building: Brick laying and Concrete	3	132	1:44	Inadequate	Inadequate
<b>Government Technical College, Town Z</b>						
1.	Carpentry and Woodworks	2	35	1:18	Adequate	Adequate
2.	Electrical Engineering	3	145	1:49	Very Inadequate	Inadequate
3.	Automobile Mechanical Engineering	1	28	1:28	Inadequate	Very Inadequate
4.	Catering	1	18	1:18	Adequate	Inadequate
5.	Building: Brick laying and Concrete	2	42	1:21	Inadequate	Inadequate
<b>Government Technical College, Town X</b>						
1.	Carpentry and Woodworks	0	0	0	Not Applicable	Not Applicable
2.	Electrical Engineering	2	145	1:49	Very Inadequate	Inadequate
3.	Automobile Mechanical Engineering	0	0	0	Not Applicable	Not Applicable
4.	Catering	0	0	0	Not Applicable	Not Applicable
5.	Building: Brick laying and Concrete	2	42	1:21	Adequate	Very Adequate

*Source: Researcher's field work, February, 2023.*



Results in Table 1 showed that human resources (teachers) are not adequate in all the three colleges for all the trade options under consideration except carpentry and woodworks and catering in GTC, Ile-Ife and Building: Brick Laying and Concrete at GTC, Gbongan. The summary of the results presented in Table 4.1 is provided in Table 2.

**Table 2**

Summary of student-teacher ratio for assessing the adequacy of human resources for teaching/learning and training courses in technical colleges in Osun State

	School Locations	Trade Subjects options				
		CWW	EE	AME	CCP	BBC
<b>Adequacy of Human Resources</b>	<b>GTC, Town Y</b>	Inadequate	Inadequate	Inadequate	—	Inadequate
	<b>GTC, Town Z</b>	Adequate	Very Inadequate	Inadequate	Adequate	Inadequate
	<b>GTC, Town X</b>	—	Inadequate	—	—	Adequate

Source: Researcher's field work, February, 2023.

Key: CWW: Carpentry and Wood works; EE: Electrical Electronics; AME: Automobile Mechanical Engineering; CCP: Catering Craft Practice; BBC: Building, Bricklaying and Concrete

#### 4.2 Research question two: What is the state of infrastructural and instructional facilities available for teaching/learning and training in technical colleges in Osun State, Nigeria?

In order to answer this question, the responses of the teachers on the availability or otherwise of recommended infrastructural and instructional facilities were collated. The results obtained are as presented in Tables 3 to 7.

**Table 3**

State of infrastructural and instructional facilities for teaching and learning Carpentry and Woodwork in Technical Colleges in Osun State

S/N	Items	Not Available	Available but....			
			Not Very Adequate	Not Adequate	Adequate	Very Adequate
1	Carpentry Workshop	0	0	0	4	1
2	Classrooms	0	0	1	4	0
3	Electricity/Solar Power Supply	1	0	2	2	0
4	Water Supply	0	1	4	0	0
5	Chairs and Tables	0	0	4	1	0
6	Claw Hammer	0	0	4	1	0
7	Tape Measure	0	0	2	1	2
8	Measuring Squares	0	0	2	1	2
9	Chisels	0	0	3	1	0
10	Mallets	0	0	3	1	0
11	Handsaw	0	0	2	3	0
12	Backsaw	0	1	4	0	0
13	Curve Cutting Saw	0	2	3	0	0
14	Planes	0	0	2	3	0
15	Sharpening Stone	0	0	2	3	0
16	Grinder	0	2	3	0	0
17	Hand Drill	0	2	3	0	0

18	Screwdrivers	0	2	2	1	0
19	Clamps	0	0	2	3	0
20	Power Drill	2	0	3	0	0
21	Jigsaw	1	0	3	1	0
22	Circular Saw	0	1	3	1	0
23	Router	2	1	2	0	0
24	Sander	2	1	2	0	0
25	Biscuit Joiner	2	1	2	0	0
26	Table Saw	0	1	4	0	0
27	Radial Arm Saw	3	0	2	0	0
28	Band Saw	2	1	2	0	0
29	Planer	0	1	2	2	0
30	Lathe	1	1	2	0	0
31	Universal Machine	2	1	2	0	0
32	Carpenter's Pencil	1	0	2	1	1
33	Extension Cords	1	0	4	0	0
34	Miter Box	1	0	4	0	0
35	Bench Hook	0	0	2	3	0
36	Woodworking Vise	0	0	5		0
37	Dust Collection System	2	1	1	0	0
38	Workbench	0	0	5	0	0
39	Pegboard	2	1	2	0	0
40	Tool Belt	2	1	2	0	0
41	Scrap Bin	2	1	2	0	0
42	Goggles	0	0	3	2	0
43	Heating Protectors	2	1	2	0	0
44	Respirator	3	0	2	0	0
45	Hair Ties	2	1	2	0	0
46	Push Stick	0	1	2	2	0

*Source: Researcher's field work, February, 2023.*

Table 3 showed that 43.45% of the facilities are not available at all. The facilities not available are medium-heavy duty machines and disposables/reusable non-capital-intensive materials. A larger percentage of the respondents ranging from 1 (20%) to 5 (100%) highlighted that these facilities are not adequately available. Only one respondent highlighted that each of carpentry workshop and carpenters' pencil are very adequate.

**Table 4**

State of infrastructural and instructional facilities for teaching and learning Electrical Engineering in Technical Colleges in Osun State.

S/N	Items	Not Available	Available but....			
			Not Very Adequate	Not Adequate	Adequate	Very Adequate
1	Electrical Laboratory/Workshop	0	3	1	6	0
2	Classrooms	0	3	1	6	0
3	Electricity/Solar Power Supply	7	0	1	2	0
4	Water Supply	2	2	1	4	1
5	Chairs and Tables		5		4	1

6	Pliers	2	3	3	1	1
7	Screwdrivers	2	2	4	1	1
8	Tape Measure	3	2	3	1	1
9	Hammer	3	2	3	1	1
10	Electrical Tape	4	2	3	0	1
11	Fish Tape	4	2	3	0	1
12	Cable Ties	2	6	1	0	1
13	Lever	6	2	0	2	0
14	Wire and Cable Lugs	4	2	2	0	1
15	Flashlight	7	1	1	1	0
16	Utility Knife	5	3	1	0	1
17	Allen Wrench Set	6	1	1	1	1
18	Coax Connector	6	3	0	0	1
19	Wire Crimper	6	2	1	0	1
20	Non-contact Voltage Tester	6	2	0	1	0
21	Voltmeter/Multimeter	2	4	1	3	0
22	Wire Stripper	7	1	0	1	1
23	Reaming Bit	8	1	0	0	1
24	Conduit Bender	2	3	2	2	1
25	Splicing Connector	5	4	0	1	0
26	Circuit Analyzers	8	2	0	0	0
27	Circuit Finders	8	0	0	0	0
28	Soldering iron	2	2	1	3	0
29	Transformer	3	1	1	1	2
30	Battery (Cells)	5	1	0	2	0

*Source: Researcher's field work, February, 2023.*

Table 4 revealed that except for electrical laboratory workshops, classrooms, water supply, voltmeter/multimeter and soldering iron which teachers responded to that are just adequate; a significant percentage of the responses from the teachers showed that facilities for teaching electrical engineering options are grossly not available. These later facilities include: power supply, lever, flashlight, Allen wrench, wire crimper, non-contact voltage tester, wire stripper, reaming bit, circuit analyzers, circuit finders, utility knife, splicing conductor and battery (cells).

**Table 5**

State of infrastructural and instructional facilities for teaching and learning Mechanical Engineering (Motor Vehicle Mechanics) in Technical Colleges in Osun State

**n=5**

S/N	Items	Not Available	Available but....			
			Not Very Adequate	Not Adequate	Adequate	Very Adequate
1	Electrical Laboratory/Workshop	2	2	1	0	0
2	Classrooms	1	0	4	0	0
3	Electricity/Solar Power Supply	1	0	0	3	0
4	Water Supply	2	1	2	0	0
5	Chairs and Tables	0	1	3	0	0
6	Protective Gloves	2	0	3	0	0
7	Goggles	1	0	3	0	0
8	Apron	1	1	0	3	0

9	Single Point Cutting Tool	2	0	1	2	0
10	Double Point Cutting Tool	4	0	1	0	0
11	Multi Point Cutting Tool	1	0	4	0	0
12	Pliers	1	0	1	2	0
13	Bench Vise	2	1	2	0	0
14	Holding Clamp	3	1	1	0	0
15	Vernier Clippers	3	1	1	0	0
16	Measuring Tapes & Scales	2	0	1	2	0
17	Ball-peen Hammer	2	0	3	0	0
18	Blacksmith Sledge Hammer	1	1	3	0	0
19	Body Mechanic's Hammer	2	0	3	0	0
20	Brick Hammer	3	0	2	0	0
21	Ratchet & Rocket Set	4	0	1	0	0
22	Screwdrivers Set	2	0	2	0	1
23	Adjustable Wrench Set	0	1	3	0	1
24	Fasteners	3	1	0	1	0
25	Spanners	0	1	3	0	0
26	Drill	2	1	2	0	0
27	Hand Cutter	3	2	0	0	0
28	Dremel	3	2	0	0	0
29	Files	1	1	2	0	1
30	Electrical Fault Detector	4	1	0	0	0

*Source: Researcher's field work, February, 2023.*

Table 5 indicated that only four of the 30 items are very adequate in provision. The items that are almost not available in all the colleges are: double point cutting tool, ratchet and rocket set, electrical fault detector, holding clamp, vernier calipers, brick hammers, fasteners, hand cutter and dremel which between three and four of the five teachers stated that they are not available.

**Table 6**

State of infrastructural and instructional facilities for teaching and learning Building: Block Laying and Concrete in Technical Colleges in Osun State

S/N	Items	Not Available	Available but....			
			Not Adequate	Very Adequate	Adequate	Very Adequate
1	Workshop	0	1	3	1	0
2	Classrooms	0	0	4	1	0
3	Electricity/Solar Power Supply	2	0	3	0	0
4	Water Supply	1	1	2	1	0
5	Chairs and Tables	0	2	2	1	0
6	Sand supplies	3	1	0	1	0
7	Hand Trowel	2	0	1	2	0
8	Iron Square	2	0	1	2	0
9	Spirit Level	2	0	1	2	0
10	Tape Measure	2	0	0	3	0

11	Lines & Pegs	2	0	0	1	0
12	Range	2	0	1	1	1
13	Head pans	2	0	0	2	1
14	Shovel	2	0	0	2	1
15	Digger	2	0	0	2	0
16	Mould (Sizes 7 & 9)	2	0	1	2	0
17	Wheel Barrow	0	3	1	1	0
18	Sheave	2	0	1	1	1
19	Scaffold	2	3	0	0	0
20	Mixer	0	5	0	0	0
21	Excavator	4	1	0	0	0
22	Compactor	2	1	2	0	0

*Source: Researcher's field work, February, 2023.*

Table 6 showed that at least one of the respondents (20%) responded that the following four items viz.: range, head pans, shovel and sheaves are very adequately available. Otherwise, about 77.27% of the materials and facilities needed for teaching and learning Building: Block Laying and Concrete are deemed not available in the technical colleges.

**Table 7**

State of infrastructural and instructional facilities for teaching and learning Catering in Technical Colleges in Osun State

S/N	Items	Not Available	Available but....			
			Not Very Adequate	Not Adequate	Adequate	Very Adequate
1	Workshop/Kitchen	0	0	1	0	0
2	Classrooms	0	0	1	0	0
3	Electricity/Solar Power Supply	0	0	1	0	0
4	Water Supply	0	0	0	1	0
5	Chairs and Tables	0	0	1	0	0
6	Refrigerator	0	0	1	0	0
7	Gas Cooker	0	0	1	0	0
8	Electric Oven	0	0	1	0	0
9	Blenders	0	0	1	0	0
10	Mixer	0	0	1	0	0
11	Knives Set	0	0	1	0	0
12	Mixing Bowls	0	0	1	0	0
13	Chopping Board	0	0	1	0	0
14	Rolling pins	0	0	1	0	0
15	Electric Fryers	0	0	1	0	0
16	Frying Pans	0	0	1	0	0
17	Cooking Utensils	0	0	1	0	0
18	Mortars & Pestles	0	0	1	0	0
19	Buckets	0	0	0	1	0
20	Dishes & Plates	0	0	0	1	0
21	Cutleries	0	0	0	1	0

*Source: Researcher's field work, February, 2023.*

Results in Table 7 showed that all the recommended infrastructural and instructional facilities for teaching and learning Catering are available in the college. However, only four (18.18%) of the listed items are adequately available.

**4.3 Research hypothesis:** There is no significant influence of human resources on the learning outcomes of students in technical colleges in Osun State, Nigeria.

In order to determine if there is no significant influence of human resources on the learning outcomes of students in the technical colleges in Osun State, the performances of the students in Catering Craft Practice (CCP) at GTC Ile-Ife for 2017 National Business and Technical Examinations Board (NABTEB) were first collated. These performances were however not contrasted with other performances as the other colleges do not offer CCP. The data obtained is as presented in Table 8.

**Table 8**

Performance of students in Catering Craft Practice at GTC, Town Z

	A	C	P	F
CCP only	0	9	1	1
CCP with other trade subjects taken by students	5	22	4	2

Results in Table 8 did not present any exceptional performance that could be attributed to the low student-teacher ratio. Further data on the performances of the students in Building: Brick Laying and Concreting and other trade subjects were collated at two colleges that offered it were contrasted for influence of adequacy of HR. Results obtained are as presented in Table 9.

**Table 9**

Chi-square statistics of performance of students in Building: Brick Laying and Concreting and other trade subjects

	A	C	P	F	df	$\chi^2_{cal}$	$\chi^2_{tab}$	P	Decision
GTC Town Y (Inadequate HR)	6	34	25	11	3	3.79	7.82	>0.05	Not Sig
GTC Town Z (Adequate HR)	5	22	11	2					

Analysis of students' performance in order to determine whether to accept or reject the null hypothesis that stated that there is no significant influence of human resource on the learning outcomes of students in technical colleges in Osun State, Nigeria revealed that there is no significant difference between the performance of students in the technical college with adequate HR and their counterparts in the college without adequate HR. The null hypothesis was therefore retained at 0.05 level of significance.

## 5 Discussion of findings

The findings showed that teachers in the technical colleges are grossly inadequate. This is contrary the recommendation in the Nigerian National Policy on Education in Section 3(b) 51(c), which states that "For effective participation of students in practical works the teacher/students' ratio shall be kept at 1:20 (FRN 2014: 20). Adequate availability of teachers in VTCs is crucial for quality training of students. Akinfolarin, et al (2012), and Moughalu (2018) emphasized that shortage of qualified teachers will result in poor training of students. Adequate availability of qualified personnel is a prerequisite for the successful implementation of VTE programmes.

The findings also revealed that many essential instructional facilities are not available. Where available, they are inadequate. Availability of instructional materials is central to effective teaching, learning and training in VTCs. A qualified and competent teacher will be frustrated in their efforts if there are no relevant infrastructural and instructional facilities to work with. Thus, for effective teaching and learning in VTCs, adequate personnel, materials, and infrastructure must be in place.

Contrary to the expectation that the inadequacies of teachers and instructional materials reported would have significant negative effect on the academic performance of students, the null hypothesis was retained at 0.05 level of significance. However, this does not mean that all is well with the students and their performances. The limitation to obtain enough students examinations' results in GTCs in Ile-Ife and Gbongan might be responsible for this.

## 6 Conclusions

There is inadequacy of teachers and instructors in VTCs in Osun State, Nigeria. Infrastructural and instructional materials are not adequately available in VTCs investigated. There is high supposition that the academic performance of the students would be negatively impacted due to low personnel and material resources.

## 7 Recommendations

Osun State Government should employ more qualified teachers into the VTCs in the State.

The State Government in collaboration with parents and non-governmental organizations should provide necessary infrastructure and instructional facilities for proper training of prospective VTCs students in Osun State, Nigeria.

The management and staff of VTCs in the State should do all in their powers to minimize the negative impact of shortage of human and material resources on the academic performance of the VTCs students.

## References

- Akinfolarin, C. A., Ajayi, I. A. & Oloruntegbe, K. O. (2012). An Appraisal of Resource Utilization in Vocational and Technical Education in Selected Colleges of Education in Southwest Nigeria. *Journal of Education*, 2(1), 41-45
- Federal Republic of Nigeria (2014). National Policy on Education (6<sup>th</sup> Edition), Nigerian Educational Research and Development Council, Abuja.
- Kagara, A. B. & Dauda, I. (2017). Infrastructure Facilities Available for the Implementation of Blocklaying, Bricklaying and Concreting Curriculum in Technical Colleges in Niger State. *Journal of Nigerian Association of Teachers of Technology*, 12(3), 95-101.
- MaCorr Research Solutions Online (2022). Sample Size Methodology. Retrieved from [macorr.com/sample-size-methodology.htm](http://macorr.com/sample-size-methodology.htm)
- Moughalu, N. C. (2018). Challenges of Technical and Vocational Education in Nigeria. *International Journal of Research*, 5(1), 3279-3292.
- Ogunode, N. J. (2020). Challenges Facing the Implementation of Teachers Students Ratio Policy in Nigerian Educational System and the Ways Forward. *International Journal on Integrated Education*, 3(9), 189-197.
- Stufflebeam, D. L. (2003). The CIPP Model for Evaluation. In T. Kellaghan, D. L. Stufflebeam, & L. A. Wingate (Eds.), *International Handbook of Educational Evaluation*, (pp 31-62) Dordrecht: Kluwer Academic Publisher.
- Vo, T. K. A. (2018). Evaluation Models in Educational Program: Strengths and Weaknesses. *VNU Journal of Foreign Studies*, 34(2): 140-150.

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## The Attractiveness of the Industrial Technology Program among Newly Arrived Students in Sweden

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### Abstract

The Swedish Ministry of Education and Research shows that interest in the Industrial Technology program, an upper secondary vocational education, is decreasing among young people in Sweden (SOU, 2020:33). Fewer applicants also mean fewer trained professionals in the industry. Since the industry is dependent on competent personnel, I am interested in investigating the attractiveness of the Industrial Technology program in Sweden with a special focus on newly arrived students. The methodological starting point of the study is based on Life course research (Elder et al., 2003; Vogt, 2018), and eight newly arrived students' narrated life experiences are combined with Bourdieu's (1985) habitus theory to understand their choice of the Industrial Technology program. Due to limited space, this paper presents one student's narrated experiences of life and studies. From his story four categories emerge that are related to his choice of the Industrial Technology program.

### Keywords

Industrial Technology program, attractiveness of vocational training, newly arrived students, habitus

## 1 Introduction

Secondary vocational education in Sweden consists of twelve vocational programmes which are three years long and lead to a vocational exam (Swedish National Agency for Education, 2016). Since upper secondary vocational education does not meet the future demand in these areas there is a risk of a shortage of trained workforce, including in industry (SCB, 2018). One of the reasons for the lack of trained labour in industry is that a small number of students apply for the Industrial Technology program. But there is an exception. A survey from the Swedish National Agency for Education (2017) shows that the Industrial Technology program is more attractive than study preparation programs to newly arrived immigrants in Sweden. It is therefore important to study the reason for choosing the Industrial Technology program stated by the newly arrived students who have already chosen the program and investigate: What categories emerge from the newly arrived students' narratives about their choice of the Industrial Technology program?

## 2 Attractiveness of vocational training

International research shows that vocational education in European countries has a varied status in relation to university preparatory education. For example, vocational education generally has a high status in countries like Germany, Switzerland, and Austria (Billett, 2011, 2013; Billett & Choy, 2013; Bolli et al., 2018; Borkowsky & Gonon, 1998; Salter et al., 2017). The social class of students, both in Scandinavian countries (Aarkrog, 2020; Anders, 2017; Eiríksdóttir, 2023), and in the other European countries (Atkins & Flint, 2015; Meriläinen et al., 2019), plays an important role in their choice of profession and vocational education. The upper secondary programmes chosen by young people with an immigrant background in Finland are often related to employment opportunities (Brunila et al., 2011; Kalalahti et al., 2017). The attractiveness of vocational education can also be related to ethnicity. Previous research shows that students with an immigrant background in some countries, for example England (Atkins & Flint, 2015; Avis et al., 2017) and Finland (Brunila et al., 2011), are overrepresented in vocational education.

The professions and educational backgrounds of the parents can also stimulate interest in vocational education (Anders, 2017; Hansen, 2011; Paulsen & Haug, 2020). International political events can attract students to a certain vocational education (Pilz et al., 2018), for example in relation to mobility and work within the EU. In addition, students who prefer to work with their hands are often interested in vocational education (Paulsen & Haug, 2020). As regards the Industrial Technology program in Sweden, the status of the education can be related to the status of the vocational school. For example, the international and well-known Swedish industrial companies that conduct industrial education are considered by young people to have a high status, and the Industrial Technology program in those schools thus has a higher power of attraction (Asghari, 2023).

## 3 Habitus

Theoretically, I proceed from Bourdieu (1977) and Broady (1990) since my claim is that the theory of habitus can help me to understand the narrated life experiences of eight newly arrived students within different time periods, in their home countries and in Sweden. Bourdieu (1977) writes that habitus is a coherent whole of the capital, materials, and resources that are rooted in the individual and carried by the individual all the time. This ingrainedness has developed during the individual's upbringing, since childhood and in his/her social world, and helps him/her to perceive various events taking place in the world, but habitus is also changeable and the change takes place in the interaction between the individual and the social space (Bourdieu, 1985). Each individual carries an indivisible life of experiences that help him/her in interpreting the world, making decisions, and behaving in a certain way (Bourdieu, 1977; Broady, 1990). Habitus is a result of social experiences and collective memories that are carved into the individual's body and mind and cause the individual to move, think, and behave in their own way (Bourdieu, 1986). Habitus guides the individual in his/her actions, mind-set, and orientation in the social world (Bourdieu, 1984).

## 4 Life course

The methodological starting point in the study is based on a Life course perspective. Life course has its emphasis on life events, transitions, and life trajectories as contextualized processes (Elder et al., 2003; Vogt, 2018). When a life event occurs, the individual goes through a transition as a result of the life event. For individuals, the transition means that they will be in a life path for a longer period of time (Hutchison, 2019). The concept of transition has its origins in contextualized Life course perspectives (Elder et al., 2003). A fundamental assumption in Life course research is that transitions are not single, isolated events, but always embedded in

trajectories that give them distinct form and meaning (cf. Elder et al., 2003; Gee & Elder, 1986). Life events that take place as well as the transitions and life paths that an individual goes through in life, can be decisive factors in the changes that are made in his/her life (Hutchison, 2019) and have significance for how the individual is shaped (Mayer, 2009).

## 5 Selection of newly arrived students

Through contact with vocational upper secondary schools, I came into contact with two students whom I call Ahmad and Mohsen in my study. Ahmad and Mohsen are from two different schools, in two different cities, and do not know each other. The request for participation in the study was based on the snowball effect (cf. Bryman, 2016) via Ahmad and Mohsen to the other six participating students who lived in different locations in Sweden. Ebrahim, whose story is used in this paper, is one of the eight students.

In the research process, I have relied on the guidelines of the Swedish Research Council (2017). Due to the pandemic, the interviews were conducted online (e.g. via Zoom, FaceTime, WhatsApp) during the years 2020 and 2021. All students were interviewed twice and six of them were interviewed a third time. The two students who were not interviewed a third time were the ones who, despite consent, did not respond to my request for the interview. The length of the first and second interviews was between 45 – 60 minutes and the third interview 30 – 45 minutes. The interview questions were based on the main research topic *newly arrived students' life and professional experiences and their choice of the Industrial Technology program*.

## 6 Analysis of interviews

I brought together each student's interview data from the first, the second, and the third (of the students who had been interviewed three times) interviews and structured the descriptions chronologically (cf. Lieblich et al., 1998). In other words, I as a researcher created stories from the students' stories (cf. Lieblich, 1993). In my analysis work, in a categorizing approach, I departed from Lieblich et al. (1998) when I divided, defined, sectioned, named, and collected single words that belong to a defined category from my story about young students' accounts of their life and professional experiences. In this way, different categories of the attractiveness of industrial education emerged from the stories.

## 7 Results

In this short paper, I report only one of the student's narrated experiences of his life and studies. The result highlights four characteristic aspects that are related to his choice of the Industrial Technology program: [1] A good working environment in the Swedish workshop, [2] The good wages of workshop workers, [3] The need for labour in industry, and [4] To be able to get employment with a good income, get a residence permit, and not be deported.

### *Ebrahim's story*

When my father was up on a construction site welding, he fell 20 meters and died, and then my mother and my siblings needed a new breadwinner. [...] I and my brother took over dad's job as a welder [...]. On the days when there was no work on the construction site or in the workshop, we also worked at the boss's house, we usually started very early in the morning and we worked with the housework until 11, 12 o'clock at night. We cleaned, fixed broken things, painted his house. He himself was very rich [...] He himself never worked. There were always others working for him and he treated us like slaves. [...] I was 15 years old when I came to Sweden. [...] I had bad

experiences with the workshop and how my boss treated me [in my home country]. I didn't want to be a slave again, but then we went on a study visit and the boss there was wearing work clothes, just like everyone else, and he himself was working on the floor. But then he also talked to us just as if we were people like him. It was really strange, I wasn't an animal anymore [...]. I also heard that industry needed people and it was easier to get a job and make money and make a living [...]. Then I also saw that the salary is high and the job opportunities were great here and I could get a job and stay in Sweden, otherwise I will be deported to my home country, and I don't want that. Then I also saw that the manager here was also not like my manager in my home country, and then I thought, okay, I choose industry.

Ebrahim's life course (Elder et al., 2003; Hutchison, 2019; Vogt, 2018) is about a life where he as a child worked for a period as a welder in his home country, and about his bad experiences from his job at the workshop and how his boss treated him there. Ebrahim was treated badly by his rich boss when he worked at his house for long hours. It is obvious that Ebrahim's life and professional experiences have been important for his choice of industrial education from the way that he compares his previous experiences of being mistreated with his experiences of the study visit. In his case, the choice of industrial education has become for him the choice of an education that leads to an industrial profession that is in need of labour [3], has a good work environment [1] where a boss treats his employees with dignity, and offers a high salary [2]. It also appears that the choice of the Industrial Technology program was made based on opportunities for employment which in turn should lead to a residence permit and a chance to stay in Sweden [4].

## 8 Discussion

Newly arrived students carry an indivisible life of life experiences (cf. Bourdieu, 2008), that is, each of them has a life history which can be seen from different perspectives in the human social field and can be placed in families, classes, professional groups, and so on (cf. Bourdieu, 1977; Broady, 1990). The students in this study come from the working class and research shows that working class students choose vocational education to a greater extent (e.g. Aarkrog, 2020; Anders, 2017; Eiríksdóttir, 2023), but in the case of these informants, even if they had come from the middle or upper class, they might still choose the Industrial Technology program. This is due to the requirement for self-sufficiency and labour market establishment for permanent residence permits (Swedish Migration Agency, 2022).

People's habitus is important for their taste, opinion, and thinking, which are context-bound and take shape in the society in which the individual has grown up and in the interaction between the individual, other people, and their social space (Bourdieu, 1985, 1995, 2008). That society, and the working-class families in which the newly arrived students in this study have grown up, have been significant in shaping their taste, opinion, and thinking. Since the students in the study themselves come from the working class, their taste, opinion, and thinking about working with the body are ingrained in them (cf. Bourdieu, 1977). In that context, the students' choice of the Industrial Technology program can be understood based on Bourdieu (1977), in relation to taste, opinion, and thinking related to physical work, but also based on Anders (2017), Hansen (2011), and Paulsen and Haug (2020), in relation to their parents' occupational background as workers. But since taste, opinion, and thinking are also changing, and the change takes place in the interaction between newly arrived students and their social space (cf. Bourdieu, 1985), the importance of further study at the university level, and the idea of becoming an engineer, also become important reasons for the choice of the Industrial technology program in their new country, Sweden.

## References

- Aarkrog, V. (2020). The standing and status of vocational education and training in Denmark. *Journal of Vocational Education & Training*, 72(2), 170-188. <https://doi.org/10.1080/13636820.2020.1717586>
- Anders, J. (2017). The influence of socioeconomic status on changes in young people's expectations of applying to university. *Oxford Review of Education*, 43(4), 381-401. <https://doi.org/10.1080/03054985.2017.1329722>
- Asghari, H. (2023). The attractiveness of industrial technology education based on teacher and students' stories. In L. M. Herrera, M. Teräs, P. Gougoulakis, & K. Janne (Eds.), *Learning, teaching and policy making in VET: Emerging issues in research on vocational education & training vol. 8* (pp. 31-46). Atlas förlag.
- Atkins, L., & Flint, K. J. (2015). Nothing changes: perceptions of vocational education in England. *International Journal of Training Research*, 13(1), 35-48. <https://doi.org/10.1080/14480220.2015.1051344>
- Avis, J., Orr, K., & Warmington, P. (2017). Race and vocational education and training in England. *Journal of Vocational Education & Training*, 69(3), 292-310. <https://doi.org/10.1080/13636820.2017.1289551>
- Billett, S. (2011). *Vocational education: Purposes, traditions and prospects*. Springer Science & Business Media.
- Billett, S. (2013). Towards a mature provision of vocational education. *International Journal of Training Research*, 11(2), 184-194. <https://doi.org/10.5172/ijtr.2013.11.2.184>
- Billett, S., & Choy, S. (2013). Learning through work: emerging perspectives and new challenges. *Journal of Workplace Learning*, 25(4), 264-276. <https://doi.org/10.1108/13665621311316447>
- Bolli, T., Rageth, L., & Renold, U. (2018). *The social status of vocational education and training in Switzerland: Information brochure for professionals in vocational education and training*. <https://www.econstor.eu/bitstream/10419/184907/1/1027282814.pdf>
- Borkowsky, A., & Gonon, P. (1998). Switzerland. In OECD (Ed.), *Pathways and participation in vocational and technical education and training* (pp. 335-372). OECD Publishing.
- Bourdieu, P. (1977). *Outline of a Theory of Practice*. Cambridge University Press.
- Bourdieu, P. (1984). *Distinction: A social critique of the judgment of taste*. Harvard University Press.
- Bourdieu, P. (1985). The genesis of the concepts of habitus and field. *Sociocriticism*, 2(2), 11-24.
- Bourdieu, P. (1986). *Kultursociologiska texter [Cultural sociology texts]*. Salamander Förlag.
- Bourdieu, P. (1995). *Praktiskt förnuft: Bidrag till en handlingsteori [Practical reason. Contributions to a theory of action]*. Daidalos.
- Bourdieu, P. (2008). *Reproduktionen: bidrag till en teori om utbildningssystemet [The reproduction: contribution to a theory of the educational system.]*. Arkiv förlag.
- Broady, D. (1990). *Sociologi och epistemologi: Om Pierre Bourdieus författarskap och den historiska epistemologin* (Vol. 2). HLS förlag.
- Brunila, K., Kurki, T., Lahelma, E., Lehtonen, J., Mietola, R., & Palmu, T. (2011). Multiple transitions: Educational policies and young people's post-compulsory choices. *Scandinavian Journal of Educational Research*, 55(3), 307-324. <https://doi.org/10.1080/00313831.2011.576880>
- Bryman, A. (2016). *Social research methods*. Oxford university press.
- Eiríksdóttir, E. (2023). Choosing vocational education: Reasons and rationale of recently graduated journeymen in Iceland. In L. M. Herrera, M. Teräs, P. Gougoulakis, & K. Janne (Eds.), *Learning, teaching and policy making in VET: Emerging issues in research on vocational education & training vol. 8* (pp. 225-257). Atlas förlag.

- Elder, G. H., Johnson, M. K., & Crosnoe, R. (2003). The emergence and development of life course theory. In *Handbook of the life course* (pp. 3-19). Springer.
- Gee, E. M., & Elder, G. H. (1986). Life Course Dynamics: Trajectories and Transitions, 1968-1980. *Social Indicators Research*, 18(4), 425-428.
- Hansen, M. N. (2011). Finnes det en talentreserve? Betydningen av klassebakgrunn og karakterer for oppnådd utdanning [Is there a talent reserve? The importance of class background and grades for education obtained]. *Søkelys på arbeidslivet*, 28(03), 173-189. <https://doi.org/10.18261/ISSN1504-7989-2011-03-01>
- Hutchison, E. D. (2019). A life course perspective. In E. D. Hutchison (Ed.), *Dimensions of human behavior: The changing life course* (pp. 1-33). SAGE publications.
- Kalalahti, M., Varjo, J., & Jahnukainen, M. (2017). Immigrant-origin youth and the indecisiveness of choice for upper secondary education in Finland. *Journal of Youth Studies*, 20(9), 1242-1262. <https://doi.org/10.1080/13676261.2017.1321108>
- Lieblich, A. (1993). Looking at change: Natasha, 21: New immigrant from Russia to Israel. In R. Josselson & A. Lieblich (Eds.), *The narrative study of lives* (pp. 92-129). Sage Publications.
- Lieblich, A., Tuval-Mashiach, R., & Zilber, T. (1998). *Narrative research: Reading, analysis and interpretation*. Sage Publications.
- Mayer, K. U. (2009). New directions in life course research. *Annual review of sociology*, 35, 413-433.
- Meriläinen, R., Isacson, A., & Olson, S. J. (2019). Secondary vocational education in Finland. *Workforce Education Forum (WEF)*, 39(1), 43-51.
- Paulsen, M. K., & Haug, E. H. (2020). Variasjoner i elevers subjektive erfaring av å ta utdannings-og yrkesvalg i 10. klasse i ungdomsskolen [Variations in pupils' subjective experience of making educational and vocational choices in 10th grade in secondary school]. *Norsk Pedagogisk Tidsskrift*, 104(01), 43-58. <https://doi.org/10.18261/issn.1504-2987-2020-01-05>
- Pilz, M., Li, J., Canning, R., & Minty, S. (2018). Modularisation approaches in Initial Vocational Education: evidence for policy convergence in Europe? *Journal of Vocational Education & Training*, 70(1), 1-26. <https://doi.org/10.1080/13636820.2017.1392994>
- Salter, E., Kuemmerling, A., Bond, R., & Sabates, R. (2017). Education and civic engagement: A comparative study of the benefits of post-compulsory education in England and Germany. *Longitudinal and Life Course Studies*, 8(2), 152-168. <https://doi.org/10.14301/lcs.v8i2.372>
- SCB. [Statistics Sweden]. (2018). *Brist på gymnasialt yrkesutbildade även om 20 år [Lack of upper secondary vocational education even in 20 years' time]*. <https://www.scb.se/hitta-statistik/artiklar/2018/brist-pa-gymnasialt-yrkesutbildade-aven-om-20-ar/>
- SOU. (2020:33). *Gemensamt ansvar – en modell för planering och dimensionering av gymnasial utbildning [Shared responsibility – a model for planning and dimensioning upper secondary education]*. <https://www.regeringskansliet.se/rattsliga-dokument/statens-offentliga-utredningar/2020/06/sou-202033/>
- Swedish Migration Agency [Migrationsverket]. (2022). *Permanent uppehållstillstånd enligt gymnasielagen [Permanent residence permit according to the Upper Secondary School Act]*. <https://www.migrationsverket.se/Privatpersoner/Skydd-och-asyl-i-Sverige/Gymnasielagen/Permanent-uppehallstillstand-enligt-gymnasielagen.html>
- Swedish National Agency for Education [Skolverket]. (2016). *Regeringsuppdrag – uppföljning och analys av gymnasieskolan [Government assignment - follow-up and analysis of the upper secondary school]*.

- <https://www.skolverket.se/download/18.6bfaca41169863e6a65c23b/1553966827325/pdf3642.pdf>
- Swedish National Agency for Education [Skolverket]. (2017). *Redovisning av uppdrag om nyanlända under 25 år och deras utbildningsbehov inom Komvux [Reporting of assignments on new arrivals under the age of 25 and their educational needs within Komvux]* (Dnr 2017:295). <https://www.skolverket.se/download/18.6bfaca41169863e6a65c9fe/1553967342452/pdf3775.pdf>
- Swedish Research Council. (2017). *Good Research Practice*. [https://www.vr.se/download/18.5639980c162791bbfe697882/1555334908942/Good-Research-Practice\\_VR\\_2017.pdf](https://www.vr.se/download/18.5639980c162791bbfe697882/1555334908942/Good-Research-Practice_VR_2017.pdf)
- Vogt, K. C. (2018). From job-seekers to self-searchers: Changing contexts and understandings of school-to-work transitions. *Young*, 26(4S), 18S-33S. <https://doi.org/10.1177/1103308817741006>

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## AI Pioneers: Developing a Community of Practice for Artificial Intelligence (AI) and Vocational Education and Training

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### Abstract

This paper examines the implications of VET and for VET of digital and sustainable socio-economic development. It examines the dual challenge of AI as a tool for teaching and training in VET but also as a subject for learning in VET. It quotes UNESCO (2022) in saying AI has the potential to accelerate the process of achieving the global education goals through reducing barriers to accessing learning, automating management processes, and optimising methods to improve learning outcomes. It looks at current advances in AI including their potential impact on work organisation, work tasks and business processes and the potential and challenge for education and the research and social challenges this poses for research in Vocational education and Training. The research suggests everyone needs to be able to recognize AI and its influence on people and systems, and be proactive as a user and citizen. VET students should have the opportunity to use AI and big data to solve problems, for instance maintaining systems in the mechatronic occupations. Thirdly, VET dual students (higher level apprentices) should become skilled in computer science for developing AI systems. The paper goes on to examine the new skills and competencies needed by VET teachers and trainers and professional development requirements. It concludes with the aims of the Erasmus Plus AI Pioneers project to develop a community of practice around AI in VET.

### Keywords

Artificial Intelligence (AI), vocational education and training, VET students, VET teachers

## 1 AI, Education and VET

This paper examines the implications of VET and for VET of digital and sustainable socio-economic development. It examines the dual challenge of AI as a tool for teaching and training in VET but also as a subject for learning in VET. The paper is based on the work of a European consortium of VET researchers and developers on Artificial Intelligence (AI) and VET. Having initially developed a strategic partnership with funding from the EU Erasmus Plus programme,





an expanded partnership has been successful in gaining EU support for a large-scale project, AI Pioneers, which started in January 2023.

### **1.1 The potential of AI for education**

Artificial Intelligence (AI) can be defined as a computer system that has been designed to interact with the world in ways we think of as human and intelligent. Ample data, cheap computing and AI algorithms mean technology that can learn very quickly. The transformative power of AI cuts across all economic and social sectors, including education. UNESCO (2022) says AI has the potential to accelerate the process of achieving the global education goals through reducing barriers to accessing learning, automating management processes, and optimising methods to improve learning outcomes.

A European Joint Research Council policy foresight report (Tuomi, 2018) suggests that "in the next few years AI will change learning, teaching, and education. The speed of technological change will be very fast, and it will create high pressure to transform educational practices, institutions, and policies." They say it is therefore important to understand the potential impact of AI on learning, teaching, and education, as well as on policy development.

### **1.2 Large language models**

The current advances in AI, particularly Large Language Models (LLMs) such as ChatGPT or Robotic, are based on processing large volumes of data from the internet. Machine learning enables a machine or system to produce meaningful results without being specifically told beforehand what to do. As a result, tasks that were previously performed by human activity are now potentially dependent on AI aided automated systems. It has been suggested that just as automation has threatened lower skilled work, the new AI system may automate skilled work (Lowrey, 2023). While such AI systems have much potential in education, for instance reducing the amount of administrative work teachers have to undertake, and developing curriculum and learning materials, ChatGPT has been seen by some as a challenge particularly for traditional forms of assessment (Khalil, 2023).

## **2 The research challenge**

The rapid development and implementation of AI poses a series of research and social challenges for Vocational Education and Training and Adult Education. These include:

What changes are needed to curricula to deal with the increasing use of AI in all areas of society?

How will AI change working practices and the knowledge and skills required in different occupations?

What is the relation between human intelligence and skill and Artificial Intelligence? How can humans work together with machines?

How can we ensure that the development of AI is not just the preserve of very large multinational companies?

What are the ecological impacts of AI?

What are the competencies and skills required for VET and Adult Education teachers and trainers?

How can we organise sufficient opportunities for VET teachers and trainers?

How can we use AI effectively for teaching and training and for extending opportunities and access to education and train

What will be the impact of Large Language Models on assessment and evaluation?

How can we ensure that we provide equal opportunities for research and development of AI?

How do we address the ethical issues raised by AI not just in society and work but also in education?

What policies are required to deal with the challenges of AI?

A major challenge for research and development is the very spread of developments in this area. ChatGPT, which was only released in November already has more than one million signed up users. Perhaps one immediate challenge is how we can use AI in our research and development activities.

### **3 Changing work and business processes**

The introduction of AI based systems is leading to changing work and business processes spanning many industries, with changing requirements for professional skills of skilled labour (Verma, 2023). This is often accompanied by the fear that human labour will be replaced on a large scale and professions and occupations can lose meaning and importance for structuring vocational education and training. In the scientific discourse, the view prevails that professional activities will change significantly, which means that some jobs will be lost, initially routine activities, but also new professions or new ranges of activities in existing occupations will emerge. There is not necessarily a complete substitution taking place, but the use of AI-based systems lead to the redesign of work. The increase in efficiency and productivity are driving factors for companies in industry, supply, manufacturing and software design to follow up such developments. From the employee's point of view, there are positive sides to the introduction of AI, for instance relief from physically demanding work or tiring routine tasks, or cognitive support for undertaking complex tasks. However, the social and ethical impact of AI is under debate: What is an AI system allowed to do and what is it not allowed to do? Who should participate in AI-based projects and development? Who is responsible for the consequences of AI-based applications? (Lufkin, 2017).

It has been suggested that workers should be equipped with at least basic knowledge about AI, both to help ensure their own employability but also their ability to shape the future of work like we do want to have. Vocational education and training can be a key element in dealing with AI technologies. Given these important and rapid shifts, it is time to consider what VET students (apprentices, trainees, technicians) need to know about AI technology. Firstly, our research suggests everyone needs to be able to recognize AI and its influence on people and systems, and be proactive as a user and citizen. Second, VET students should have the opportunity to use AI and big data to solve problems, for instance maintaining systems in the mechatronic occupations. And thirdly, VET dual students (higher level apprentices) should become skilled in computer science for developing AI systems.

Recognizing AI is an initiative by leading computer scientists that have identified five big ideas that VET students should know about AI (AI4K12, 2020):

- Computers perceive the world using sensors. Examples include speech recognition and computer vision; emerging issues include the nature of intelligence and the limitations of human and computer perception.
- Agents maintain representations of the world and use them for reasoning. Examples include types of algorithms, the work they do and their limitations.
- Computers can learn from data. Examples include types of machine learning - yet there are concerns about issues such as bias in training data.
- Intelligent agents require many types of knowledge to interact naturally with humans. Examples include interacting with digital assistants, chatbots and robots. Emerging issues involve the nature of consciousness and limitations of AI interaction.
- AI applications can impact society in both positive and negative ways. Emerging issues include the use, fairness and transparency of algorithms and likely social impacts.

#### **4 Vocational education and training and the European Digital Education Action Plan**

The education sector finds itself in a double tension. On the one hand, it is responsible for preparing young people for the changing world of work. On the other hand, educational institutions and teachers and trainers are under pressure to adapt to adopt digital technologies. This is particularly the case in vocational training. Teachers and trainers in VET are responsible for training the workforce of the future, which will include the development and use of AI systems and for whom knowledge is linked to a new understanding of the work processes. For example collaborative robotics can allow workers to undertake more complex tasks than before. These pressures are leading to the development of new projects in the vocational schools including the extension of the curriculum around AI, but the resulting freeing up of time from the existing school curricula.

The Tackle AI project undertook a series of case studies in vocational schools and the workplace in different European countries. This resulted in the following policy recommendations: (Attwell, Deitmer et.al., 2021):

1. Update of VET curricula by including AI topics.

Artificial intelligence has the potential to change many areas of life. It is therefore important that (young) people are fully informed about the potential benefits and limitations of AI for digital learning. In addition, apprentices need knowledge of how to use the latest AI-based applications in their occupational areas. The discussion of ethical and legal issues must be given special priority including data privacy.

2. Incorporate teaching competences for AI for VET teachers and trainers. If we incorporate AI in VET curricula it is self-evident that we need to include it in training programmes for VET teachers and trainers as well. The extent to which the topic of AI should find its way in depends on the respective area of learning / vocational field. Nevertheless, it is important that VET teachers and trainers have a basic knowledge of AI in order to assess developments in the labour market and new trends in educational technologies. Knowledge about AI should also be sought beyond professional activities, as AI also affects the everyday lives of VET teachers and trainers.

3. Encourage and support the development, searchability and sharing of Open Educational Resources for AI in VET. Due to the speed of the digital transformation, it is useful to bundle competences and share knowledge under VET teachers and trainers. In the field of education, the sharing of Open Educational Resources can support new learning programmes on AI and digital learning.

4. Encourage and support the development of online programmes of Continuing Professional Development for AI in VET. Digital transformation opens up the opportunity to make learning more flexible. This is also true for the Continuing Professional Development of teachers and trainers. Applications for digital interaction such as forums, Massive Online Courses (Moocs), chat groups or shared comments can promote exchange between VET stakeholders.

5. Support collaboration between industries, VET schools and training centres. This is in order to develop new training projects in the use of AI in different occupations in order to update their own knowledge and competences in the use of AI in different occupations. In addition to sharing knowledge between educational institutions, it is crucial that all stakeholders involved in VET work more closely together. Educational institutions need to know from companies how the latest technologies are already affecting their business in order to know what to teach.

At a European level the Digital Education Action Plan (European Commission, 2021) has adopted two strategic priorities. The first is to support the development of a high-performing digital education ecosystem and the second to address the need to enhance digital competences for the digital transformation. It is stated that a high performing digital education ecosystem

will increasingly include the use of AI at all levels including for teaching and learning. The action plan says that “digital technology, when deployed skilfully and effectively by educators, can fully support the agenda of high quality and inclusive education and training for all learners”.

The Tackle AI and Vocational Education and Training project has identified additional competences for AI based on the European Commission DigCompEdu framework of competencies for educational practitioners (Attwell, Deitmer et.al., 2020).

## **5 VET teachers and trainers**

The initial Erasmus+ project, AI and VET, was mainly directed towards researching the use of AI by VET teachers and trainers and at developing their confidence and competence in AI. This included research on the changing labour markets and the implications of AI for VET curricula as well as the practices of teachers and trainers. A survey and interviews (Roppertz, 2020) with teachers and trainers found little resistance to the use of AI in their teaching practice, but there is still massive demand for the professional development opportunities and for examples of how they could teach AI.

The use of AI in VET differs from AI in general education in that it has a dual focus: school learning and workplace learning. AI can be used in VET for teaching and learning, for example using chatbots (like GPT3 or others) for example to extend formative e-assessment and feedback as well as personalised learning. But AI is also a subject for VET, as it is increasingly adopted in different occupational competences and practices.

However, it is one thing to identify the competencies needed, it is another to provide sufficient opportunities for professional development to ensure ALL VET teachers and trainers are supported in updating their competences.

In this regard we recognise that traditional training courses for Professional Development may not be sufficient to meet the needs. Therefore, we would urge an approach supporting more flexible and innovative opportunities for Professional Development including in particular blended and online learning programmes.

These considerations have led us to develop the following recommendations.

- Incorporate competences for AI into all initial training programmes for VET teachers and trainers
- Encourage and support the development, searchability and sharing of Open Educational Resources for AI in VET
- Encourage and support the development of online programmes of Continuing Professional Development for AI in VET
- Support collaboration between industries; craft trade; VET schools and training centres to develop new projects and curricula and in the use of AI in different occupations.

To provide professional development opportunities for teachers and trainers, the AI and VET project developed a Massive Open Online Course (MOOC). The MOOC was flexible, initially running online for three months, and now freely open to participants. In the initial three months, nearly 500 people signed up, with almost equal numbers for the English and German language versions.

A key issue in researching and supporting the use of AI in education and training is the issue of ethics. The AI and VET project produced a research report (Attwell, Bekiadiis et al, 2021), drawing attention to issues like bias, the lack of transparency in algorithms and unequal access to digital content and resources. The European Commission has recently launched a set of ethical guidelines for educators on the use of AI and data in education (European Commission, 2022). Work on this area will continue in the new AI Pioneers project.

## 6 Exemplar case study of an AI project in VET

The topic of the project was Deep Reinforcement Learning –“= artificial intelligence” and implementation of an agent in the game “Sonic the Hedgehog” (Attwell, Deitmer et al., 2021). Sonic is a computer game from the Japanese publisher, Sega. The goals for the project were:

- (1) To acquire an understanding of artificial intelligence and neural networks
- (2) To gain advanced knowledge of the Python programming language
- (3) The AI should master different levels independently.

Trainees of the vocational school course for “information technology assistants” (German: “Informationstechnische(r) Assistent(in)”) took part in the second year of training within the framework of the learning field “Planning, implementing and evaluating projects” (practice). The total time required was 160 hours per school year.

What did trainees learn in the project? The trainees were able to acquire both technical and social skills in the course of this project. On the one hand, they learned project-oriented work in a group; they set themselves goals and divided and organised their work independently. On the other hand, they independently dealt with a programming language (Python) that was new to them and learned its basics to the extent that they were able to understand, modify, and create programs. In addition, the trainees have dealt with the basics of neural networks and different terms of machine learning, so that they were able to present the basics to their fellow students and explain the terms.

Reflection and recommendations for other teachers: since the students have to deal with the topic of artificial intelligence in their future work, it makes sense to deal with it in the vocational school. In the project documentation, the students report that it was surprisingly easy to acquire basic knowledge about AI. However, they emphasise that the deeper immersion in the subject matter was an obstacle, as more complex mathematical knowledge would have been necessary. This sometimes led to lower motivation and productivity. Overall, however, the students report that the choice of project was a good decision and that they have gained an advanced understanding of AI and its practical implementation.

When asked about what needs to happen on the part of the school and the teachers so that such projects can be practised regularly, the teacher reported that, on the one hand, appropriate further training for the teachers is necessary. Besides the transfer of knowledge about AI, the joint development of teaching concepts should be more important. In addition, existing teaching materials should be jointly reviewed and classified. The teacher recommends that the students have a say in choosing the appropriate topic. Students need motivation and perseverance to work in project groups, so it is an advantage if the project tasks are linked to the students’ interests. In addition, clear evaluation criteria should be established and communicated transparently.

## 7 Conclusion: AI pioneers

The questions and issues emerging from the previous research and activities in the AI and VET project are being taken forward in the new AI Pioneers large scale Erasmus+ project launched in January 2023 and running to December 2025. The project directly addresses the issues of capacity, both systemic and institutional, through working with teachers and trainers, educational planners, stakeholders, and policy makers in Adult Education and Vocational Education and Training, to identify, develop and pilot use cases of artificial intelligence in education and training including considering their impact on data, privacy, ethics and EU values. The project will develop a supplement to the DigCompEdu Framework for the skills and competences related to the use of AI in education. It will also produce recommendations, toolkits and implementation guidelines on the role and use of artificial intelligence. Central to the project is the development of a network of AI pioneers as a Community of Practice.

Online communities of practice (CoPs) can be a valuable resource for AI pioneers in education who are interested in exploring the use of artificial intelligence and machine learning in the classroom. Such CoPs can provide a platform for educators to collaborate and share best practices, resources, and experiences related to the use of AI in education. By participating in online CoPs, AI pioneers can gain access to a wider range of perspectives and expertise and stay up to date on the latest trends and best practices in the field of AI. They can also collaborate on projects and initiatives, and receive feedback and support from other members of the community. In addition, participation in online CoPs can help participants to strengthen their commitment to their profession by fostering a sense of community and shared purpose. By connecting with other like-minded individuals who are passionate about AI, AI pioneers can feel more inspired and motivated to continue their own professional growth and development.

The term Pioneers is taken from DigCompEdu (Redecker, 2017) and is defined as follows: “Pioneers question the adequacy of contemporary digital and pedagogical practices, of which they themselves are Leaders. They are concerned about the constraints or drawbacks of these practices and driven by the impulse to innovate education even further. Pioneers experiment with highly innovative and complex digital technologies and/ or develop novel pedagogical approaches. Pioneers are a unique and rare species. They lead innovation and are a role model for younger teachers.”

That such innovation is necessary has been amply illustrated by the challenges and debate not just in the education community but in popular media by the release of ChatGPT and the forthcoming Bard application.

### **Ethics Statement**

There are no ethical implications to this research

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### **References**

- AI4K12 (2020). 5 Big Ideas in AI, The Artificial Intelligence (AI) for K-12 initiative, <https://ai4k12.org/>
- Attwell, G., Bekiaridis, G., Deitmer, L., Perini, M., Roppertz, S., Stieglitz, D., & Tütlys, V. (2021). Artificial Intelligence & Vocational Education and Training. How to shape the future. Policy recommendations [http://taccleai.eu/wp-content/uploads/2021/12/TacpleAI\\_Recommendations\\_UK\\_compressed.pdf](http://taccleai.eu/wp-content/uploads/2021/12/TacpleAI_Recommendations_UK_compressed.pdf), accessed 13 November 2022
- Attwell, G., Bekiaridis, G., Deitmer, L., Perini, M., Roppertz, S., & Tütlys, V. (2020). Artificial Intelligence in Policies, Processes and Practices of Vocational Education and Training. [http://taccleai.eu/wp-content/uploads/2021/02/TacpleAI\\_FullReport\\_IO1\\_2021.pdf](http://taccleai.eu/wp-content/uploads/2021/02/TacpleAI_FullReport_IO1_2021.pdf)
- European Commission (2021). Digital Education Action Plan, <https://education.ec.europa.eu/focus-topics/digital-education/action-plan>
- European Commission, Directorate-General for Education, Youth, Sport and Culture (2022). *Ethical guidelines on the use of artificial intelligence (AI) and data in teaching and learning for educators*. Publications Office of the European Union. <https://data.europa.eu/doi/10.2766/153756>
- Khalil, M. (2023). Will ChatGPT get you caught? Rethinking of Plagiarism Detection, ResearchGate, [https://www.researchgate.net/publication/368358895\\_Will\\_ChatGPT\\_get\\_you\\_caught\\_Rethinking\\_of\\_Plagiarism\\_Detection](https://www.researchgate.net/publication/368358895_Will_ChatGPT_get_you_caught_Rethinking_of_Plagiarism_Detection)

- Lowrey, A. (2023). *How ChatGPT Will Destabilize White-Collar Work*, The Atlantic, <https://www.theatlantic.com/ideas/archive/2023/01/chatgpt-ai-economy-automation-jobs/672767/>, accessed 15 February 2023
- Lufkin, B. (2017). Why the biggest challenge facing AI is an ethical one, BBC Future, <https://www.bbc.com/future/article/20170307-the-ethical-challenge-facing-artificial-intelligence>
- Redecker, C. (2017). *European Framework for the Digital Competence of Educators: DigCompEdu*. Publications Office of the European Union, Luxembourg
- Roppertz, S. (2020). Artificial Intelligence and Vocational Education and Training: Perspective of VET teachers Survey Results, [https://taccleai.eu/wp-content/uploads/2020/10/TacpleAI\\_SurveyResults\\_eng.pdf](https://taccleai.eu/wp-content/uploads/2020/10/TacpleAI_SurveyResults_eng.pdf)
- Tuomi, I. (2018). The Impact of Artificial Intelligence On Learning, European Joint Research Council, <https://www.scribd.com/document/606487891/Jrc113226-Jrcb4-the-Impact-of-Artificial-Intelligence-on-Learning-Final-2>, accessed 13 November 2022.
- UNESCO (2022). What you need to know about digital learning and transformation of education, <https://www.unesco.org/en/education/digital/need-know>, accessed 13 November 2022.
- Verma, E. (2022). How AI and Automation Are Changing the Nature of Work, <https://www.simplilearn.com/how-ai-and-automation-are-changing-the-nature-of-work-article>

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Baum, M. & Fournier, L. (2023). Investment in human capital: Company expenditures on continuing vocational training in times of technological change in Germany. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 38–54). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7808132>

## Investment in Human Capital: Company Expenditures on Continuing Vocational Training in Times of Technological Change in Germany

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### Abstract

**Context:** The scientific and political discourse often acclaims continuing training as the key for adapting to today's changes in the labour market, caused – among others– by technological change. However, changed skill demand and increased continuing training participation does not necessarily translate into increased investment in human capital by employers, especially for already disadvantaged skill groups. Therefore, this analysis focusses on the relation between companies' investment in human capital, technological change indicators and companies' skill structure. **Methods:** We use quantitative data from the 2020 wave of a representative establishment survey for Germany to estimate ordinary least square regressions. **Results:** The results show that the investment in technology and the technology level positively relate to investment in human capital. However, the an above average share of low-skilled employees is negatively associated with a companies' human capital investment. **Conclusion:** Investment in technology and the technology level do lead to an increase in human capital investment. Still, the skill structure in a company is important for determining whether companies invest in the human capital of their employees. Combined with the fact that most training is financed by the employer, increased investment by companies in times of technological change could lead to increased or persistent barriers to continuing training for already disadvantaged groups. Therefore, further research in this area is needed. These findings provide a good starting point for policies aimed at reducing these barriers and increasing human capital investment for disadvantaged groups.

### Keywords

human capital investment, continuing vocational training, technological change, company-level data

## 1 Introduction

Employees must constantly adapt to changing labour market conditions. In recent decades, technological change in particular has had a major impact on the labour market and the skill demand (Kruppe & Baumann, 2019; Schneemann et al., 2021). In the scientific and political discourse, continuing vocational education and training (CVET) is often praised as the key to





adapting to these changes (Anbuhl, 2019; Kruppe & Baumann, 2019; Schneemann et al., 2021; Weber, 2017). This demand for higher or new skills also seems to reflect in the increasing participation in CVET. In 2020, 60 per cent of the German workforce participated in CVET and the numbers are increasing (BMBF, 2021), but whether technological change is the driver of this pattern is still unclear. Furthermore, it must be acknowledged that there are large disparities in CVET participation based on qualifications and skills (Anbuhl, 2019; Dobischat et al., 2019; Offerhaus et al., 2016).

Continuing training (CT) is defined as intentional learning after initial training or resumption of education after entering the labour market (Bilger et al., 2017; CEDEFOP, 2019). CT is a heterogeneous term covering different forms of learning. Distinctions are made, according to the content, the duration, the degree of formalisation and the awarding of certificates. CVET is distinguished from general CT. The purpose of CVET is to promote the adaptation, maintenance or upgrading of workers' skills (Janssen & Leber, 2015). If CVET is partly/fully covered by the employer in a direct (e.g., assumption of costs) and/or indirect way (e.g., release from work), it is referred to as company-based CVET (Bilger et al., 2017) and course-based CVET if the company-based CVET takes place in courses.

With regard to technological change, empirical research predominantly shows a positive relation between new technology, technology investment or the technology level of the company and the participation in CVET within a company (e.g. Baum & Lukowski, 2022; Janssen et al. 2018; Lukowski et al., 2021; Mohr et al., 2016; Wotschack, 2020a). An often-used explanation for this connection is that technological change leads to changes in tasks and competence requirements, which require adaptation and thus CVET (Arntz et al., 2016; Ehlert, 2020; Görlitz & Tamm, 2016; Heß et al., 2019; Janssen & Leber, 2020; Kleinert & Wölfel, 2018). However, this link between CVET and technological change indicators often depends on the employee's skills and tasks (e.g. Lukowski et al., 2021; Mohr et al., 2016; Wotschack, 2020a; Wotschack & Solga, 2014; Ehlert, 2020). Especially, routine tasks, which are in higher danger of substitution by technology (e.g. Autor et al., 2003) and are mostly performed by low-skilled employees (e.g. Rohrbach-Schmidt, 2019), are negatively correlated with CVET participation (Ehlert, 2020; Heß et al. 2019; Wölfel & Kleinert, 2018).

In times of technological change companies' expenditures may shift towards investment in technology and away from HCI, as technology may substitute or complement certain tasks (e.g., Autor et al., 2003; Frey & Osborne, 2017) - especially for the low-skilled employees, who more likely perform more routine (Rohrbach-Schmidt, 2019) and substitutable (Autor et al., 2003) tasks. As companies provide the majority of CVET in numerous European countries - like Germany - (Bassanini et al., 2007; Bilger et al., 2017; Dohmen & Cordes, 2019; Hummelsheim, 2009) lower provision and investments in CVET might be problematic. Thus, in addition to participation, employers' human capital investment (HCI) is another important dimension for assessing the development of CVET in times of technological change in a country.

However, recent research on technological change and companies' expenditures on CVET or HCI in Germany is scarce (e.g. Baum & Fournier, 2021; Janssen et al. 2018; less recent: Gerlach et al. 2002; Hempell, 2003; Kuckulenz & Meyer, 2006; country comparison: Brunello et al. 2023). To fill this gap, this analysis examines how a company's technology level, technology investment tendency and skill structure are related to its expenditure on CVET. For the analysis we use quantitative company-level data using ordinary least squares (OLS) regression models.

## 2 Literature overview

### 2.1 Financing of continuing training in Germany

The majority of CVET in Germany is financed by the private sector (i.e. companies and individuals) (Dohmen & Cordes, 2019; Hummelsheim, 2009; Müller & Wenzelmann, 2018), and mostly takes the form of company-based CVET (Bassanini et al., 2007; Bellmann & Leber, 2010; Bilger et al., 2017; Frei et al., 2020). Financing by the state and employment agencies (i.e. the public sector) is comparatively low, especially if tax compensation is not considered (Dohmen & Cordes, 2019; Hummelsheim, 2009). Since the mid-1990s until 2015, the public sector investment has stagnated, while the private sector investment has increased (Dobischat et al., 2019). In 2015, the state contributed only about a third of total expenditures on CVET (Dobischat et al., 2019; Dohmen & Cordes, 2019). This disproportionate use of private resources to finance CVET is not uncritical, as it has particularly negative consequences for groups that are already disadvantaged in CVET (Dobischat et al., 2019; Hummelsheim, 2009).

Individuals and employees differ in the type of training they finance (Müller & Wenzelmann, 2018). Particularly formal CVET (e.g. upgrading training) is more likely to be financed by employees themselves, while employers are more likely to invest in non-formal CVET, work-related qualifications, conference attendance, lectures, etc. (Müller & Wenzelmann, 2018). CVET participants spend an average of €189 per CVET unit on direct and indirect costs (Müller & Wenzelmann, 2018). The total amount spent by individuals on CVET in 2015 was a sum of €17.8 billion (Müller & Wenzelmann, 2018). The amount spent by the employers per employee is even higher than the individual expenditures (Müller & Wenzelmann, 2018).

Depending on the database, methods, etc. (Schönfeld & Thiele, 2019), different figures on the amount employers in Germany invest in CVET exist. According to the German Economic Institute's Continuing Training Survey companies spent €41.3 billion (€21 billion direct costs) on CVET in 2019, which corresponds to €1,236 per employee (€629 direct costs) (Seyda & Placke, 2020). Overall, investment has been rising steadily since 2013 (Seyda & Placke, 2020). Projections from the Continuing Vocational Training Survey (CVTS), based on the German microcensus, are more moderate. In 2017, companies spent around €11 billion on CVET and there has been no increase in expenditures in recent years. This places Germany in the middle of the European Union in terms of company expenditure on CVET (Schönfeld & Thiele, 2019).<sup>1</sup>

Due to the high level of financial support, participation in company-based CVET depends not only on self-selection, but also on external selection by the employer (Kaufmann & Widany, 2013; Offerhaus et al., 2016). This leads to inequalities in CVET participations, as employees have different participation chances depending on various factors, even within the same company. Factors that influence the external selection are individual characteristics e.g., the qualification or skills of employees (Hubert & Wolf, 2007; Offerhaus et al., 2016), but also job characteristics and tasks (Ehlert, 2020; Görlitz & Tamm, 2016; Hornberg et al., 2021; Tamm, 2018) as well as company characteristic e.g., qualification demands, HR management, organisational innovations, company size, sector, technology use and investment (e.g., Baum & Lukowski, 2022; Leber, 2009; Lukowski et al., 2021; Mohr et al., 2016; Offerhaus et al., 2016; Wotschack, 2020a).

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<sup>1</sup> Recent developments and especially changes due to Covid-19 are not yet considered here.

## 2.2 Continuing training, human capital and technological change

A reason why companies invest in CVET can be found in the human capital (HC) theory, which assumes that HCI can be analysed analogously to investment in physical capital (Becker, 1962). All activities for mental and physical well-being that increase productivity are HCI. These activities also include CVET (Becker, 1962). The main assumption of the HC theory is that direct (e.g., participation fees) and indirect costs (e.g., opportunity costs) are weighed against the benefits (e.g., higher productivity) of CVET (Becker, 1962; van Loo & Rocco, 2004). Thus, the decision depends on immediate costs and potential benefits (Becker, 1962; Williamson, 1989). Thus, HCI should only be undertaken if the future benefits outweigh the immediate costs.

The understanding of HC has changed over time. Today it is defined more broadly (Balog & Demidova, 2021), because costs and benefits are no longer only monetary (Becker, 1994). Additionally, the actors are rarely assumed to be purely rational anymore i.e. their goal is not only income/productivity maximisation (Balog & Demidova, 2021). Still, based on the logic of a (partially) rational actor, cost-benefit calculations for HCI are mostly negative for low-skilled employees and positive for medium- and high-skilled employees (e.g., Blossfeld et al., 2020; Wotschack, 2020b; Wotschack & Solga, 2014). Therefore, HCI should be lower in firms with a higher degree of low-skilled employees. Hence, it is assumed that:

H1) Companies with an above average share of low-skilled employees have lower HCI as those with a below average share of low-skilled.

Next to the skill structure, company-level indicators of technological change also have a strong impact on training participation, such as the company's technology use, technology level or technology investment (e.g., Baum & Lukowski, 2022; Hempell, 2003; Janssen et al., 2018; Kuckulenz & Meyer, 2006; Lukowski et al., 2021; Mohr et al., 2016).

Technological change has a significant influence on HC development, because it creates a constant demand for knowledge, creativity and skill improvement, which increases HC accumulation (Balog & Demidova, 2021). Moreover, the cost-benefit calculation of HC theory is sensitive to changes in the environment, such as technological change (Becker, 1994). An investment that may not have been worthwhile before may become worthwhile (Becker, 1994), because the changes in the environment e.g., technological improvements, may change the cost-benefit analysis of companies (Becker, 1994; van Loo & Rocco, 2004; Wotschack, 2020b). Hence, companies may spend more on HC.

Education and training are key variables in dealing with technological changes (Becker, 1994). Consequently, technological change creates a need for employees and employers to adapt, which can be met through company-based CVET (Acemoglu & Restrepo, 2019; Heß et al., 2019; Schneemann et al., 2021). Moreover, technologies are leading to changes in work tasks, due to substitution or complementarity tendencies between tasks and technologies (e.g., Acemoglu, 2002; Acemoglu & Restrepo, 2019; Autor et al., 2003; Frey & Osborne, 2017). With that work is becoming less physically and more cognitively demanding, which may require adaptation through CVET (Arntz et al., 2016). Technological change therefore plays a major direct role for CVET (Janssen & Leber, 2020). This change is accompanied by increasing demands and skill requirements (Janssen & Leber, 2020; Seyda et al., 2018). Thus, investment in technology, might leads to changes in the company, which can lead to HCI regardless of the skill structure, because the company needs suitably skilled employees who can cope with the changes (Düll & Bellmann, 1999; Hempell, 2003).

Technological change is described as the most important driver of CVET, as companies with a higher technology level invest more in CVET than those with a lower level (Seyda & Placke, 2020). Gerlach et al. (2002) show that capital expenditures increase CVET in firms in

Germany. Janssen et al. (2018) show that investment in digitalisation is associated with more HCI, which is in line with Hempell (2003) that ICT and HCI are positively correlated or Kuckulenz and Meyer (2006) that ICT investment is positively related to CVET spending. Baum and Fournier's (2021) exploratory results support a positive relation between CVET expenditure and technology use. However, a recent cross-country analysis by Brunello et al. (2023) shows a negative relation between the adoption of advanced digital technologies and investment in training. Despite these recent results, it is assumed that:

H2) Companies with a greater technology level have higher HCI as those with a lower technology level.

H3) Companies with increased investment in technological infrastructure have higher HCI as those with a decrease in technology investment.

### **3 Method**

#### **3.1 Data**

For the analysis we use the quantitative company-level data from the 2020 wave of the Federal Institute for Vocational Education and Training Establishment Panel on Training and Competence Development (BIBB Training Panel), which has been conducted annually since 2011. The disproportionate, stratified random sample is representative of all companies based in Germany that have at least one employee who is subject to social insurance contributions. The main focus of the survey is on vocational training activities (Gerhards et al., 2012). The analysis sample consists of 2.457 companies. For descriptive values of the variables see Appendix 1.

#### **3.2 Operationalization**

##### **Human capital investment**

HCI is measured by direct expenditure on course-based CVET in euro in the year 2019 (for questionnaire wordings see Appendix 2). The question is broadly based on the CVTS question on CVET costs (Destatis, 2017). This expenditure is divided by the number of employees' subject to social insurance contributions in the company, excluding apprentices. Since the original values are not normally distributed, we logarithmise the expenditure per employee (see Appendix 3).

##### **Technology level**

For the technology level we utilise the information on which technologies from 13 categories are currently used in the company (see Appendix 2). For each company the share of used technologies is calculated, along with the average technology use in the sector. Companies are then classified into high (1) and low (0) technology level, depending on whether they are above or below the sector average.

##### **Investment in technology**

The question is asked whether investment in technology has changed in 2019 compared to the previous year. The options are categorised as decreased or about the same (0) and increased (1).

##### **Skill structure**

Companies are asked as follows, how many employees they had with certain skill levels in 2019: 1) employees in low-skilled jobs, i.e. employees performing tasks that do not require vocational qualification; 2) employees in medium-skilled jobs, i.e. employees performing tasks that require vocational education and training (VET) degree or equivalent; 3) employees in high-skilled jobs, i.e. employees performing tasks that require university degree or equivalent.

For each company, the share of low-skilled employees is calculated, as well as the average share of low-skilled employees in the sector. Companies are then categorised into having an above average (1) or below average (0) share of low-skilled employees compared to their sector.

### Control Variables

CVET, technology level or investment and skill structure in a company depend on various company characteristic that are controlled for (Leber, 2009; Offerhaus et al., 2016; Schönfeld & Thiele, 2019; Seyda & Placke, 2017). Sector type is considered with an allocation to eight industries, based on a summary of the 2-digit NACE Rev. 2 classification. Company size is controlled for by the standardised number of employees' subject to social insurance. High-skilled employees are considered analogous to the share of low-skilled, with above average (1) or below average (0) share of high-skilled employees. It is also controlled for whether the companies are located in Eastern- (0) or Western-Germany (1), whether the company provides VET (1) (i.e. at least one apprentice) or not (0), and whether a works council exists (1) or not (0).

### 3.3 Analysis Strategy

The aim is to identify the relation between a company's technology level, it's skill structure and HCI using several regression models. The dependent variable is a continuous variable, so linear OLS-regression is used. The dependent variable is logarithmised. Therefore, the regression coefficients cannot be interpreted as an increase in euros per unit increase in the independent variable, but rather as an increase in per cent (Best & Wolf, 2015).

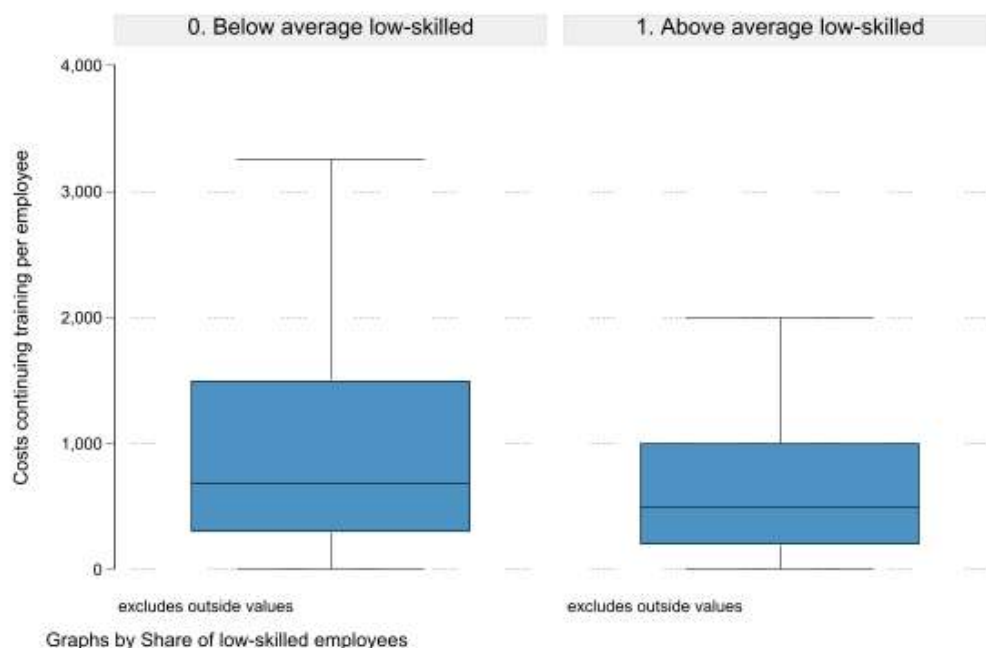
## 4 Results

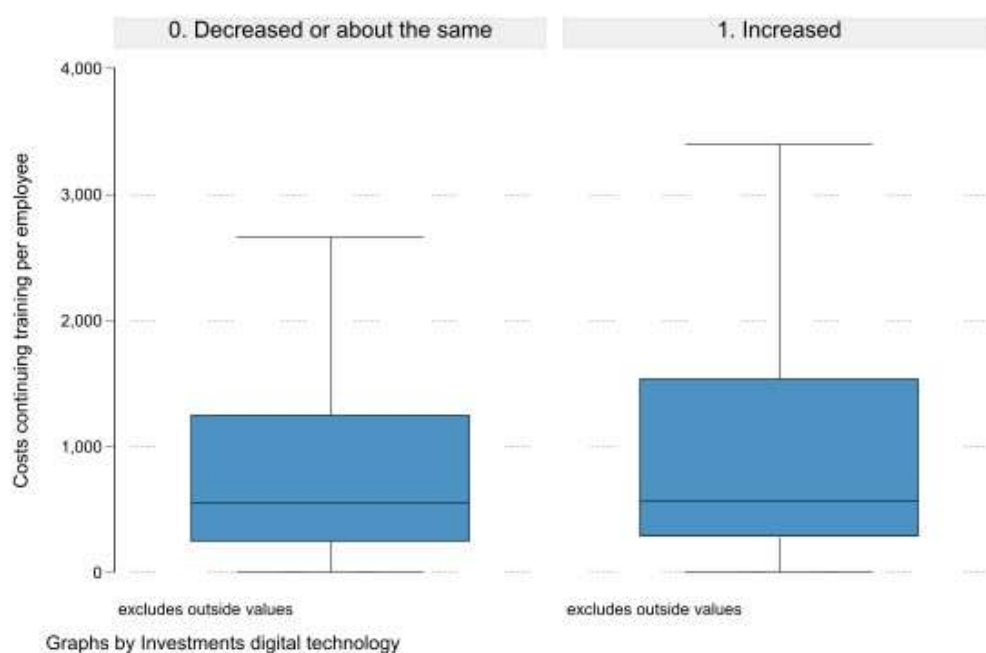
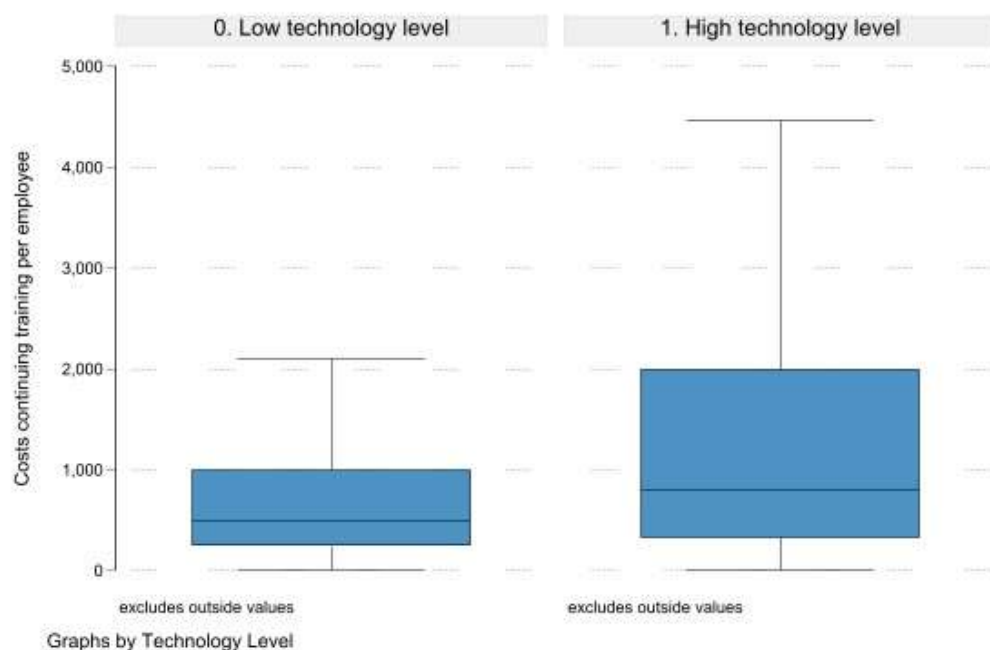
### 4.1 Descriptives

Figure 1 displays boxplots for the CVET expenditures per employees separated by the independent variables.

**Figure 1**

Boxplots of costs of continuing training per employee (weighted; outside values excluded)





These boxplots show that there are differences in the expenditures on CVET when there is an above average share of low-skilled employees or not in the company (first row). The median expenditure (black line in the box) seems to be higher when there is a below average share of low-skilled employees – in accordance with H1. In line with H2 and H3, the median values of CVET expenditure per employee are (slightly) higher in companies with a high technology level and increased investment in digital technology (second and third row). Tests to see whether the mean values are significantly different from each other i.e. tests for independent samples (e.g., t-test and Mann-Whitney-U-test (Appendix 4)) confirm these assumptions.

## 4.2 Regression

Table 1 shows the results of the OLS-regression analysis (for graphical representation see Appendix 5). The first column tests for H1 that the influence of the average share of low-skilled

employees is negative. HCI decreases by about 34% when a company has an above average share of low-skilled employees, which is in line with H1. Columns 2 and 3 support H2 & H3. Both a high technology level (24%) and increased investment in digital technology (17%) increase a company's HCI, regardless of the share of high-skilled employees, company size, sector, VET provision and a works council existence.

**Table 1**

OLS-Regression Results for logarithmised CVET expenditures per employee

	Model H1	Model H2	Model H3	Model All
Above average low-skilled	-0.339*** (0.054)			-0.342*** (0.054)
High technology level		0.239*** (0.051)		0.213*** (0.051)
Increased Invest. technology			0.174*** (0.049)	0.143** (0.050)
Primary Sector	0.0443 (0.113)	0.0514 (0.114)	0.0591 (0.114)	0.0330 (0.113)
Manufacturing	Ref.	Ref.	Ref.	Ref.
Construction	0.103 (0.116)	0.0831 (0.117)	0.129 (0.117)	0.0767 (0.116)
Trade and Repair	0.0834 (0.087)	0.0919 (0.088)	0.101 (0.088)	0.0580 (0.087)
Business-related Services	0.321*** (0.079)	0.317*** (0.080)	0.343*** (0.079)	0.279*** (0.079)
Personal Services	-0.0687 (0.089)	-0.0994 (0.090)	-0.0536 (0.089)	-0.130 (0.089)
Health Services	-0.182 (0.095)	-0.173 (0.096)	-0.173 (0.096)	-0.198* (0.095)
Public Sector	-0.192* (0.082)	-0.185* (0.082)	-0.205* (0.082)	-0.188* (0.081)
Above average high-skilled	0.349*** (0.052)	0.426*** (0.050)	0.433*** (0.051)	0.331*** (0.052)
Stand. No. of employees	-0.0944** (0.031)	-0.109*** (0.031)	-0.104*** (0.031)	-0.114*** (0.031)
West-Germany	0.268*** (0.057)	0.221*** (0.057)	0.217*** (0.057)	0.259*** (0.057)
VET provision	-0.195*** (0.055)	-0.212*** (0.056)	-0.202*** (0.056)	-0.235*** (0.056)
Works Council	-0.117* (0.054)	-0.165* (0.055)	-0.128* (0.055)	-0.169** (0.055)
Constant	5.674*** (0.084)	5.474*** (0.083)	5.477*** (0.084)	5.564*** (0.087)
R <sup>2</sup>	0.093	0.086	0.083	0.104
Observations	2,457	2,457	2,457	2,457

Note: Standard errors in parentheses; \*\*\* p<0.001, \*\* p<0.01, \* p<0.05; Ref. =Reference Category

Columns 4 includes all explanatory variables. The results show that when the above average share of low-skilled is considered, a high technology level (21%) and increased investment in technology (14%) still are positively associated with HCI. With that the results suggests that while the skill structure still impacts the HCI of companies, technology level and investment in technology increases HCI. Investment in technology and HC go hand in hand, as previous

findings as well suggest (Gerlach et al., 2002; Janssen et al., 2018; Hempell, 2003; Kuckulenz and Meyer, 2006). Nevertheless, skills are important for HCI even in times of technological change.

## 5 Conclusion

The aim of this analysis is to explore the lesser explored relation between technological change and HCI, while considering a major determinant of CVET - a companies' skill structure. For this indicator of technological change i.e. companies' technology level and changes in technology investment are used, as well as the share of low-skilled employees in a company and companies' expenditures on CVET. It is thus one of the few recent studies focussing on the relation between technological change and HCI (in terms of so CVET expenditures) using representative quantitative data.

The results of the regressions are largely consistent with the hypotheses. An above average share of low-skilled employees in a company is associated with lower HCI – supporting H1. The results suggest that investment in technology and the level of technology - and hence technological change – do lead to more HCI, which is in line with H2 and H3 as well as most previous findings on investment in technology and CVET. This result is the good news because it suggests that technological change may lead not only to increased participation in CVET for (some) employees - as found in the literature - but also to increased company expenditures.

The bad news, however, is that the skill structure, and in particular the presence of low-skilled employees, is still very important for determining companies HCI. This finding may not be surprising, as it is one of the core assumptions of HC theory. Though, it is problematic, because it perpetuates inequalities. Therefore, further research should focus more on the differences in expenditure for employees with different skill levels as well as the interrelation of skills and technology indicators.

Moreover, while it might be positive that technology investment and technology level go hand in hand with increased HCI of companies and do not reduce HCI, one aspect might be suboptimal: In Germany and many other European countries, companies are the main sponsors of CVET (Bassanini et al., 2007). The heavy sponsoring by companies might be problematic, because companies do not primarily focus on reducing unequal access to CVET (Anbuhl, 2019; Bassanini et al., 2007). An increase in HCI, due to technological change, could further increase the reliance on companies for access to CVET, which could increase the barriers for people who are already disadvantaged (Anbuhl, 2019) – as the negative impact of an above average share of low-skilled shows. This problem is not only an issue in Germany, but also should concern other countries, even those with lower levels of company sponsored CVET, as the role of companies in CVET might increase everywhere, and with that potential barriers.

Therefore, more research is needed on the impact of technological change on governmental funded CVET. Moreover, policies are needed to address the barriers to CVET for low-skilled employees and other disadvantaged groups, i.e. increased governmental support, easier access to training, and information on benefits and opportunities. Though, increasing CVET and HCI for the disadvantaged groups has always been difficult (Bellmann & Leber, 2019).

It must be recognised that the analysis cannot make causal claims and that not all results can be fully generalised to other countries, which requires, among other things, longitudinal or comparative data across countries. Moreover, the analysis cannot distinguish between general (i.e. skills that can be used anywhere) and specific (i.e. skills that can only be used in the current company) HC, which is one of the assumptions of the HC theory (Becker, 1962). Companies should invest only in specific skills because these skills are not useful for other companies (e.g. Acemoglu & Pischke, 1999; Becker, 1962). However, this lack of distinction should not affect the analysis, as CVET expenditure is collected after the decision to finance CVET has been made. Companies should therefore only incur costs for CVET that they consider to be useful.



Furthermore, general and specific skills are not always (empirically) distinguishable or are accumulated simultaneously (e.g. Acemoglu & Pischke, 1999; Kuckulenz & Meyer, 2006).

It must also be acknowledged that the HC theory has been the subject of much criticism and modification since it was first published (cf. new training literature) (Bellmann & Leber, 2019, pp. 13–20). The main points of criticism are the rational actor, the assumed freedom of choice of the actors, the fact that not all investment is associated with increased productivity (or wages) and the phenomenon of the financing of general training by employers (Bellmann & Leber, 2019, pp. 13–20). Therefore, when interpreting the results, it is important to keep these caveats of HC theory in mind.

Overall, the technological change is associated with an increase of HCI. However, the skill structure is still important in determining whether or not companies make HCI. Together with the fact that most CVET is financed by the employer, it could lead to increased barriers to CVET for already disadvantaged groups. These findings provide a good starting point for further research to assess the impact of technological change on HCI in the public and private sectors. The results also offer impulses for policies aimed at reducing barriers for disadvantaged groups and increasing their participation in CVET, as well as for strengthening state support.

## References

- Acemoglu, D. (2002). Directed Technical Change. *The Review of Economic Studies*, 69(4), 781–809.
- Acemoglu, D., & Pischke, J.-S. (1999). Beyond Becker: Training in Imperfect Labour Markets. *The Economic Journal*, 109(453), 112–142. <https://doi.org/10.1111/1468-0297.00405>
- Acemoglu, D., & Restrepo, P. (2019). Artificial Intelligence, Automation, and Work. An agenda. *The Economics of Artificial Intelligence*, 197–233. <https://doi.org/10.7208/chicago/9780226613475.003.0008>
- Anbuhl, M. (2019). *Die Zwei-Klassen-Gesellschaft. DGB-Analyse zur sozialen Spaltung in der Weiterbildung 2019*. Berlin.
- Arntz, M., Gregory, T., Jansen, S., & Zierahn, U. (2016). *Tätigkeitswandel und Weiterbildungsbedarf in der digitalen Transformation. ZEW-Gutachten und Forschungsberichte (ZEW-Gutachten und Forschungsberichte)*. Mannheim. Zentrum für Europäische Wirtschaftsforschung (ZEW).
- Autor, D. H., Levy, F., & Murnane, R. J. (2003). The skill content of recent technological change: An empirical exploration. *The Quarterly Journal of Economics*, 118(4), 1279–1333.
- Balog, M., & Demidova, S. (2021). *Human Capital Development in the Context of the Fourth Industrial Revolution*. IOP Conference Series: Earth and Environmental Science, 666(6), 62120. <https://doi.org/10.1088/1755-1315/666/6/062120>
- Bassanini, A., Booth, A. L., Brunello, G., Paola, M. de, & Leuven, E. (2007). *Workplace training in Europe (IZA Discussion Papers, No. 164)*. Bonn. Institute for the Study of Labor (IZA).
- Baum, M., & Fournier, L. (2021). Betriebliche Investitionen in Weiterbildung im Zuge des technischen Wandels–Eine explorative Betrachtung auf Betriebsebene. Version 1.0, Bonn. [https://datapool-bibb.bibb.de/pdfs/2021\\_Baum\\_Fournier\\_Betriebliche\\_Investitionen\\_in\\_Weiterbildung.pdf](https://datapool-bibb.bibb.de/pdfs/2021_Baum_Fournier_Betriebliche_Investitionen_in_Weiterbildung.pdf).
- Baum, M., & Lukowski, F. (2022). Der Zusammenhang zwischen der Einführung neuer Informations- und Kommunikationstechnologien und der Teilnahme an kursförmiger betrieblicher Weiterbildung- Eine Längsschnittanalyse von Betrieben in Deutschland. *ZBW - Beiheft 32*, 125-152.

- Becker, G. (1962). Investment in Human Capital: A Theoretical Analysis. *The Journal of Political Economy*, 70(2), 9–49.
- Becker, G. S. (1994). *Human Capital Revisited*. In: Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education, Third Edition.
- Bellmann, L., & Leber, U. (2010). *Betriebliche Weiterbildung*. In: *Der Krise bleibt das Bild zwiespältig (IAB-Forum, H, 1/2010)*. Institut für Arbeitsmarkt- und Berufsforschung.
- Bellmann, L., & Leber, U. (2019). *Bildungsökonomik (2nd ed.)*. De Gruyter Oldenbourg.
- Best, H., & Wolf, C. (Eds.). (2015). *The SAGE handbook of regression analysis and causal inference*. SAGE Reference. <https://doi.org/10.4135/9781446288146>
- Bilger, F., Behringer, F., Kuper, H., & Schrader, Josef. (2017). *Weiterbildungsverhalten in Deutschland 2016*. Ergebnisse des Adult Education Survey (AES).
- Blossfeld, H.-P., Kilpi-Jakonen, E., & Vilhena, D. V. de. (2020). Gibt es im lebenslangen Lernen einen Matthäus-Effekt? Ergebnisse eines internationalen Vergleichs / Is there a Matthew effect in adult learning? Results from a cross-national comparison. In J. Schrader, A. Ioannidou, & H.-P. Blossfeld (Eds.), *Monetäre und nicht monetäre Erträge von Weiterbildung* (pp. 1–26). Springer VS, Wiesbaden. [https://doi.org/10.1007/978-3-658-25513-8\\_1](https://doi.org/10.1007/978-3-658-25513-8_1)
- BMBF. (2021). *Weiterbildungsverhalten in Deutschland 2020: Ergebnisse des Adult Education Survey — AES-Trendbericht*. Bonn. Bundesministerium für Bildung und Forschung.
- Brunello, G., Rückert, D., Weiss, C., & Wruuck, P. (2023). Advanced Digital Technologies and Investment in Employee Training: Complements or Substitutes? *SSRN Electronic Journal*. Advance online publication. <https://doi.org/10.2139/ssrn.4354413>
- CEDEFOP. (2019). *Continuing vocational training in EU enterprises: developments and challenges ahead (Cedefop research paper No. 73)*. Luxembourg. European Centre for the Development of Vocational Training. <https://doi.org/10.2801/704583>
- Destatis (Statistisches Bundesamt) (2017). Berufliche Weiterbildung in Unternehmen 2015 (CVTS 5). <https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-Forschung-Kultur/Weiterbildung/Publikationen/weiterbildung-unternehmen-artikel.html>
- Dobischat, R., Münk, D., & Rosendahl, A. (2019). *Weiterbildungsfinanzierung in Deutschland 1995–2015. Aktueller Stand, Entwicklung, Problemlagen und Perspektiven*. Bertelsmann Stiftung. <https://doi.org/10.11586/2019019>
- Dohmen, D., & Cordes, M. (2019). *Kosten der Weiterbildung in Deutschland - Verteilung der Finanzlasten auf Unternehmen, Privatpersonen, öffentliche Hand (FiBS-Forum No. 61)*. Berlin: Forschungsinstitut für Bildungs- und Sozialökonomie (FiBS). <https://www.econstor.eu/handle/10419/196922>
- Düll, H., & Bellmann, L. (1999). Der unterschiedliche Zugang zur betrieblichen Weiterbildung nach Qualifikation und Berufsstatus. Eine Analyse auf der Basis des IAB-Betriebspanels 1997 für West- und Ostdeutschland. *Mitteilungen Aus Der Arbeitsmarkt- Und Berufsforschung*, 32(1), 70–84.
- Ehlert, M. (2020). No Future, No Training? Explaining Cross-national Variation in the Effect of Job Tasks On Training Participation. *Köln Z Soziol*, 72(1), 483–510. <https://doi.org/10.1007/s11577-020-00676-1>
- Frei, M., Kriwoluzky, S., & Putzing, M. (2020). *IAB-Betriebspanel Ostdeutschland. Ergebnisse der 24. Befragungswelle 2019 (IAB-Betriebspanel Ostdeutschland 2019)*. Berlin. Bundesministerium für Wirtschaft und Energie.
- Frey, C. B., & Osborne, M. A. (2017). The future of employment: How susceptible are jobs to computerisation? *Technological Forecasting and Social Change*, 114, 254–280. <https://doi.org/10.1016/j.techfore.2016.08.019>

- Gerhards, C., Mohr, S., & Troltsch, K. (2012). The BIBB Training Panel – An Establishment Panel on Training and Competence Development. *Schmollers Jahrbuch: Zeitschrift Für Wirtschafts- Und Sozialwissenschaften*, 132(4), 635–652. <https://doi.org/10.3790/schm.132.4.635>
- Gerlach, K., Hübler, O., & Meyer, W. (2002). Investitionen, Weiterbildung und betriebliche Reorganisation. *Mitteilungen Aus Der Arbeitsmarkt- Und Berufsforschung*, 35, 546–565.
- Görlitz, K., & Tamm, M. (2016). Revisiting the complementarity between education and training – the role of job tasks and firm effects. *Education Economics*, 24(3), 261–279. <https://doi.org/10.1080/09645292.2015.1006182>
- Hempell, T. (2003). *Do Computers Call for Training? Firm-level Evidence on Complementarities Between ICT and Human Capital Investments (ZEW Discussion Paper 03-20)*. Center for European Economic Research. <https://doi.org/10.2139/ssrn.416440>
- Heß, P., Janssen, S., & Leber, U. (2019). *Digitalisierung und berufliche Weiterbildung: Beschäftigte, deren Tätigkeiten durch Technologien ersetzbar sind, bilden sich seltener weiter (IAB-Kurzbericht No. 16)*. Nürnberg. Institut für Arbeitsmarkt- und Berufsforschung.
- Hornberg, C., Heisig, J. P., & Solga, H. (2021). Fit für die digitale Arbeitswelt: Weiterbildung gering Qualifizierter scheitert an Strukturen am Arbeitsplatz. *WZB Mitteilungen* (171), 44–47.
- Hubert, T., & Wolf, C. (2007). Determinanten der beruflichen Weiterbildung Erwerbstätiger. Empirische Analysen auf der Basis des Mikrozensus 2003. *Zeitschrift Für Soziologie*, 36(6), 473–493.
- Hummelsheim, S. (2009). *Finanzierung der Weiterbildung in Deutschland*. Bertelsmann Verlag.
- Janssen, S., & Leber, U. (2015). *Weiterbildung in Deutschland. Engagement der Betriebe steigt weiter (IAB-Kurzbericht No. 13)*. Nürnberg. Institut für Arbeitsmarkt- und Berufsforschung.
- Janssen, S., & Leber, U. (2020). *Zur Rolle von Weiterbildung in Zeiten von Digitalisierung und technologischem Wandel (IAB-Stellungnahme No. 5)*. Nürnberg. Institut für Arbeitsmarkt- und Berufsforschung.
- Janssen, S., Leber, U., Arntz, M., Gregory, T., & Zierahn, U. (2018). *Betriebe und Arbeitswelt 4.0: Mit Investitionen in die Digitalisierung steigt auch die Weiterbildung (IAB-Kurzbericht No. 26)*. Nürnberg. Institut für Arbeitsmarkt- und Berufsforschung.
- Kaufmann, K., & Widany, S. (2013). Berufliche Weiterbildung – Gelegenheits- und Teilnahmestrukturen. *Z Erziehungswiss*, 16(1), 29–54. <https://doi.org/10.1007/s11618-013-0338-8>
- Kleinert, C., & Wölfel, O. (2018). Technologischer Wandel und Weiterbildungsteilnahme. *BWP 1/2018*, 11–15.
- Klös, H.-P., Seyda, S., & Werner, D. (2020). *Berufliche Qualifizierung und Digitalisierung: Eine empirische Bestandsaufnahme (IW-Report No. 40)*. Köln. Institut der deutschen Wirtschaft.
- Kruppe, T., & Baumann, M. (2019). *Weiterbildungsbeteiligung, formale Qualifikation, Kompetenzausstattung und Persönlichkeitsmerkmale (IAB-Forschungsbericht No. 1)*. Nürnberg. Institut für Arbeitsmarkt- und Berufsforschung.
- Kuckulenz, A., & Meyer, J. (2006). *Die Entscheidung über betriebliche Weiterbildungsinvestitionen: Eine empirische Analyse mit dem Mannheimer Innovationspanel (ZEW Discussion Papers 06/089)*. Mannheim. Zentrum für Europäische Wirtschaftsforschung.

- Leber, U. (2009). Betriebsgröße, Qualifikationsstruktur und Weiterbildungsbeteiligung - Ergebnisse aus dem IAB-Betriebspanel. In F. Behringer, B. Käßlinger, & G. Pätzold (Eds.), *Betriebliche Weiterbildung - der Continuing Vocational Training Survey (CVTS) im Spiegel nationaler und europäischer Perspektiven* (pp. 149–168).
- Lukowski, F., Baum, M., & Mohr, S. (2021). Technology, tasks and training – evidence on the provision of employer-provided training in times of technological change in Germany. *Studies in Continuing Education*, 43 (2), 174–195. <https://doi.org/10.1080/0158037X.2020.1759525>
- Mohr, S., Troltsch, K., & Gerhards, C. (2016). Job tasks and the participation of low-skilled employees in employer-provided continuing training in Germany. *Journal of Education and Work*, 29(5), 562–583. <https://doi.org/10.1080/13639080.2015.102464>
- Müller, N., & Wenzelmann, F. (2018). *Berufliche Weiterbildung: Aufwand und Nutzen für Individuen (Forschungs- und Arbeitsergebnisse aus dem Bundesinstitut für Berufsbildung 2/2018)*. Bonn.
- Offerhaus, J., Leschke, J., & Schömann, K. (2016). Soziale Ungleichheit im Zugang zu beruflicher Weiterbildung. In R. Becker & W. Lauterbach (Eds.), *Bildung als Privileg: Erklärungen und Befunde zu den Ursachen der Bildungsungleichheit* (pp. 387–420). Springer. [https://doi.org/10.1007/978-3-658-11952-2\\_12](https://doi.org/10.1007/978-3-658-11952-2_12)
- Rohrbach-Schmidt, D. (2019). Putting Tasks to the Test: The Case of Germany. *Social Inclusion*, 7(3), 122–135. <https://doi.org/10.17645/si.v7i3.2025>
- Schneemann, C., Zika, G., Kalinowski, M., Maier, T., Krebs, B., Steeg, S., Bernardt, F., Mönnig, A., Parton, F., Ulrich, P., & Wolter, M. I. (2021). Aktualisierte BMAS-Prognose „Digitalisierte Arbeitswelt“, *Forschungsbericht* 526/3.
- Schönfeld, G., & Thiele, M. (2019). *Datenreport zum Berufsbildungsbericht 2018*.
- Seyda, S., Meinhard, D. B., & Placke, B. (2018). Weiterbildung 4.0 - Digitalisierung als Treiber und Innovator betrieblicher Weiterbildung. *IW-Trends 1/2018 - Vierteljahresschrift Zur Empirischen Wirtschaftsforschung, Institut Der Deutschen Wirtschaft (IW)*, 45(1), 107–124. <https://doi.org/10.2373/1864-810X.18-01-06>
- Seyda, S., & Placke, B. (2017). Die neunte IW-Weiterbildungserhebung. Kosten und Nutzen betrieblicher Weiterbildung. *IW-Trends 4/2017 - Vierteljahresschrift Zur Empirischen Wirtschaftsforschung, Institut Der Deutschen Wirtschaft (IW)*, 44(4), 3–19.
- Seyda, S., & Placke, B. (2020). IW-Weiterbildungserhebung 2020: Weiterbildung auf Wachstumskurs. *IW-Trends 4/2020 - Vierteljahresschrift Zur Empirischen Wirtschaftsforschung, Institut Der Deutschen Wirtschaft (IW)*, 47(4), 105–123.
- Tamm, M. (2018). Training and changes in job Tasks. *Economics of Education Review*, 67, 137–147. <https://doi.org/10.1016/j.econedurev.2018.09.007>
- van Loo, J. B., & Rocco, T. S. (2004). *Continuing Professional Education and Human Capital Theory (Online Submission)*. Academy of Human Resource Development International Conference (AHRD).
- Weber, E. (2017). *Digitalisierung als Herausforderung für eine Weiterbildungspolitik (Wirtschaftsdienst 2017/5)*. Leibniz. ZBW – Leibniz-Informationszentrum Wirtschaft. <https://doi.org/10.1007/s10273-017-2146-x>
- Williamson, O. E. (1989). *Transaction Cost Economics. In Transaction-Cost Economics: The Governance of Contractual Relations*. Elsevier Science Publishers B.V.
- Wotschack, P. (2020a). Drivers of training participation in low skilled jobs: the role of ‘voice’, technology, innovation and labor shortages in German companies. *International Journal of Training and Development*, 24(3).
- Wotschack, P. (2020b). When Do Companies Train Low-Skilled Workers? The Role of Institutional Arrangements at the Company and Sectoral Level. *British Journal of Industrial Relations*, 58(3), 587–616. <https://doi.org/10.1111/bjir.12503>

Wotschack, P., & Solga, H. (2014). Betriebliche Weiterbildung für benachteiligte Gruppen. Förderliche Bedingungskonstellationen aus institutionentheoretischer Sicht. *Berlin J Soziol*, 24(3), 367–395. <https://doi.org/10.1007/s11609-014-0254-7>

### **Biographical note**

**Myriam Baum** has been a research assistant at the BIBB since 2019. Among others she was part in the Polarisation 4.0 project, which focused on the impact of the technological change on the labour market and the vocational education system. Her research interests lie in the area of technological change in the world of work with a special focus on continuing vocational training. Currently she is pursuing her PhD degree in Sociology.

## Appendix

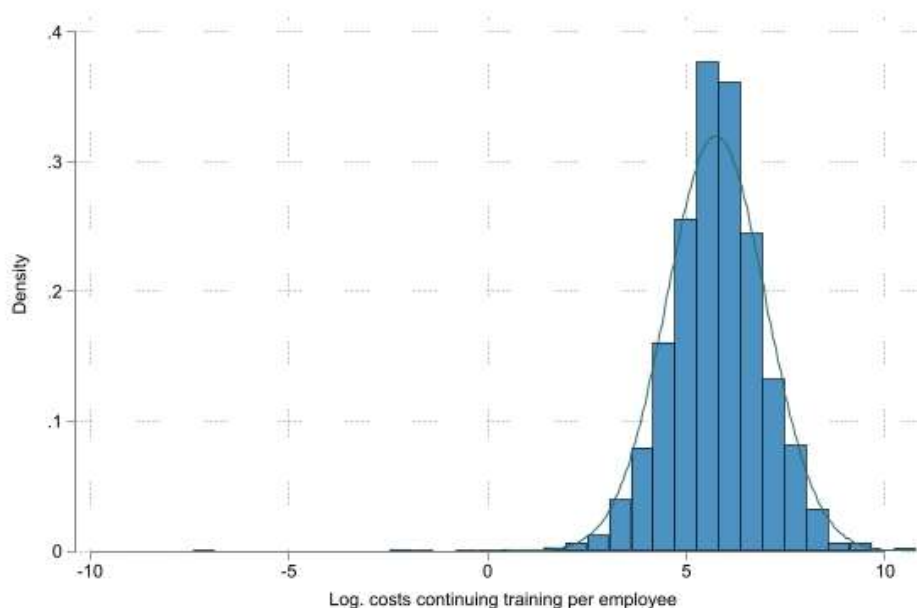
### Appendix 1: Descriptive values of the variables (unweighted)

	Mean/Share	Standard Division	Median	Min	Max	Observations
Costs of continuing training per employee	673.78	1,744.96	327.87	0	47,753	2,457
Above average low-skilled	0.32	0.47	0.00	0	1	2,457
High technology level	0.54	0.50	1.00	0	1	2,457
Increased investment in technology	0.54	0.50	1.00	0	1	2,457
Primary Sector	0.06	0.23	0.00	0	1	2,457
Manufacturing	0.25	0.43	0.00	0	1	2,457
Construction	0.05	0.22	0.00	0	1	2,457
Trade and Repair	0.11	0.32	0.00	0	1	2,457
Business-related Services	0.17	0.38	0.00	0	1	2,457
Personal Services	0.11	0.31	0.00	0	1	2,457
Health Services	0.10	0.30	0.00	0	1	2,457
Public Sector	0.15	0.36	0.00	0	1	2,457
Above average high-skilled	0.38	0.49	0.00	0	1	2,457
Standardized No. of employees	-0.01	0.83	-0.22	-0.30	17	2,457
West-Germany	0.76	0.43	1.00	0	1	2,457
VET provision	0.59	0.49	1.00	0	1	2,457
Works Council	0.47	0.50	0.00	0	1	2,457

## Appendix 2: Survey Questions Variables

Variable	Question	Answers
Expenditures on continuing training	You have indicated that part of your workforce has participated in continuing training measures in the past year. How high were the approximate total costs for internal and external courses, seminars or training courses? For example, consider the following costs for course fees, training staff, teaching materials, rooms, travel and accommodation costs, learning software, etc. accommodation costs, learning software, etc.	Openly surveyed from 0 till infinite
Technology use	<p>A: Digital technologies specifically related to services for customers, e.g., online ordering and booking systems or online trade (so-called B2C e-commerce), customer loyalty and customer care systems (Customer Relationship Management (CRM)) and comparable applications.</p> <p>B: Digital technologies specifically related to networking with suppliers and between companies, e.g., supply chain management (SCM) and B2B e-commerce.</p> <p>C: Technologies related to human resource management, e.g., for personnel selection, competence management, human resource development.</p> <p>D: Technologies that enable new forms of communication and cooperation between employees, e.g., team collaboration systems, gamification, evaluation systems.</p> <p>E: Technologies that support project-based and cross-company collaboration, e.g., collaboration platforms, crowd working or crowdsourcing, web-based project management for distributed teams.</p> <p>F: Digital technologies that enable the collection, compilation, storage and processing of large amounts of data, e.g., big data, cloud computing, in-house database systems.</p> <p>G: Special software and hardware for IT security, e.g., encryption technologies, protection against hacking and DDOS attacks, server security and stability.</p> <p>H: Digital technologies that enable a new type of networking of previously individual digital and/or automated processes, e.g., smart factory, Internet of Things, cyber-physical systems.</p> <p>I: Use of artificial intelligence and machine learning for physical work processes, e.g., deep learning and pattern recognition in production and maintenance, building management or care.</p> <p>J: Application of artificial intelligence and machine learning for non-physical work processes, e.g., deep learning and pattern recognition in marketing, procurement or human resources.</p> <p>K: New technologies that enable more individual products in small quantities, e.g., additive manufacturing (3D printing), collaborative lightweight robotics.</p> <p>L: Digital devices on the body of employees, so-called wearables, e.g., smartwatches, AR/VR glasses, smart workwear.</p> <p>M: Technology for autonomous transport, e.g., transport drones, self-driving transport robots or vehicles.</p>	<p>1 Yes, the technology is currently used in operation</p> <p>2 No, the technology is not currently in use. However, an acquisition is planned.</p> <p>3 No, the technology is not currently in use. An acquisition is also not planned. (Both “No” Answers are combined)</p>
Number of employees with certain skill levels	<p>How were the employees, i.e. excluding trainees, distributed among the following employee groups on 31.12.2019?</p> <p>A) Employees with low-skilled task that do not usually require vocational training (open)</p> <p>B) Employees with medium-skilled task that usually require completed vocational training or corresponding work experience</p> <p>C) Employees with high-skilled task that usually require a university or technical college degree or a master craftsman's, technician's or comparable degree</p>	Openly surveyed
Change in technology investment	When you think about the development of investment in digital technology, how have they changed?	<p>1 Decreased</p> <p>2 Remained more or less the same</p> <p>3 Increased</p>

### Appendix 3: Histogram of the logarithmised expenditures on CVET per employee

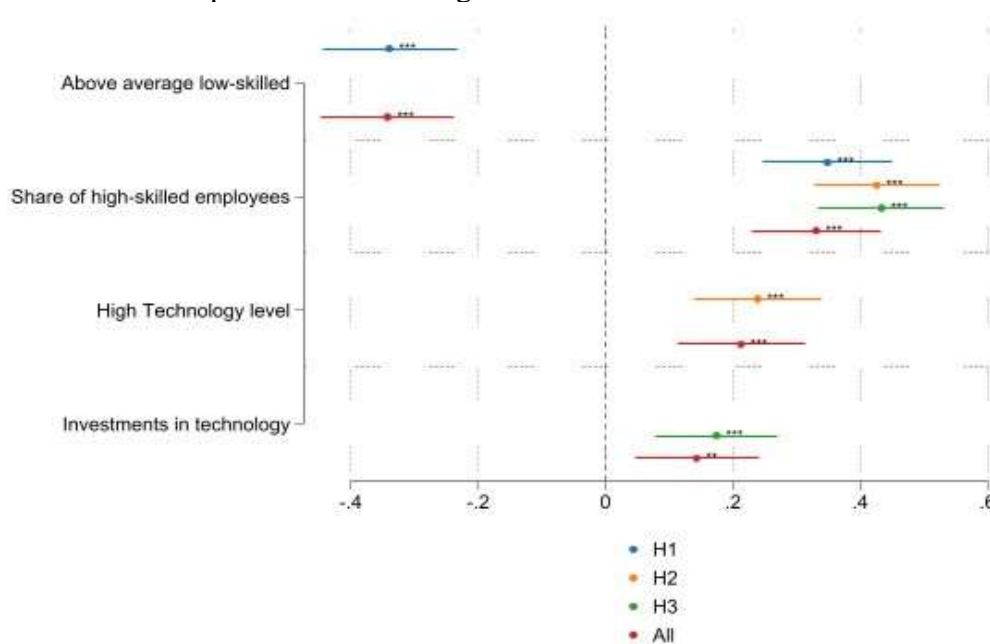


### Appendix 4: Tests for independent sample

Test	Variable	Degrees of freedom (df)/ Observations	t-value/z-value significant value	with
t-test for logarithmised expenditures on continuing training per employee	Technology level	2,455 (df)	-3.7133***	
	Above average low-skilled	2,455 (df)	8.3051***	
	Investment in technology	2,455 (df)	-2.7852**	
Mann Whitney U test for expenditures on continuing training per employee	Technology level	2,457 (Observations)	-3.542***	
	Above average low-skilled	2,457 (Observations)	8.895***	
	Investment in technology	2,457 (Observations)	-2.435*	

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

### Appendix 5: Coefficient plot of the OLS-Regression





Benedek, A. & Sik, D. (2023). Open content development as a challenge and an opportunity (Hungarian Case). In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 55–60). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7808215>

## Open Content Development as a Challenge and an Opportunity (Hungarian Case)

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### Abstract

This paper informs about a Hungarian initiative on the innovation for the collaborative content construction process as a new methodological learning development model. The objective aim is to apply our unique concept to modernize the methodology used in vocational teacher training and practical training by creating complex learning content units. In the frame of elaborating online teaching materials, we used learning units and micro-contents as new tools. The research and development based on the recognition of creating open learning materials become in high demand in VET systems worldwide. Our project focused on local innovation where vocational teachers play an essential role. Furthermore, we realized that the new mobile communication environment based on networks and cloud services offers new applications daily for evaluation and analysis of the learning resources and micro-contents created via collaborative pedagogical activity.

### Keywords

collaborative content development, micro-content, online teaching, vocational teachers

### 1 Elaboration of online teaching materials: micro-contents as a new tool

During the project period (2017-2021), a new methodological learning content development model was introduced, tested in pilot schools, and integrated into vocational teacher training. The methodological renewal research linked the content development of vocational training within the collaborative learning framework to the modernization of teacher training and multi-leveled e-learning solutions for the knowledge transfer process (Benedek, 2020; Benedek, 2021; Sik, 2018). Furthermore, the learning content development process evolved within this model during student/teacher collaborative activities. On the one hand, the research was theoretically focused on the teacher support of the collaborative learning processes of ICT-based curriculum development in 12 pilot schools and the teacher training and further training that supports this. On the other hand, procedures were introduced, described, and analyzed in



which new technologies (cloud services, mobile communication devices, forms of network cooperation) were also connected to curriculum development.

Concerning international tendencies, the rapid implementation of online collaborative teaching methods were recognized in the VET systems after the economic drop of the latest decade. (Cedefop, 2020). Booming economies have leading practice in this field, which came over the crisis due to an extraordinarily intense and target-focused process that included the renewal of education and vocational training (Colons & Halverson, 2009). According to the technology-driven methodological modernization (Collins, 2008), especially in VET, our project set the following research questions: *how can rapidly changing learning content be, and how could learning be made more effective by increasing student activity within relatively narrow time frames?*

Our project, initially launched in 2016, looking for an answer to the above problem, had to face even more of the latest challenges of online education by 2020 due to the pandemic. The realization of education in a virtual environment and the issues of collaborative development of the curriculum have already occupied researchers in the last decade (Hamutoglu et al., 2020; Hod & Sagi, 2019); however, the reality, due to the impact of Covid-19, exceeds all prior expectations appeared in practice with dynamics.

In our case, in Hungary, between 2020-2022, a radical reduction by two-thirds of the vocational qualification system (to 174 basic qualifications) was introduced, and new output requirements were applied in VET. So far, the subject system and the initiation of new program plans and conditions have been the essential content elements of the transformation. All this initiated a short period of total renewal of content in the reorganized VET institutions (centers and affiliated schools) in 2020-2021. At that time, even the pandemic crisis meant a significant challenge to change the training methodology. In this process construction of micro-contents became an efficient new tool (Sun et. al., 2020). In the first stage of our research, we conducted a needs analysis among the potential stakeholders and international comparative studies. Then, we developed the open content construction model based on theoretical research.

The development of methodological knowledge and the collaborative organization of learning was put into the focus of our work because the open learning resources with active student participation are apt to improve professional knowledge. According to our pilot school experiences, the new-type learning support can considerably improve the effectiveness, organization, and methods of learning. The methodological specialty of the research was model creation based on theoretical analyses, which served as the ground for the implementation of learning resource development tasks with the involvement of engineer and economics vocational teacher students. The surveys and interviews made with these students and the implementation of the micro-contents developed by the students can be considered a new approach to training content improvement as an innovative process. Involving the students (future vocational teachers) in the open learning resource development process and equipping them with methodological knowledge was suitable for the permanent development of active learning.

## **2 Creating open learning materials becomes high demand**

According to the rethinking pedagogy for the digital age (Beetham & Sharpe, 2019), this project presents a new orientation about the first innovative initiatives in the direction of a new methodological learning content development model. A further innovation possibility appeared in the provision of cloud services, assuring the background storage capacity necessary for this process. During the latest decade, it has become a general development trend, which strengthened considerably during the pandemic, to provide mass access to educational content, which is by today supported by excellent and interactive online platforms. The LMS (Learning Management System) and their application of the academic frameworks in VET are justified

by the high number of participants, trained in integrated organizations and their various vocational distribution. In the empirical phase of the research, we support purposeful, open curriculum developments in twelve pilot schools and the framework of university professional teacher training. The model analyzed these results, and in the professional teacher training program, we adapted the procedure and created a broader teacher training program in which we trained 170 teachers.

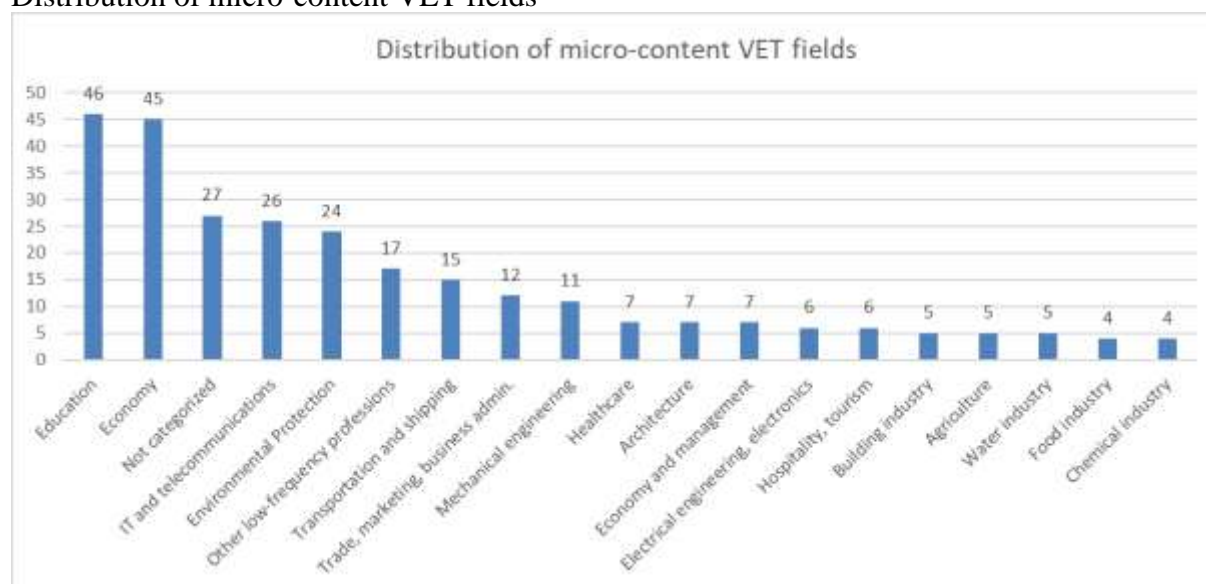
### 3 Priority of the local innovation in VET

Using the new methodology, the participating vocational teachers played an influential multiplier role in the highlighted development programs and local innovation implemented at the institutional level. The national regulatory frameworks changed, preferably during the project period. As a result, new conditions appeared amongst the qualification and output requirements of the vocational teacher training programs in terms of the competence field related to methodological and vocational knowledge, the planning of the pedagogical process, the support, organization, and direction of learning, and the evaluation of the educational methods.

Between 2020-2022 in the frame of our university vocational teacher training courses (Digital Pedagogy and Theory of the Training), we applied the open content development method to support collaborative learning directly and with thematic focuses. For further analyses, a more significant set of micro-contents (279 learning units) was outworked within the given courses (*Fig 1*), which had a special significance in the current situation and offered the opportunity for collaborative construction and evaluation within the frameworks of student activities.

**Figure 1**

Distribution of micro-content VET fields



### 4 Integration of mobile phones and applications

Mobile phone usage and applications have become more prevalent in recent years. The global trends show that internet usage from desktops started to decrease, while internet usage from mobile phones started to increase in the 2010s, reaching parity by the end of 2016. According to the statistics of statcounter.com, in Hungary, the desktop and mobile market share reached parity in 2021. The share is around 63% mobile and 36% desktop usage (tablet 1%).

Network as a conceptual factor has become the core element of the new methodological developments and the organization of work contacts. Its importance in creating the development model of local innovation was of strategic significance. As a result of the organizational transformation, the VET system became more integrated and size-economic. Simultaneously, we also experienced the fluctuation of vocational teachers and institutional leaders during the project, which caused several personal changes at the school practice level. In this respect, our research program represented the aspects of life-long learning. In addition to formal education, it also dealt with the development of non-formal learning and permanent training.

Our experience in the twelve pilot schools and the university was an important motive that we have to consider the usage habits of the newer generations as well, who would use their mobile phones for almost everything instead of sitting in front of a desktop computer or a notebook. Therefore, we developed a mobile phone application that can be used both by teachers and students. Furthermore, a mobile application also involves the bring your own device (BYOD) approach into the classrooms, as the students can open the micro-contents pre-created by the teachers, or the students can create micro-contents during the class based on the learned curriculum, which can be done in a competitive or gamified approach as well.

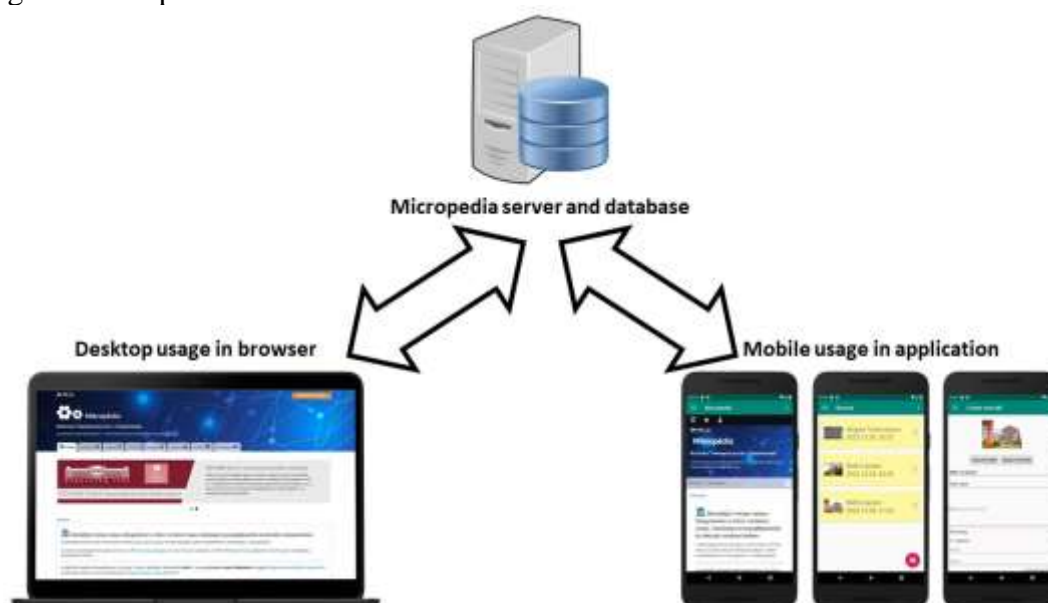
This application extends the functionality of our VET system called Micropedia (*Fig 2 and 3*) by enabling the users to create micro-contents with their mobile phones, using the built-in camera for taking pictures, the touch screen for drawing, and the microphone to record and transcribe texts. Furthermore, the application supports the proper categorization of the different micro-contents, such as assigning the rating, the level, the major, the minor, and the subject of the related qualifications in the VET.

**Figure 2**

Micropedia – Platform for Community Curriculum Development in Vocational Education ([www.mikrotartalom.hu](http://www.mikrotartalom.hu))



**Figure 3**  
Usage of Micropedia



Connecting micro-contents and creating a sequential curriculum, called micro-content paths, is also possible. The users can reach and study the micro-contents and paths of other users and even rate them on a five-star scale. The application also has a built-in web browser so the users can follow the links embedded into the micro-contents to extend their knowledge and do further research.

## 5 Conclusions

Our research highlighted how Hungary's vocational qualification system changed in the last few years. We presented how we reacted and adapted to the changes during our project by customizing our methodological learning content development model. The model includes the increasing importance of micro-contents and open learning materials. An institutional network was established when collaborating with pilot schools and university teacher training. The teachers and the students successfully applied the new model to their teaching-learning habits, including the older desktop-based and the newer mobile phone and application-based approaches. The statistics of our online platform shows that 18% of the users are browsing and using it from a mobile phone, 1% uses tablet, and 81% of the users are visiting Micropedia from desktop computer. To ensure the sustainability of this innovation process and the project results, the new mobile communication environment based on networks and cloud services offers new applications daily for evaluation and analysis of the learning resources and micro-contents created via collaborative pedagogical activity. These results and further dissemination may act as considerable innovation, motivation, and support for vocational education and training.

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## References

Beetham, H., & Sharpe, R. (2019). *Rethinking Pedagogy for a Digital Age: Designing for 21st Century Learning*. New York: Routledge.

- Benedek, A. (2020). New content development for and by VET teachers. In Nägele, C. & Stalder, B. E. & Kersh, N. (Eds.), *Trends in vocational education and training research*, vol. III. Proceedings of the European Conference on Educational Research (ECER) (pp. 43–51). Vocational Education and Training Network (VETNET). <https://doi.org/10.5281/zenodo.4008077>
- Benedek, A. (2021). New paths to online teaching – how can we manage knowledge transfer and make the learning more enjoyable? *Central European Journal of Educational Research. Res.* 3(3), 55–62. <https://doi.org/10.37441/cejer/2021/3/3/10015>
- Cedefop (2020). *Vocational education and training in Europe, 1995-2035: scenarios for European vocational education and training in the 21st century*. Luxembourg: Publications Office of the European Union. Cedefop reference series; No 114. <http://data.europa.eu/doi/10.2801/794471>
- Collins, A. M. (2008). Rethinking education in the age of technology. In: Woolf, B.P., Aïmeur, E., Nkambou, R., Lajoie, S. (Eds.), *ITS 2008. LNCS*, vol. 5091 (pp. 1–2). Springer, Heidelberg. [https://doi.org/10.1007/978-3-540-69132-7\\_1](https://doi.org/10.1007/978-3-540-69132-7_1)
- Colons, A. & Halverson, R. (2009). *Rethinking Education in the Age of Technology*. Teacher College Press. <https://doi.org/10.1007/s11423-010-9159-0>
- Hamutoglu, N.B., et al. (2020). Evaluating students experiences using a virtual learning environment: satisfaction and preferences. *Education Tech Research Dev.*, 68, 437–462. <https://doi.org/10.1007/s11423-019-09705-z> last accessed 2022/05/2
- Hod, Y. & Sagy, O. (2019). Conceptualizing the designs of authentic computer-supported collaborative learning environments in schools. *Int. J. Comput.-Support. Collab. Learn.* 14(2), 143–164. <https://doi.org/10.1007/s11412-019-09300-7>
- Sik, D. (2018). Introduction and implementation of a multi-leveled e-learning environment based on the open content development model principles. *Advances in Intelligent Systems and Computing.* 716(2), 64–70. [https://doi.org/10.1007/978-3-319-73204-6\\_9](https://doi.org/10.1007/978-3-319-73204-6_9)
- Sun, G. & Shen, J. & Lin, J. (2020). *Adaptive Micro Learning - Using Fragmented Time to Learn (Intelligent Information Systems)*, World Scientific Pub Co Inc.

### Biographical notes

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## Similarities and differences in the evolution of VET in Hungary and Poland 1989–2022

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### Abstract

The article takes a multi-pronged approach to study the main challenges in vocational education and training (VET) faced by Hungary and Poland in the transformation of their economies in 1989. The development of VET is examined in light of different development paths, ongoing criticism, declining prestige, dual training, governance, and VET research. We review the lessons learned from the changes experienced in the two countries as a result of the COVID-19 epidemic and examine the prospects for the current situation regarding VET in light of the recent Cedefop VET scenarios.

### Keywords

vocational education and training (VET), transformation, new scenarios, Central and Eastern Europe, Hungary, Poland

## 1 Introduction

The social and economic changes initiated at the turn of the 1990s had a great impact on the education systems of the former socialist countries. Although different privatization policies had been employed, the discontinuation of corporate internships and training workshops, tackling mass unemployment, and organizing retraining courses for those affected became an extraordinary task for initial VET and adult education in all former socialist countries. ‘In the last few decades, economic liberalization has spread across the former socialist region at a higher pace than in the world ...’ (Porčnik, 2019). Accession to the EU, the economic crisis and recently the COVID-19 pandemic have changed provisions for VET in all countries of Central and Eastern Europe (CEE).

In the light of the conditions mentioned above, in our study, we present some of the most important elements of the development and changes in Hungarian and Polish vocational education and training from the period after the 1989 regime change to the present day. To compare the two vocational education and training systems, we have selected some aspects which we believe to be of great importance for the evolution of VET in both countries.

It is crucial to note that we try to place VET, not in isolation but, as far as possible within the scope of this report, in a broader context. We are convinced that vocational education and training, because of its broad economic and social determinants, cannot be examined and judged



without knowledge and study of the complex and diverse systems of influences and interests involved.<sup>2</sup>

The selection of topics is based on recent study (Benke & Rachwał, 2022) comparing VET in the two countries, extended by some new topics. The social and economic changes initiated at the turn of the 1990s had a great impact on the education systems of the former socialist countries. Poland and Hungary were ranked among the most successful implementers of reforms at the beginning of regime change (Kozenkow, 2011). On the other hand, the economic structure (Kilar & Rachwał, 2014), the nature of post-regime privatization, and VET policy differ in the two countries, making them interesting cases to compare.

## **2 Methodology**

The method of our research is literature review, based on a critical analysis of national literature. Our article uses a multi-faceted approach to present the major challenges to VET that Hungary and Poland have been facing during the transformation of their economic systems in 1989 and joining the EU in 2004. The evolution of VET is examined according to different paths, continuous criticism towards VET, its declining prestige, the introduction of dual training and governance. We also look at recent changes as a result of the COVID-19 pandemic and the current situation in the light of VET scenarios recently developed by Cedefop (2020); (Benke & Rachwał, 2022).

## **3 Main findings**

### **3.1 Different paths in secondary level - General upper secondary education vs. vocational education**

After the change of the regime VET was developing differently in Hungary and Poland in the 1990s. The Polish education system became more 'general', while the Hungarian retained a relatively strong VET which later became increasingly practice-oriented. In Poland around 1990, the liquidation and closure of vocational schools took place on a larger scale than in Hungary. However, focusing on upper secondary education, according to data, by 2021 upper secondary general education had become more popular in Hungary compared to Poland. This may suggest that Polish secondary vocational institutions with well-equipped school workshops may have been recently more attractive for VET candidates than Hungarian institutions. Despite the decline, the number of Polish VET students (more than 660 000) is still by far the highest in Central and Eastern Europe, and among the highest in the EU.

### **3.2 Low performance - Continuous criticism towards VET**

There has been a continuous criticism of VET in both countries for decades, the essence of which is that VET does not meet the needs of the economy.

In both countries, policy highlights the indispensability of general knowledge in a turbulent, often unpredictable economic environment. The simplification, considering VET mostly from a short-term labour market perspective, forgetting its complexity as a system with several external factors, has weakened its prestige and compromised its quality, especially in the lower 'branch' of VET. A recent study draws attention to the risk that leaders or representatives of firms and companies often believe that short-term labour shortages are the

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<sup>2</sup> Our opinions are based on scientific publications and other official research findings and do not necessarily reflect official views.



main obstacle to their future development while suggesting a reduction in the emphasis on basic skills in the curriculum (Munkácsy & Scharle, 2021).

In Hungary, the employment rate of recent VET graduates at 86.3% in 2019, exceeding the EU average (79.1%). However, vocational schools' limited general education content has been problematized (Horn, 2014; Mártonfi, 2019). Together with the concentration of students with low socioeconomic status, explains the heavy deficit in basic skills measured in PISA and high drop-out rates: in 2016 in the lower level of VET drop-out rate was 15.3%, against 6.5% in the higher-level form, and 1.1% in general upper-secondary schools (Varga, 2018). In Hungary the impact of pupils' socioeconomic background on education is the strongest in the EU. The impact of school type is also very significant, reflecting early selection in secondary education (European Commission, 2017; Bükki, 2019).

Although the early school leaving (ESL) rate in Poland is relatively low (5%), the problems associated with its consequences are a concern for researchers. Students who early leave school feel marginalised, and are thus marginalised regarding their life chances (social, cultural, and personal), which may lead to their social exclusion, poverty and helplessness even transferred to the next generations. (Tomaszewska-Pekala, Marchlik & Wrona, 2015).

### **3.3 The governance of VET**

The governance of VET (Lassnig et.al 2018) is highly centralised in both countries, but in Poland not as strongly as in Hungary, because local and regional governments are still responsible for running VET schools. The economic and labour market relevance of VET is an absolute priority (Benke, 2019). The social aspects of VET have been neglected and little attention is being paid to recognising that transmission of knowledge about democracy alone is not enough for students to become democratically-minded citizens (Csapó, 2000). Partnership, including cooperation with social partners, and socialisation have been unresolved challenges in VET development work for decades, especially in Hungary.

From September 2020, important changes have started in the Hungarian VET system. One of the a major element in the transformation of the Hungarian vocational education and training system was the radical reduction of the number of occupations by about two-thirds, the introduction of training outcome requirements that substantially transformed the subject system and had not previously been applied in vocational education and training, and the introduction of new curricula and programme requirements. All of these changes have triggered a complete overhaul of the content of VET institutions (centres and member schools) (Györgyi, 2019).

Similarly, in Poland, as a result of the education reforms, the list of professions was changed and new vocational training programs for various qualifications were introduced. In Poland the core curricula for both general and VET have been changed many times (Nowak, 2017; Rachwał et al., 2018). This situation is subject to widespread criticism as reforms have been implemented without a thorough assessment of the effects of previous reforms. Following the typology developed by Pilz (2016), the Polish VET system is characterised by Reegård and Dębowski (2020) as a state-regulated, highly stratified, highly standardised system, with low levels of experience of labour market practice. The lack of teachers of vocational subjects will become even more acute in the coming years (Dolinska et al., 2019; Schröder et al., 2020).

VET governance at different levels constantly raises important questions in both countries. In Hungary the topic focuses on the issue of centralization and decentralization, while in Poland it is around the issue of rebuilding VET and adapt to the modern requirements of the labour market (Kurek, Rachwał, 2012; Melnarowicz. & Melnarowicz, 2017; Kust, 2020).

### **3.4 The prestige of VET**

There is a close relationship between knowledge conveyed by initial VET and the vulnerable social situation of young people leaving VET (Marhuenda-Fluixá, 2017). The lower the social

status of the profession, the lower the prestige of the school and the more vulnerable are its students on the labour market.

In Poland, large state-owned enterprises were closed in the 1990s, so were the vocational schools functioning alongside them. Moreover, VET seemed to be too expensive and held no future for Poland's economic development (Dębowski & Stęchły, 2015). Due to the lack of investment and modernisation, VET could not provide the skills needed for emerging high-tech industries following the influx of foreign investors and the development of new private enterprises. In this situation, many young people believed that VET had no future. The interest of candidates and the prestige of vocational schools began to decline (Kurek & Rachwał, 2012; Pasierbek, 2011), which is still largely visible today. Reegård and Dębowski (2020) confirm this conclusion – according to them VET suffers from a disparity of esteem compared to academic education, despite governmental activities to change its negative image.

The prestige of VET is still a current theme in Poland. The amendment to the Law on School Education Act's target in Poland is to improve the prestige of initial vocational education, mostly through improving the quality and effectiveness of VET in schools and other institutions. The implementation of the changes started in the school year 2019/2020. OECD (2020).

The prestige of VET in the light of enrolment data has long been a critical point of Hungarian VET. Within the framework of the market economy, which replaced the state of the working class, the situation of manual wage workers has inevitably changed, and the prestige of VET preparing for this work has deteriorated even more than before. The government introduced measures that seek to make VET more attractive to young people through various 'facilitation measures' such as reducing general education, and the 'simplified' content and delivery conditions for VET (Horn, 2014; Kunert, 2016; Mártonfi, 2019). In Hungary, the prestige of VET has not improved despite measures taken by governments. The curtailment and centralization of the decision-making powers of school directors did not produce the desired results in Hungary, where the previously flexible, relatively freely interoperable horizontal system has become rigid and impenetrable (Mártonfi, 2019).

The changing pattern of parents' and students' decisions to continue their education, which is contrary to the government's intentions: since the radical reduction of the general education content of school-based vocational education, interest in general secondary schools has increased and interest in vocational education and training institutions has decreased. As the government is making considerable efforts to reverse the trend towards further education and to channel a larger share of students towards vocational education, there is no question of rationalising the network of vocational education and training institutions and reducing their redundant capacity. However, the overcapacity in vocational schools has been almost 'catastrophic': today, just over half of the places in technicums and just over a third of the places in vocational schools are being used (Ercse & Radó, 2019).

A further important aspect of the demand for university diplomas is that the wage advantage of Hungarian university graduates over secondary school graduates is quite outstanding in Europe. Another problem is that the Hungarian system is highly selective already at the point of entry to primary school. Even after 4th and 6th grades, there are already pathways out of the integrated education system into grammar schools. These circumstances all contribute to the stagnation of the low prestige of vocational education.

In Hungary, for many students, the vocational school appears as 'the last chance' (Makó, 2016). In Poland, they are called 'the schools of last resort'.

### 3.5 Dual training

The two countries appear to be in different positions over dual training. In Hungary, based on the experience gained, more critical opinions were expressed by researchers and trade unions,

especially regarding long-term effects, like the decline in VET students' theoretical and general knowledge (Hajdu et al., 2015; Fazekas et al., 2020). Additionally, different government policy measures did not significantly influence the willingness of companies to provide practical training for VET students. On the Polish side, the idea of developing a non-German type of dual training has emerged and opinions are more positive. However, schools nowadays seem to play a more important role in training students than companies, and the fact that there have been significant developments in school workshops, have also supported the renewed attractiveness of VET for young people.

The interest of companies in training differs widely between the two countries. In Hungary, until the end of 2021, for many decades, companies that did not undertake to train apprentices had to pay into the vocational training fund to ensure a more equal financial burden. We assume that the low financial interest of companies in investing in training, similarly their high interest in avoiding costs, is one of the reasons for the low participation of Polish companies in apprenticeships.

One of the survey results shows that employers are set on increasing the number of hours of students' practical vocational training in the workplace but are reluctant to undertake more costly and more demanding forms of cooperation with schools, like participating in vocational exams, training teachers or providing equipment for school workshops (Maleszyk, 2017). However, in Poland, due to the systematically decreasing unemployment rates in the years 2015-2021, enterprises are increasingly starting to look for opportunities to cooperate with vocational schools and they are increasingly willing to accept apprenticeships. In this way, they hope to attract employees in the future. It should be noted that additional training in enterprises is also an important form of vocational education for adults. As research shows, vocational training programs are particularly developed in the branches of international enterprises located in Poland (Tobolska, 2016). The cooperation of employers with vocational schools is one of the most important elements affecting the quality of education, in the course of various VET reforms in Poland, efforts were made to create mechanisms that would facilitate such cooperation (Kust, 2020).

### 3.6 Research

Research on VET in Hungary and Poland has only recently received more attention with a stronger critical voice. It had deteriorated strongly after the regime change and practically fell out of sight in sociological research in education (Kozma, 2021). Likewise, many forums for debate among VET actors disappeared. In this sense, our paper would like to support to re-establish scholarly informed debates among VET stakeholders. We assume and hope that the examples of our countries can provide interesting lessons for researching VET evolution in other former socialist countries, and maybe for all those facing similar challenges in our globalised world.

The small scale of VET research in Hungary is focused on the labour market perspective, with very little attention paid to the study of the losers from technical progress, the long-term laggards (Benke & Rachwał, 2022).

Among the small number of Hungarian vocational education and training research projects, the MTA<sup>3</sup>-supported 'Subject Pedagogical Research Programme', which is conducted in the framework of the BME<sup>4</sup> in international research cooperation, is of great importance. This research develops the process of open curriculum development in VET by involving enterprising teacher students and teachers. In this way, research constitutes an important

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<sup>3</sup> MTA = Hungarian Academy of Sciences

<sup>4</sup> BME = Budapest University of Technology and Economics

element of innovation in the training of teachers involved in vocational education and training. The research and development work that had already begun has been given a strong impetus by the recent radical transformation of the VET system, which has created the imperativeness and opportunity for methodological change and research and development (Benedek, 2021). Interdisciplinary approaches in VET research (and development) are rare in both countries, as is VET research on the issues of ‘citizenship’ and ‘empowerment’. However, in the future, greater consideration of non-economic and non-market aspects may create new avenues and purposes for VET concerning social innovation. In this respect, the results of a survey in which nearly 90% of VET experts in Hungary stated that secondary VET institutions could play an important role in the life of local communities beyond teaching, was promising (Benke, 2016).

#### 4 Conclusions

Polish and Hungarian VET are characterised by a continuous search for a new path. However, it seems in 2023 that, partly because of the COVID pandemic, the increasing level of uncertainty about the prospects for economies and the permanent skills shortages in many occupations will continue to dominate short-term VET policies in both countries. It is questionable how these circumstances will influence and determine the willingness of policymakers to turn towards more flexible, less economy-driven, and more ‘humanistic’ forms of VET.

As in Hungary, in Poland the situation in VET in the times of the COVID pandemic depended a lot on the specific sector, to what extent it was vulnerable to the crisis and whether it was affected by decisions concerning lockdowns. However, it seems that in those sectors, professions with strong and well-equipped workshops in schools could face the crisis under less dramatic conditions compared to those who had only or mostly training placements in companies. It seems that school workshops in certain conditions can serve as a lifeline during short-term crises.

Scenario research organised by Cedefop, gives rise to many ideas for the future. The question is whether the ‘Plural’ model, opening up to lifelong learning, can open up new horizons for secondary vocational education and training in building links with local societies and local economies (Benke, forthcoming). And as the new vocational education and training scenarios put dual training in a new light (Markowitsch & Bjørnåvold, 2022), an exciting challenge is how to reconcile the interests of companies with the ‘Plural Model’. Extrapolating past developments into the future would suggest in both countries either the ‘Distinctive’ or ‘Marginalised’ (according to Cedefop, 2020) scenario to materialise. We assume that learning about the scenarios and broadly discussing them could make a positive contribution to future development processes in VET in both Hungary and Poland.

#### References

- Benedek, A. (2021). New Paths to Online Teaching – How Can We Manage Knowledge Transfer and Make the Learning More Enjoyable? *Central European Journal of Educational Research*, 3(3), 55–62. <https://doi.org/10.37441/cejer/2021/3/3/10015>
- Benke, M. (2023) (forthcoming). Duális képzés kitekintéssel és kérdőjelekkel. [Dual training with outlook and question marks.] HERA Évkönyv 2022. [HERA Year book 2022.]
- Benke, M. (2019). Vocational education and training, the contested partner in innovation projects: Questions and remarks. In: *Trends in vocational education and training research: Proceedings of the European Conference on Educational Research (ECER), Vocational Education and Training Network (VETNET)*. Ed.: Barbara E. Stalder, Christof Nägele, VETNET, Bern, 77-84. <http://doi.org/10.5281/zenodo.3457503>

- Benke, M. & Rachwał, T. (2022). The evolution of vocational education and training in Hungary and Poland 1989–2035. *Hungarian Educational Research Journal*, 12 (3), 328–356. <https://doi.org/10.1556/063.2022.00061>
- Cedefop (2020). *Vocational education and training in Europe, 1995-2035: scenarios for European vocational education and training in the 21st century*. Luxembourg: Publications Office of the European Union. Cedefop reference series; No 114. <http://data.europa.eu/doi/10.2801/794471>
- Csapó, B. (2000): Az oktatás és a nevelés egysége a demokratikus gondolkodás fejlesztésében. *Új Pedagógiai Szemle*, 50. 2. sz. 24–34. [The unity of education and training in the development of democratic thinking. *New Pedagogical Review*. 50. 2. 24–34.]
- Dolinska, J., Ketschau, T. J., & Schulte, S. (2019). Research Design and Preliminary Results of an Exploratory Study on Technical and Vocational Education and Training in Poland. *TVET@Asia*, 13, 1–14, [http://www.tvet-online.asia/issue13/dolinska\\_ketschau\\_schulte.tvet13.pdf](http://www.tvet-online.asia/issue13/dolinska_ketschau_schulte.tvet13.pdf)
- Ercse, K. & Radó, P. (2019). A magyar közoktatásban zajló privatizáció és annak hatásai. [The ongoing changes in Hungarian public education privatisation and its effects.] *Iskolakultúra*, 29 (7) DOI: 10.14232/ISKKULT.2019.7.8.
- Fazekas, K., Csillag, M., Hermann, Z. & Scharle, Á. (Eds.) (2020). *The Hungarian Labour Market 2019*. Institute of Economics, Centre for Economic and Regional Studies, Budapest [https://kti.krtk.hu/wp-content/uploads/2020/07/LMYB2019\\_onefile.pdf](https://kti.krtk.hu/wp-content/uploads/2020/07/LMYB2019_onefile.pdf)
- Györgyi, Z. (2019). Változások a hazai szakképzésben [Changes in domestic vocational education and training] 2004 - 2019. *Educatio*, 28 (1), 105–120. DOI: 10.1556/063.28.2019.1.8.
- Hajdu et al. (2015). Az érettségi védelmében. [In defense of graduation.] *Budapesti munkagazdaságtani füzetek [Budapest working papers on the labour market]* 1785–3788, BWP 2015/1 <http://www.econ.core.hu/file/download/bwp/bwp1501.pdf>
- Kilar, W., Rachwał, T. (2014). *Changing Role of Industry in the Economy in the V4 Countries – a Regional Approach*, 'Club of Economics in Miskolc' Theory, Methodology, Practice, Vol. 10, Nr. 1, 45–54.
- Kozenkow, J. (2011). Rendszerváltás, intézmények és gazdasági növekedés. PhD értekezés, Corvinus Egyetem. [Regime change, institutions and economic growth. PhD Dissertation]. [http://phd.lib.uni-corvinus.hu/594/1/Kozenkow\\_Judit.pdf](http://phd.lib.uni-corvinus.hu/594/1/Kozenkow_Judit.pdf)
- Kozma, T. (2021). Nevelésszociológiából oktatáskutatás. (Áttekintés az MTA Pedagógiai Tudományos Bizottsága számára.) [From the educational sociology to the social research on education]. (Review for the Scientific Committee of Pedagogy of the Hungarian Academy of Sciences.)
- Kurek S., Rachwał T. (2012). Vocational Education and Training in Poland During Economic Transition [in:] *The Future of Vocational Education and Training in a Changing World*, ed. Pilz M., Springer, Wiesbaden, p. 321–340. [http://dx.doi.org/10.1007/978-3-531-18757-0\\_19](http://dx.doi.org/10.1007/978-3-531-18757-0_19)
- Kust, I. (2020). Vocational Education and Training in the Light of the Reforms of Polish Education System in the Years 1999–2017. *Przegląd Badań Edukacyjnych (Educational Studies Review)*, 1(30), 211–230. <https://doi.org/10.12775/PBE.2020.012>
- Lassnigg, L., Deitmer, L., Benke, M., Hauschildt, U., Tacconi, G. & Perini, M. (2018): Problems of VET governance and scope for improvement – a comparative view. In: *Trends in vocational education and training research: Proceedings of the European Conference on Educational Research, Vocational Education and Training Network (VETNET)*. Ed.: Christof Nägele, Barbara E. Stalder, VETNET, Bern, 208–217.
- Makó et al. (2016). Szakiskolák, oktatás, szegénység. [Vocational schools, education, poverty]. *Esély (Chance)* 2016/6.

- Maleszyk, P. (2017). Cooperation between vocational schools and business in Poland: employers' perspective. *Annales Universitatis Mariae Curie-Skłodowska, sectio H – Oeconomia*, 51(3), 85. doi: <http://dx.doi.org/10.17951/h.2017.51.3.85>
- Marhuenda-Fluixá, F. (ed.) (2017). *Vocational Education beyond Skill Formation*. Peter Lang.
- Markowitsch, J. & Bjørnåvold, J. (2022). Scenarios for vocational education and training in Europe in the 21st century. *Hungarian Educational Research Journal*, 12 (3), DOI: <https://doi.org/10.1556/063.2021.00116>
- Mártonfi, Gy. (2019). Tanügyirányítás és struktúraváltás a hazai szakképzésben 2010 után. [School management and structural change in Hungarian VET after 2010]. *Educatio*, 28(2), 241-254.
- Melnarowicz, W. & Melnarowicz, K. (2017). Return to Vocational Education. *Journal of KONBiN*, 44(1) 235-255. <https://doi.org/10.1515/jok-2017-0070>.
- Munkácsy, B., Scharle, Á. (2021). The Relevance of Future Challenges to Education in Five Central Eastern European Countries. In: Radó, P., Munkácsy, B., Scharle, Á. & Kende, Á. *Adapting to Future Challenges to Education. Hungary, Poland, Romania, Serbia, And Slovakia*. 15–60. CEU Center for Policy Studies, Vienna. <https://cps.ceu.edu/sites/cps.ceu.edu/files/attachment/publication/3321/cps-book-adapting-future-challenges-education-2021.pdf>.
- Nowak, J. (2017). Kształcenie zawodowe w Polsce w świetle obowiązujących aktów prawnych [VET in Poland Under the Current Regulations], *Zeszyty Naukowe. Organizacja i Zarządzanie / Politechnika Śląska*, 111, 273-282.
- OECD (2020): Skills Strategy Poland : Assessment and Recommendations. <https://www.oecd-ilibrary.org/sites/1559965f-en/index.html?itemId=/content/component/1559965f-en>
- Pilz, M. (2016). Typologies in comparative vocational education and training: Existing models and a new approach. *Vocations and Learning*, 9(3), 295–314. <https://doi.org/10.1007/s12186-016-9154-7>
- Porčnik, T. (2019). Still moving toward markets 30 years after the Berlin Wall. <https://www.fraserinstitute.org/blogs/still-moving-toward-markets-30-years-after-the-berlin-wall>
- Rachwał, T., Kilar W., Kawecki Z., & Wróbel P. (2018). Edukacja w zakresie przedsiębiorczości w wychowaniu przedszkolnym, szkole podstawowej i szkołach średnich w świetle nowej podstawy programowej [Entrepreneurship Education in Pre-School, Primary and Secondary Education in the New Core Curriculum]. *Przedsiębiorczość – Edukacja / Entrepreneurship – Education*, 14, 389-424. <https://doi.org/10.24917/20833296.14.28>
- Reegård, K. & Dębowski, H. (2020). Exit, voice or loyalty? VET stakeholders' response to large scale skilled emigration from Poland. *International Journal for Research in Vocational Education and Training*, 7(3), 325-343. <http://dx.doi.org/10.13152/IJRVET.7.3.4>
- Schröder T. et al. (2020). Preliminary Study of TVET in Poland (SBBP) 'An analysis of challenges and needs in TVET regarding the perspective of educational institutions in Poland', Final (online) conference – presentation of results and discussion, [https://edunet-poland.pl/wp-content/uploads/2020/05/TU\\_Dortmund\\_28.05.pdf](https://edunet-poland.pl/wp-content/uploads/2020/05/TU_Dortmund_28.05.pdf)
- Tobolska, A. (2016). System szkoleń i podnoszenia kwalifikacji zawodowych jako forma transferu wiedzy w przedsiębiorstwach międzynarodowych (Vocational Education and Training as a Form of Knowledge Transfer in Multinational Enterprises). *Gospodarka Narodowa. The Polish Journal of Economics*, 282(2), 121-148. <https://doi.org/10.33119/GN/100789>

Tomaszewska-Pekala, H. Marchlik, P. & Wrona, A., (2015): Between school and work. Vocational education and the policy against early school leaving in Poland. *Educação, Sociedade & Culturas*, 45, 75-95.

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Braun, V. & Melnyk, O. (2023). Promoting VET by implementing a “dual system” in Ukraine. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 70–77). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7808278>

## Promoting VET by Implementing a “Dual System” in Ukraine

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### Abstract

In the course of recent history, the Ukrainian vocational education and training system (VET) system has evolved from a system with a large share of work-based learning to a school-based model. Both models struggle(ed) with a lack of appreciation among the population and in companies (Braun, 2022; Melnyk, 2021). Currently, attempts are being made to upgrade marginalised VET by moving work-based learning back to the centre of it. Specifically, Ukraine implemented a dual VET system in a pilot project in 2015, which has since expanded. While three VET institutions were involved in 2015, 217 were recorded in 2021 (MES & Institute of Educational Analytics, 2021).

This is not only associated with hopes for demand-oriented, recognised VET, but also with challenges such as creating a working legal framework for the dual forms of education, encouraging and creating incentives for all actors to participate and contribute to the development of the skill formation and overcoming long-established stereotypes about VET in Ukraine (e. g. Boichevska & Veremiuk, 2020; Deissinger & Melnyk, 2019).

The aim of the paper is to analyse these issues and come to an up-to-date assessment of the reform implementation, its possible prospects and pitfalls.

To achieve this goal, it is first necessary to consider why it is important to promote VET in Ukraine in the first place and where its low esteem results from. This is primarily due to historical-political developments and cultural causes (Braun, 2022; Melnyk, 2021).

Finally, the dual system approach is analysed in concrete terms, taking into account the previously explained background, and the challenges are worked out. For example, it is difficult to convince employers to participate in VET, which they usually see as the sole responsibility of the state (cf. Prytomanov et al., 2018).

The results present a summary of the diverse research activities of the authors connected with VET in Ukraine conducted during 2018-2021.

### Keywords

dual training, work-based learning, (standing of) VET, Ukraine



## 1 Introduction

In the course of recent history, the Ukrainian vocational education and training (VET) system has evolved from a system with a large share of work-based learning to a school-based model. Both models struggle(ed) with a lack of appreciation among the population and in companies (Braun, 2022; Melnyk, 2021). Currently, attempts are being made to upgrade marginalised VET by moving work-based learning back to the centre of VET. Specifically, Ukraine implemented a dual VET system in a pilot project in 2015, which has since expanded. The paper evaluates the idea of the dual VET system as a solution to the problem of the low standing of VET against the background of historical and cultural reasons for and effects of this problem. The focus is on non-academic VET as an alternative to university studies.

## 2 Standing of VET in Ukraine

The question of how VET is valued in Ukraine can only be answered comprehensively if one takes into account the historical and political developments of the past decades as well as cultural characteristics (Deissinger, 2001). In particular, the period of belonging to the Soviet Union and the relatively sudden turn to new principles and forms of social coexistence in the transition period have left their mark.

In Soviet times, VET had a politically intended high significance (Roberts et al., 2000). While only a few study places were available (Braun & Glowka, 1975; Glowka, 1986; Pennar et al., 1971), work education was already part of regular schooling (Helmert, 1994; Pennar et al., 1971) and participation in different forms of VET was the norm for the majority of the population. The latter was not always voluntary (Anweiler & Meyer, 1979; Melnyk, 2021; Pennar et al., 1971). Through reforms in secondary education, which narrowed down specialised work teaching (polytechnic education) (Anweiler et al., 1976; Tatur, 1977; Wiessner, 1963) and increasingly integrated propaedeutic elements (Braun & Glowka, 1975; Schmidt, 1973), the hope of studying was raised in the students. The hope of a study place at university was linked to the hope of a demanding, broadly specialised job (Braun & Glowka, 1975; Glowka, 1970; Scharff, 1977). Vocational schools and enterprises maintained close links so that work-based learning played a central role and VET was strongly oriented towards the needs of enterprises (Melnyk, 2021; Roberts et al., 2000). VET programmes tended to lead to relatively narrowly specialised, monotonous activities that offered little room for self-fulfilment (Braun & Glowka, 1975; Glowka, 1970; Scharff, 1977). Only a small percentage of the high number of holders of the higher education entrance qualification were admitted to universities, so a certain dissatisfaction arose (Braun & Glowka, 1975; Glowka, 1986; Popovych & Levin-Stankevich, 1992).

With independence and the introduction of a market economy, Ukraine's transformation period began. The (meritocratic) conviction quickly spread that in the new form of society, the highest possible educational qualifications were the prerequisite for further life opportunities (Braun, 2022; Pohorila, 2011; Roberts et al., 2000). The government swiftly opened the universities to the masses (Braun, 2022; Kremen & Nikolajenko, 2006) and thus continued a policy strategy that had already been initiated during the Gorbachev era (Savelyev et al., 1990). At the same time, VET faced massive problems. On the one hand, many companies that had previously served as places of learning were no longer available, and on the other hand, there was a lack of financial resources (Hellwig & Lipenkova, 2007; Melnyk, 2021; Roberts et al., 2000; Zinser, 2015). The government treated VET in a step-motherly manner and was primarily concerned with other, supposedly more important areas of education (Braun, 2022; Farla, 2000; Melnyk, 2021; Raimondos-Møller, 2009). Soon, VET became education for disadvantaged respective low-performing students (Braun, 2022; Del Carpio et al., 2017; Suprun et al., 2012).

### 3 Effects of the low standing of VET

The massive loss of importance of VET reflects in a sharp decline of VET schools and participants, while the higher education sector took the opposite development (Klein, 2018; Rumyantseva & Logvynenko, 2018; State Statistics Service of Ukraine, 2022a, 2022b UNESCO Institute of Statistics 2013-2020; Zimmermann & Schwajka, 2018). It took a long time for the government to pay more attention to VET and to seek sufficient, specific legal regulations and support – a process that is still ongoing (ETF, 2019b; Farla, 2000; Melnyk, 2021; Suprun et al., 2012). Nonetheless, it suffers from underfunding and teacher shortages (ETF, 2019a; Melnyk, 2017). For trained teachers, VET schools do not seem very attractive - because of their poor reputation and low salaries (Melnyk, 2017). It is proving difficult to rebuild closer links between VET schools and companies (Prytomanov et al., 2018). Last but not least, the companies see the state, that means the Ministry of Education and Science (MES), which centrally directs the fate of the education system (Braun, 2022; Želudenko & Sabitowa, 2015), as having a duty to ensure that the education of the population is in line with demand. Overall, the Ukrainian education system is considered to be extremely theory-based, and activity-based, vocational education inferior (Braun, 2022; Friedman & Trines, 2019; Prytomanov et al., 2018). Because of the high rates of university graduates, there has been an inflation of academic qualifications, which further devalues vocational qualifications and is linked to the currently prevailing shortage of skilled workers (Braun, 2022; Długosz, 2016; MES, 2017–2019; Suprun et al., 2012; UNESCO, 2008).

### 4 Concept of the dual system as a solution for skill formation in Ukraine

The introduction of the concept of dual education is not only associated with hopes for demand-oriented, recognised VET, but also with challenges such as creating a working legal framework for the dual forms of education, encouraging and creating incentives for all actors to participate and contribute to the development of the skill formation, and overcoming long-established stereotypes about VET in Ukraine (e. g. Boichevska & Veremiuk, 2020; Deissinger & Melnyk, 2019).

The piloting of the concept of a dual form of education began in 2015 as a part of a national experiment implemented by the MES during 2015-2018. According to the Order of the MES No. 298 dated 16.03.2015 "On conducting research and experimental work on the topic 'Vocational training of skilled workers using elements of the dual education system on the basis of vocational education institutions'", the main goal of this experiment was to scientifically substantiate and experimentally check the quality of VET using elements from the dual system. Important actors who fostered the piloting of the elements of the dual system were the Federation of Employers of Ukraine and international organisations like the Friedrich-Ebert Foundation Representation in Ukraine (FEFR UA, 2020; Tütlys et al., 2021). After completing the experiment, a legal framework for implementing the dual system was introduced. Thus, the Order of the Cabinet of Ministers of Ukraine No. 660-r dated 19.09.2018 "On approval of the concept of training specialists in the dual form of education" and Order of the MES No. 1551 dated 12.12.2019 "On approval of the regulation on the dual form of vocational (vocational-technical) education" provided legal grounds for vocational institutions and companies and enterprises to cooperate and train VET students with increased practical orientation.

According to these legal documents, VET institutions are responsible for establishing cooperation and partnership with companies and enterprises and ensuring communication between all involved sides. Companies and enterprises may also initiate such cooperation; however, their main task is to provide a place for an apprenticeship with adequate work conditions. Both parties must cooperate in designing training programmes within respective occupations but VET institutions must ensure that the designed programmes comply with the occupational standards defined by the MES. In addition, both parties must be involved in the

evaluation of knowledge and skills and final state examinations. VET students must conclude a three-party contract to undergo practical training at an enterprise or a company. The last must pay remuneration to a VET student according to achieved results at work.

While only three VET institutions were involved in 2015 in the piloting experiment, in the 2020-2021 academic year 217 from the total of 711 vocational institutions offered dual training to 12 395 VET students (i.e. approximately 5% of total VET students). The number of students in dual training during the three years of the implementation (2018-2020) remains relatively small and insignificant. Most VET institutions engaged in dual training are situated in Central and Western Ukraine (Khmelnyska, Lvivska and Vinnytska regions) (MES & Institute of Educational Analytics, 2021). The latest available data from the MES states that over 300 employers were involved in dual training in 2017-2018 (MES, 2017–2019).

The prospects of the successful implementation of dual training in the Ukrainian VET system remain vague. Together with the introduction of the dual approach in the VET system, the higher education sector has begun actively discussing the application of elements of the dual system in training offered by higher education institutions (HEIs), i.e. universities, institutes and colleges. In 2019, the MES together with international partners launched a new experiment on the implementation of the elements of the dual approach in higher education. Consequently, the rivalry between the two sectors may further intensify and the efforts to make VET more attractive and relevant for the labour market by introducing the dual approach may fail. Another challenge that hampers the implementation of dual training is the weak social dialogue between different stakeholders (Deissinger & Melnyk, 2019; Tütlys et al., 2021). As evident from the legal framework, the responsibility for finding partner-companies and enterprises lies with VET institutions. They must also encourage companies and enterprises to conclude cooperation agreements and in such a way secure apprenticeship places for VET learners. As a result, VET institutions get a subordinate role and can hardly be considered equal partners in dual training. Other social partners, which traditionally are important players in VET systems of countries where the dual system is well-established like for example chambers in Germany (Deißinger, 2001; Deissinger, 2010), are not involved in skill formation in Ukraine. There is no independent public body or agency that can overtake the function of supervising and monitoring the quality of training and competences acquired by VET learners at both learning venues. The absent feeling of shared responsibilities for skill formation in the country from employers' side, who see it as the sole responsibility of the state (cf. Prytomanov et al., 2018), remains problematic. In addition, companies are not particularly interested in being involved in dual training due to financial investments, fear of losing VET graduates after the training and ill-defined understanding of the concept of dual training (FEFR UA, 2020). Since there are no uniform training programmes at companies and enterprises and no mechanisms of independent quality monitoring, they also offer quite specific training that contradicts the principle of mobility and comprehensive vocational training but becomes on-the-job training. It creates a risk of narrow vocational specialisation, once experienced in the Soviet Union that had a negative impact on the enrolment of students in the VET system in independent Ukraine and encouraged aiming at studies in higher education.

## **5 Conclusions and outlook**

The new dual training in VET can be interpreted as an approach to increase the appreciation of VET in Ukraine. In terms of numbers, it remains to be seen how the dual system will develop and whether it will succeed in establishing itself. On the one hand, the fact that some companies have been won over and participate in dual training is promising; on the other hand, the absence of a systematic understanding of the dual system with its mechanisms that clearly assign roles and responsibilities to the actors can threaten the success of its implementation. Ultimately, the success of the dual system will also depend on whether it proves to be complementary or

competitive to higher education. Within VET, it can be a high-quality alternative alongside full-time school-based courses. However, as we have shown, there are difficulties and risks that need addressing.

The ongoing war in Ukraine has already heightened the importance of VET for the post-war rebuilding of Ukraine in the minds of policymakers. The MES approved a strategic document titled “Conceptual framework for the development of human capital in the field of vocational education and training” within the “Reconstruction Plan of Ukraine” (MES, 2022). However, changes must occur in the social perception of VET as a driver for economic development and as an instrument for increasing the human capital of a country. The biggest industrial enterprises, which are crucial for the Ukrainian economy and consequently potential partners of dual training, are situated in occupied Southern and Eastern regions of Ukraine. The outcome of the war is a decisive factor for the further implementation of the dual approach in the VET system: Ukraine’s victory is a precondition for the realisation of the Reconstruction Plan.

## References

- Anweiler, O., & Meyer, K. (1979). Einleitung [übernommene Version aus der 1. Auflage von 1961]. In O. Anweiler & K. Meyer (Eds.), *Die sowjetische Bildungspolitik 1917–1960. Dokumente und Texte* (pp. 19–51). Harrassowitz Verlag.
- Anweiler, O., Kuebart, F., & Meyer, K. (1976). Einleitung. In O. Anweiler, F. Kuebart & K. Meyer (Eds.), *Die sowjetische Bildungspolitik von 1958 bis 1973. Dokumente und Texte* (pp. 1–23). Quelle & Meyer.
- Boichevska, I., & Veremiuk, L. (2020). Dual education: Application of Germany’s positive experience in Ukrainian reality. *Порівняльно-педагогічні студії*, 39(I), 4–13.
- Braun, F., & Glowka, D. (1975). Die Differenzierung des Schulwesens als Gegenstand von Schulreformen. In F. Braun, D. Glowka, K.-D. Mende, P. Müller, H. Thomas & J. Zimmer (Eds.), *Schulreform und Gesellschaft. Vergleichende Studien über die gesellschaftlichen Bedingungen von Schulreformen in sieben europäischen Ländern* (1st ed., pp. 1–124). Max-Planck-Institut für Bildungsforschung.
- Braun, V. (2022). *Der Zusammenhang zwischen Meritokratie und beruflicher Bildung. Idealtypische Rekonstruktion als Deutungsrahmen für das Wertschätzungsproblem der Berufsbildung in der Ukraine*. Springer.
- Deißinger, T. (2001). Zum Problem der historisch-kulturellen Bedingtheit von Berufsbildungssystemen – Gibt es eine „Vorbildfunktion“ des deutschen Dualen Systems im europäischen Kontext?. In T. Deißinger (Ed.), *Berufliche Bildung zwischen nationaler Tradition und globaler Entwicklung. Beiträge zur vergleichenden Berufsbildungsforschung* (pp. 13–44). Nomos-Verlagsgesellschaft.
- Deissinger, T., & Melnyk, O. (2019). Reform perspectives for the Ukrainian VET system – a critical analysis. In F. Marhuenda & M. J. Chisvert-Tarazona (Eds.), *Pedagogical concerns and market demands in VET: Proceedings of the 3rd Crossing Boundaries in VET conference, Vocational Education and Training Network (VETNET)* (pp. 50–56). CreateSpace. 10.5281/zenodo.2644069
- Deißinger, T. (2001). Zum Problem der historisch-kulturellen Bedingtheit von Berufsbildungssystemen: Gibt es eine “Vorbildfunktion” des deutschen Dualen Systems im europäischen Kontext?. In T. Deißinger (Ed.), *Bildung und Arbeitswelt: Vol. 5. Berufliche Bildung zwischen nationaler Tradition und globaler Entwicklung: Beiträge zur vergleichenden Berufsbildungsforschung* (pp. 13–44). Normos Verlagsgesellschaft.
- Deissinger, T. (2010). Dual system. In P. Peterson, E. Baker, & B. McGaw (Eds.), *International encyclopaedia of education* (3rd ed., 448–454.). Elsevier.

- Del Carpio, X., Kupets, O., Muller, N., & Olefir, A. (2017). *Skills for a modern Ukraine*. World Bank. <http://hdl.handle.net/10986/25741>
- Długosz, P. (2016). Private lessons as an instrument for middle class status struggle in post-socialist societies: Poland and Ukraine case studies. *Economics and Sociology*, 9(1), 173–191. <https://doi.org/10.14254/2071-789X.2016/9-1/12>
- ETF - European Training Foundation. (2019a). *Tornio Process 2018–2020. Ukraine. National report*. [https://openspace.etf.europa.eu/sites/default/files/2019-10/TRPreport\\_2019\\_Ukraine\\_EN.pdf](https://openspace.etf.europa.eu/sites/default/files/2019-10/TRPreport_2019_Ukraine_EN.pdf)
- ETF - European Training Foundation. (2019b). *Ukraine. Education, training and employment developments 2018*. [https://www.etf.europa.eu/sites/default/files/document/Country%20fiche%202019\\_Ukraine.pdf](https://www.etf.europa.eu/sites/default/files/document/Country%20fiche%202019_Ukraine.pdf)
- ETF - European Training Foundation. (2020). *Work-based learning in Ukraine – Factsheet*. <https://euneighbourseast.eu/news/publications/work-based-learning-in-ukraine-factsheet/>
- Farla, T. (2000). *Transnational analysis of vocational education and training in the new independent states and Mongolia*. ETF Report.
- Friedman, O., & Trines, S. (2019). *Education in Ukraine*. *World education news and reviews*. <https://wenr.wes.org/2019/06/education-in-ukraine>
- FEFT UA - Friedrich Ebert Foundation Representation in Ukraine. (2020). *Analytical report "Employers' opinions on dual education". Based on the results of a study of employers' awareness of dual education and experience in participating in a pilot project to implement it at the level of professional pre-university and higher education in Ukraine [Analitichnyi zvit «Dumky robotodavtsiv pro dualnu osvitu». Za rezultatsy doslidzhennia obiznanosti robotodavtsiv pro dualnu formu zdobuttia osvity ta dosvidu uchasti u pilotnomu proiekti iz yii zaprovadzhennia na rivni fakhovoi peredvyshchoi ta vyshchoi osvity Ukrainy]*. <https://library.fes.de/pdf-files/bueros/ukraine/16664.pdf>
- Glowka, D. (1970). Numerus Clausus. Darstellung eines Problems am sowjetischen Beispiel. *Osteuropa*, 20(11), 751–775.
- Glowka, D. (1986). Problems of access to higher education in the USSR. In J. J. Tomiak (Ed.), *Western perspectives on Soviet education in the 1980s* (pp. 123–137). Palgrave Macmillan. [https://doi.org/10.1007/978-1-349-07179-1\\_7](https://doi.org/10.1007/978-1-349-07179-1_7)
- Hellwig, W., & Lipenkowa, J. (2007). Ukraine. In W. Hörner (Ed.), *The education systems of Europe* (pp. 808–825). Springer. [https://doi.org/10.1007/1-4020-4874-2\\_50](https://doi.org/10.1007/1-4020-4874-2_50)
- Helmert, G. (1994). *Schule unter Stalin 1928 bis 1940. Über den Zusammenhang von Massenbildung und Herrschaftsinteressen*. Harrassowitz.
- Klein, E. (2018). *Bildungskorruption in Russland und der Ukraine. Eine komparative Analyse der Performanz staatlicher Antikorruptionsmassnahmen im Hochschulsektor am Beispiel universitärer Aufnahmeprüfungen*. Ibidem-Verlag.
- Kremen, V. G., & Nikolajenko, S. (2006). *Higher education in the Ukraine*. Cepes. <https://unesdoc.unesco.org/ark:/48223/pf0000146552>
- Melnyk, O. (2017). *Profesiyna pidhotovka vykladachiv ekonomichnykh dystsyplin u vyshchyykh navchal'nykh zakladakh [Training of business teachers for vocational schools at higher education institutions in Germany]*. Unpublished dissertation. Kyiv National Economic University named after Vadym Hetman.
- Melnyk, O. (2021). Historical-cultural dimension of VET in Ukraine. In P. Eigenmann, P. Gonon & M. Weil (Eds.), *Opening and extending vocational education* (pp. 99–131). Peter Lang.
- MES - Ministry of Education and Science of Ukraine. (2017–2019). *Vocational education and training*. <https://mon.gov.ua/eng/tag/profesiyno-tekhnichna-osvita>

- MES - Ministry of Education and Science of Ukraine (MES), & Institute of educational analytics. (2021). *Education in the independent Ukraine: development and competitiveness [Osvita v nezalezhnii Ukraini: rozvytok ta konkurentospromozhnist]*. <https://mon.gov.ua/storage/app/media/zagalna%20serednya/serpneva-konferencia/2021/19.08/Inform.zbirnyk-Osv.v.nezalezhniy.Ukrayini/Inform.zbirnyk-Osv.v.nezalezhniy.Ukrayini.17.08-1.pdf>
- MES - Ministry of Education and Science of Ukraine. (2022, December 19). *MES board approves conceptual framework for human capital development in vocational education [Kolehiia MON skhvalyla kontseptualni zasady rozvytku liudskoho kapitalu u sferi profesiinoi osvity]* [Press release]. <https://mon.gov.ua/ua/news/kolegiya-mon-shvalila-kontseptualni-zasadi-rozvytku-lyudskogo-kapitalu-u-sferi-profesijnoyi-osviti>
- Pennar, J., Bakalo, I. I., & Bereday, G. Z. F. (1971). *Modernization and diversity in Soviet education. With special reference to nationality groups*. Praeger Publishers.
- Pohorila, N. (2011). Graduates' aspirations toward social advancement in Georgia and Ukraine. *International Journal of Sociology*, 41(4), 79–98.
- Popovych, E., & Levin-Stankevich, B. L. (1992). *The Soviet system of education*. AACRAO American Association of Collegiate Registrars and Admissions & NAFSA - Association of International Educators.
- Prytomanov, S., Kolyshko, R., & Garmash, A. (2018). Modern educational reforms and their impact on the labour market in Ukraine. Employer attitudes. In T. Deissinger & V. Braun (Eds.), *Improving Teacher Education for Applied Learning in the Field of VET* (pp. 29–72). Waxmann.
- Raimondos-Møller, E. (2009). Technical and vocational education. In Nordic Recognition Network (Ed.), *The educational system of Ukraine* (pp. 15-18). <https://norric.org/wp-content/uploads/NORRIC-Ukraine-Report-March2009.pdf>
- Roberts, K., Fagan, C., Tarkhnishvili, L., Ivaschenko, E., & Abidekian, A. (2000). Employment and social mobility: Evidence from Armenia, Georgia and Ukraine in the 1990s. *European Journal of Education*, 35(1), 125–136.
- Rumyantseva, N. L., & Logvynenko, O. I. (2018). Ukraine: Higher education reforms and dynamics of the institutional landscape. In J. Huisman, A. Smolentseva & I. Froumin (Eds.), *25 years of transformations of higher education systems in post-soviet countries. reform and continuity* (pp. 407–433). Palgrave Macmillan.
- Savelyev, A. Y., Zuyev, V. M., Galagan, A. I., & Yagodin, G. A. (1990). *Higher education in the USSR*. Cepes. <https://unesdoc.unesco.org/ark:/48223/pf0000090711>
- Scharff, R. (1977). Studium und Berufswahl sowjetischer Studenten. *Osteuropa*, 27(6), 502–517. <http://www.jstor.org/stable/44908320>
- Schmidt, G. (1973). Die Verbindung von allgemeiner und beruflicher Bildung – ein zentrales Problem sowjetischer Bildungspolitik. *Bildung und Erziehung*, 26, 385–402.
- State Statistics Service of Ukraine. (2022a). *General secondary and vocational education in Ukraine: Vocational education institutions (1990-2021) [Sahalna serednja ta profesijna (profesijno-technitschna) osvita w Ukrajini. Saklady profesijnoji (profesijno-technitschnoji) osvity (1990-2021)]*. State Statistics Service of Ukraine. <https://ukrstat.gov.ua/>
- State Statistics Service of Ukraine. (2022b). *Higher education institutions (1990-2021) [Zaklady vyshchoi osvity(1990-2021)]*. State Statistics Service of Ukraine. <https://ukrstat.gov.ua/>
- Suprun, V., Karbysheva, V., Lokshyna, O., Lutsкая, A., Scherbak, L., Scherbak, O., & Lynnyk, I. (2012). *Torino Process in Ukraine. Analysis of the system of vocational education and training in Ukraine in the framework of the “Torino Process”*. European Training Foundation, Lokshyna, O. (Ed.).

- [https://www.etf.europa.eu/sites/default/files/m/7C714C06F59A75E7C1257B5C00283911\\_TRP%202012%20Ukraine\\_EN.pdf](https://www.etf.europa.eu/sites/default/files/m/7C714C06F59A75E7C1257B5C00283911_TRP%202012%20Ukraine_EN.pdf)
- Tatur, M. (1977). Bildung und Qualifikation. Zum Verhältnis von allgemeiner und beruflicher Bildung in der Sowjetunion. *Osteuropa*, 27(10), 879–897.
- Tūtlys, V., Bukantaitė, D., Melnyk, S., & Anužis, A. (2021). The institutional development of skills formation in Lithuania and Ukraine: Institutional settings, critical junctures and policy transfer. *Research in Comparative and International Education*, 16(4), 405–432. <https://doi.org/10.1177/17454999211057448>
- UNESCO. (2008). National report on the development of education. *48th session of the International Conference on Education*, ICE: „Inclusive Education: The Way of the Future“, November 25–28, 2008, Geneva.
- UNESCO Institute of Statistics. (2013–2020). “Education. Completion. Completion and graduation ratios: Completion rate for upper secondary education (household survey data), both sexes.” Accessed June 25, 2020. <http://data.uis.unesco.org/>
- Wiessner, R. (1963). *Die Berufsbildung in der Sowjetunion. Kurzer Abriß der Berufsausbildung der Jugend und der Qualifizierung der Werktätigen*. Volk und Wissen Volkseigener Verlag.
- Želudenko, M., & Sabitowa, A. (2015). Ukraine. In W. Hörner, H. Döbert, B. von Kopp & W. Mitter (Eds.), *The education systems of Europe* (pp. 851–868). Springer.
- Zimmermann, G., & Schwajka, O. (2018). “Ukraine. Daten und Analysen zum Hochschul- und Wissenschaftsstandort 2018.” Accessed March 1, 2023, [https://static.daad.de/media/daad\\_de/pdfs\\_nicht\\_barrierefrei/laenderinformationen/eur opa/bsa\\_report\\_long\\_ukraine.pdf](https://static.daad.de/media/daad_de/pdfs_nicht_barrierefrei/laenderinformationen/eur opa/bsa_report_long_ukraine.pdf)
- Zinser, R. (2015). Analysis of VET in Ukraine since the Soviet era. *Education and Training*, 57(6), 685–701. <http://dx.doi.org/10.1108/ET-09-2014-0114>

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Brescianini, F. (2023). Promoting citizenship competence in Italian vocational education and training through assessment. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 78–86). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7808336>

## Promoting Citizenship Competence in Italian Vocational Education and Training through Assessment

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### Abstract

European VET is becoming increasingly important in promoting inclusiveness, social justice, and democratic citizenship. “Citizenship competence”, which has been recently introduced in Italian initial VET (iVET), can contribute to the pursuit of these objectives.

Based on the assumption that assessment can be formative and thus can help to improve learning processes, this research aims to develop an *ad hoc* assessment tool for Citizenship competence in Italian iVET inspired by formative assessment principles.

The research methodology adopts a mixed methods perspective. The first qualitative phase aimed at understanding iVET institution’s characteristics, needs, and objectives and teaching strategies related to Citizenship competence. Next, based on these data, the quantitative phase aimed to develop and validate a set of standardized assessment instruments.

Despite data from the quantitative instruments still being analyzed, the exploratory phase provided meaningful data on how iVET teachers are promoting Citizenship competence and the role of citizenship education in Italian iVET.

### Keywords

civic and citizenship education, vocational education and training, competency-based assessment, soft skills, measuring instrument

### 1 Introduction

In recent years, there has been an increasing assignment of non-vocational objectives to European VET, such as promoting inclusiveness, equal opportunities, social justice, and democratic citizenship (Council of the European Union, 2020a; 2020b). The introduction of “Citizenship competence” in the Italian initial VET (iVET) curriculum represents a significant change toward these outcomes. Assuming that assessment can be formative (Black & Wiliam, 1998), the present research aims to support the iVET capacity to promote active and democratic citizenship through the development of a Citizenship competence assessment tool. The research question is: *is it possible to develop a Citizenship competence assessment tool that can consider both iVET institutions’ regulations and needs as well as pedagogical principles such as formative assessment?*

The research design adopts a mixed methods perspective: an exploratory design with sequential steps (Ponce & Pagán-Maldonado, 2015). The first exploratory-qualitative phase aimed to lay out the object of research and the variables to be inquired. The second step, mostly



quantitative, consisted in designing an assessment tool for Citizenship competence validated through the administration to a sample of  $n \approx 500$  students in 2 iVET institutions in Italy.

The exploratory phase's results suggest that iVET institutions have always been attentive to the issue of civic education. The introduction of Citizenship competences did not have a strong impact on teachers' teaching strategies, except for the assessment which has been reported as problematic.

Moreover, teachers' efforts focus mainly on promoting the principles and values of the national Constitution and this is done through classroom debate, which is considered engaging and promotes dialogue between different points of view on political, social, and cultural issues.

The assessment tool validation will provide data on the Citizenship competences of Italian iVET students and possible correlations between competence levels and background variables.

Although data from the quantitative step of the research are still being analyzed, the exploratory phase highlighted some interesting aspects of how iVET teachers are promoting Citizenship competence in their teaching and the role of citizenship education in Italian iVET.

## **2 The role of Vocational Education and Training in the education of citizens**

Vocational Education and Training (VET) is defined as all education and training which aims to equip people with knowledge, know-how, skills, and competences required in a certain job or, more broadly, in the labor market (CEDEFOP, 2014). Despite this explicit purpose of VET, in recent years many policy guidelines also assigned to VET a role in fostering inclusiveness, equal opportunities, resilience, and social fairness (Council of the European Union, 2020a) as well as strengthening democratic citizenship (Council of the European Union, 2020b). This has been considered important according to VET stakeholders and experts as well, as highlighted by a CEDEFOP questionnaire in which respondents stated that the most desirable characteristic of VET in 2035 should be the capacity to prepare students to fully participate in society and to become active citizens. (CEDEFOP, 2020).

In the field of the European key competences for lifelong learning, Citizenship competence is the most closely connected to the idea of active and democratic citizenship, being also considered a prerequisite for social transformation, as it is defined as the ability to act as responsible citizens and to fully participate in civic and social life, to develop a more democratic, sustainable, and inclusive society (Council of the European Union, 2018).

Developing Citizenship competence in VET learners appears urgent considering that citizenship education is less developed in the VET curriculum than in the general education curriculum in most European countries (European Commission/EACEA/Eurydice, 2017).

In such a scenario, the introduction of "Citizenship competence" in Italian initial VET (iVET) in 2019 represents a significant change in terms of promoting a more democratic and sustainable society. iVET paths in Italy primarily aim to equip students from grade 9 to grade 12 with skills for the labor market, but also to develop basic competences that enable the fulfillment of mandatory education. Since 2019, Citizenship competence is part of such basic competences.

In iVET teaching is organized into subjects and each subject plays a role in developing one or more competences. Having a certain amount of autonomy, institutions can decide if Citizenship competence must be developed within subjects with a similar knowledge domain (like first language, history, etc.) or if it has to be taught through a dedicated discipline.

Italian iVET also presents some characteristics that make the introduction of Citizenship competence not only appropriate but also urgent: 14.7 percent of pupils have a migratory background (against national data of 7.3 percent for upper secondary school) and 7.6 percent have disabilities (against a national figure of 2.6 percent) (MIUR, 2019a; 2019b). In addition, iVET is more attractive to students at risk of dropping out of school and with failures in previous school paths (ISFOL, 2014).

These data raise the urgency for reflection and the development of teaching practices focused on citizenship, inclusion, and diversities in VET. The introduction of Citizenship competence is worthy but, given the issues related to competence assessment that will be explored, call for the support of educational research.

### **3 The assessment of citizenship competences**

#### **3.1 Citizenship competences**

The concept of citizenship competences has only recently spread in academic literature. However, despite a growing debate on these competences, there is no agreement on a common definition of them (Torney-Purta et al., 2015).

Another problem with citizenship competences is their overlapping with the concept of key competences (Losito, 2015), sometimes defined as soft skills or transversal competences. Regardless of how they are defined, the distinctive feature of key competences is that they do not refer to specific tasks and are useful in any professional or life context (Pellerey, 2017). Another feature that characterizes such competences is that they are usually identified in institutional frameworks (Curtis, 2010). Since soft skills are useful in any life context, all of them could be considered citizenship competences, given that "to be a citizen" is something related to all areas of an individual's life. A possibility to overcome this problematic overlap is the identification – among soft skills – of competences more directly definable as citizenship competencies (Losito, 2009, p. 107) and which can be defined as citizenship-specific competencies (Losito, 2014, p. 67). It is also notable that some works that focus on soft skills encompass citizenship competences as well, identifying them as a specific competence sub-domain (Binkley et al., 2012; Kechagias, 2011).

There are also various frameworks developed by international organizations that aim to define learning objectives related to the specific area of citizenship education. These objectives are defined as sets of knowledge, skills, attitudes, and values related to participation in civic and social life in democratic societies (Council of Europe, 2018; OECD, 2018; UNESCO, 2015). It is noteworthy that some of these international institutions have also developed frameworks for transversal competences, but they have developed specific frameworks for citizenship competencies anyhow, in line with the perspective that considers them as a sub-domain of transversal competences.

#### **3.2 Assessment of transversal and citizenship competences**

Considering citizenship competences as transversal ones helps in addressing their assessment. Even if there is a small number of principles recognized for the assessment of transversal competences (Binkley et al. 2012), this can help to broaden the tools used to assess citizenship competences, which would benefit from an expansion in instruments' scope and modes of assessment (Daas et al., 2016).

It is recognized that transversal competences assessment should be tackled through an integrated and holistic approach, meaning that different tools pertaining to different assessment paradigms must be employed (Kechagias, 2011; Luppi & Bolzani, 2019). What is crucial is not the simple application of standardized assessment methods, but rather the definition of the learning objectives and the adoption of multiple methods for their assessment (Curtis, 2010).

This "holistic" approach must integrate with some of the principles considered effective in the more general field of competence assessment, such as the principle of triangulation (Pellerey, 2004), which involves, given the impossibility of observing a competency as a whole and only being able to infer its presence through the observation of a few manifest elements, also the integration of different points of view: subjective point of view (self-assessment);

intersubjective point of view (e.g., peer assessment); and objective point of view (performance assessment). This principle is well suitable for citizenship education (Castoldi, 2022).

Moreover, citizenship competences assessment methods should converge toward a formative perspective (Gibb, 2014), which implies engaging the concept of formative assessment. Formative assessment can be broadly defined as using assessment as a tool to gain evidence that teachers can use to improve their teaching (Black & Wiliam, 2009). It is recognized that the use of formative assessment strategies (such as providing feedback or activating students as owners of their learning) can have a positive impact on learning (Black & Wiliam, 1998) making assessment an integral part of the teaching-learning processes. This means that, in the context of Italian iVET, the innovation of Citizenship competence assessment in a formative perspective could strengthen the ability of iVET institutions to promote active and democratic citizenship among their students.

## **4 Strengthening citizenship education in VET through assessment: an empirical research**

### **4.1 Research design**

As part of a doctoral program in Education studies, the research presented here aims to develop a set of assessment tools for Citizenship competence in Italian iVET.

The research design follows a mixed methods perspective. This perspective does not only refer to the combined use of tools pertaining to different traditional research paradigms (positivism/post-positivism and constructivism) but in recent years has reached the status of a specific approach to research inspired by pragmatism (Johnson et al., 2007; Johnson & Onwuegbuzie, 2004). Pragmatism's essential principle in methodology consists in adopting, from time to time, the most appropriate tool (the one "that works") for investigating single aspects of the research object without establishing in advance a rigid methodological design (Teddlie & Tashakkori, 2009).

The present research design is an *exploratory design using sequential phases*, consisting of an exploratory phase characterized by the prevalent use of qualitative tools followed by a deepening phase in which quantitative methods prevail (Ponce & Pagán-Maldonado, 2015).

The first phase is aimed at reconstructing the experience of people who work in the contexts have in relation to the phenomenon under examination. The data analysis then provides the cues needed to formulate the operational definition of the constructs and build quantitative tools aimed to detect them (Trinchero & Robasto, 2019).

Since Citizenship Competence is a policy novelty that needs to be translated into educational practice, it was decided to start with professionals who operate in training institutions and to investigate their awareness, perspectives, and needs regarding this competence.

The exploratory phase was then carried out with the administration of interviews with two key actors belonging to two different training institutions selected with a non-probabilistic random sampling. Two figures (one per institution) who cover both roles of teaching and coordination were identified. Interviews analysis was done through deductive – or *a priori* – analysis (Bingham & Witkowsky, 2022) which revealed the need to deepen the assessment of Citizenship competence.

The exploratory phase of the study continued with a second series of interviews involving two teachers of the same iVET institutions to gain information on the teaching and assessment practices currently in use and to identify what is considered more important and pursued with greater awareness by the institutions concerning the promotion of citizenship competence. This was done because, although official guidelines state attitudes, skills, and knowledge related to citizenship competence, it is not necessarily the case that all these objectives are actively

pursued in practice. Moreover, information about teaching can help to develop assessment strategies that could better suit the classroom routine.

Based on the results of the exploratory phase interviews, it was decided to develop an assessment tool for Citizenship competence. Specifically, the tool aims to combine, on one hand, teachers' needs and normative guidelines' educational objectives, and on the other hand, some principles recognized as necessary for the assessment of soft skills. The research questions the feasibility of an assessment tool able to address all the previously mentioned issues.

An assessment framework has been developed (see Table 1). The framework includes two dimensions of competence (attitudes and skills/competences) paired with the tools to be used to assess them and a content domain that specifies the subject matter to be assessed. As teachers stated that Constitution's values and principles are the main educational objectives, the first part of the Italian Constitution has been analyzed through thematic analysis (Miles et al., 2014); this process led to identify three main themes, which constitute the three dimensions of the content domain: "democracy and equality"; "freedom and fundamental rights"; "civic-mindedness and solidarity".

**Table 1**

Assessment framework for Citizenship competence in Italian iVET

Competence dimension	Assessment tool	Content domain		
		Democracy and equality	Freedom and fundamental rights	Civic-mindedness and solidarity
Attitudes	Questionnaire (n. of items)	7	6	7
Skill Competence	/ Rubric (holistic) (n. of criteria)	1	1	1

The first competence dimension is attitudes. To address this dimension a student self-assessment questionnaire has been developed, with 20 items covering the three content domain's dimensions: 7 items for "democracy and equality", 6 items for "freedom and fundamental rights" and 7 items for "civic-mindedness and solidarity". The questionnaire aims to measure students' attitudes toward Constitution's principles and values and allow to address the subjective point of view of assessment triangulation.

The second competence dimension to be assessed focuses on the coherence between students' behavior and the values they expressed in the three dimensions of the content domain and thus it can be assessed by teachers' observations. This dimension is conceptualized as in between skill and competence because it can be considered as a skill due to its observability and its being representative of a "being able to", however, it is impossible to cut off the mere ability from the whole competence: to behave consistently with Constitution's values and principles involve multiple meta-cognitive and affective subject's resources. The assessment tool is a holistic rubric (Brookhart, 2013) with a single criterion for each content domain and it can be filled by teachers referring to observed students' behaviors during classroom spontaneous or organized debates.

The tryout of the tools has been carried out by administering them in two classes of both iVET institutions. After the tryout, meetings with teachers were held to check the comprehensibility of the tools, suitability, and practicability in the context, as well as to gather any opinions from the teachers. To respond to some issues raised by teachers after the tryout, the questionnaire's items were simplified in their wording and a box has been added to the rubric so teachers can signal to the researcher when a student does not have sufficient language proficiency to properly understand the questionnaire, while still allowing him or her the

freedom to fill in order to avoid the occurrence of stigmatizing situations. After the tryout, a user manual containing guidance on assessment, competences assessment, formative assessment, and tools administration guidelines has been prepared, delivered, and explained to teachers before administration.

The administration began in January 2023 and is expected to be completed by the end of February 2023. In the first institution, where Citizenship competence is developed within other subjects, the administration is carried out by 10 teachers in 12 classes. In the second institution, where Citizenship competence is developed by a dedicated subject called “citizenship”, the administration is carried out by a single teacher in 12 classes. Classes from all years of study and vocational paths are participating in the study and the total number of students involved is expected to be approximately 500.

Data from the questionnaire will be subjected to item analysis. Overall internal consistency will be tested, as well as the correctness of hypothesized content domain dimensions through exploratory factorial analysis. Additional analysis will consist in measuring the possible correlation between the questionnaire and rubric results. Finally, possible correlations between results and background variables such as age, gender, year of course, and the professional path will be considered.

## 4.2 First results

The exploratory-qualitative phase has been completed. In particular, the analysis of the first series of interviews brought out two main issues.

The first is that key actors claim to be aware of the centrality of citizenship education in their working contexts. They said that students who enroll in iVET courses failed in other school paths, distrust educational institutions, oppose the rules, present heterogeneous ethnic-cultural backgrounds, and are in conditions of socioeconomic fragility. In this context, trainers always – even before the introduction of Citizenship competence – paid great attention to personal, social, and civic education.

The second key element is that, even if the new normative guidelines involved some adjustment in teaching practices, the issue perceived as problematic is about “how to assess” Citizenship competence. Adequate assessment strategies have not been introduced, on the one hand, because teachers are in a phase of transition, so a reflection and practice on the assessment of Citizenship competence have not yet been undertaken, and on the other hand, because there is a certain skepticism about the very possibility of assessing a construct with such blurred contours.

Regarding the educational objectives that teachers claim to be most important, the analysis of the second series of interviews suggested the “capacity to behave accordingly to national Constitution’s values and principles” (as stated in guidelines for Citizenship competence). This is considered the starting point for all the other Citizenship education learning goals, claimed as “too ambitious” for the socio-economic and cultural characteristics of most of the students enrolled in the courses. Teachers claimed that they not only want their students to know these values and principles, but they want to ensure students to “embrace” them. The educational activity perceived as most effective in this regard is the “classroom debate”: it often arises spontaneously starting from the topics considered important by the students, it is engaging and allows different points of view to dialogue on political, social, and cultural issues.

As data emerged from the tryout, it is possible to report that, while filling out the questionnaire, many students asked for clarification of some concepts and some moments of debate occurred. This is interesting because carries out some formative functions of the assessment: on the one hand, it makes teachers reflect on topics they take for granted (e.g., equality), and on the other hand, stimulates debate and reflection among students on citizenship issues.

## 5 Further developments

Once the standardized tools are validated, they will be enriched with other assessment strategies based on the teaching activities that use the results of the questionnaires and rubrics as a starting stimulus, thus integrating quantitative and qualitative assessment tools. Consistently with the teaching activities already in use, one could, for example, propose debate-based assessment strategies (Council of Europe, 2021).

Finally, once all the tools are validated, they will form a single assessment device that will be delivered by the teachers who participated in the study and that can be used by them to improve assessment and consequently the promotion of Citizenship Competence in their iVET institutions.

## References

- Bingham, A. J., & Witkowsky, P. (2022). Deductive and Inductive Approaches to Qualitative Data Analysis. In C. Vanover, P. Mihas & J. Saldaña (Eds.), *Analyzing and Interpreting Qualitative Research: After the Interview* (pp. 133–146). Sage.
- Binkley, M., Erstad, O., Herman, J., Raizen, S., Ripley, M., Miller-Ricci, M., & Rumble, M. (2012). Defining Twenty-First Century Skills. In P. Griffin, B. McGaw & E. Care (Eds.), *Assessment and Teaching of 21st Century Skills* (pp. 17–66). Springer. [https://doi.org/10.1007/978-94-007-2324-5\\_2](https://doi.org/10.1007/978-94-007-2324-5_2)
- Black, P., & Wiliam, D. (1998). Assessment and Classroom Learning. *Assessment in Education: Principles, Policy & Practice*, 5(1), 7–74. <https://doi.org/10.1080/0969595980050102>
- Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability*, 21(1), 5–31. <https://doi.org/10.1007/s11092-008-9068-5>
- Brookhart, S. M. (2013). *How to Create and Use Rubrics for Formative Assessment and Grading*. ASCD.
- Castoldi, M. (2022). *Promuovere la cittadinanza attiva. Proposte per insegnare educazione civica* [Promoting active citizenship. Proposals for teaching civic education]. Carocci.
- CEDEFOP (2014). *Terminology of European education and training policy. A selection of 130 key terms* (2nd ed.). Publications Office of the European Union. <https://doi.org/10.2801/15877>
- CEDEFOP (2020). *Vocational education and training in Europe, 1995-2035: scenarios for European vocational education and training in the 21st century*. Publications Office of the European Union. <https://doi.org/10.2801/794471>
- Council of Europe. (2018). *Reference framework of competences for democratic culture. Volume I: Context, concepts and model*. Council of Europe Publishing.
- Council of Europe. (2021). *Assessing competences for democratic culture: principles, methods, examples*. Council of Europe Publishing.
- Council of the European Union (2018). *Council recommendation of 22 May 2018 on key competences for lifelong learning*.
- Council of the European Union (2020a). *Council recommendation of 24 November 2020 on vocational education and training (VET) for sustainable competitiveness, social fairness and resilience*.
- Council of the European Union (2020b). *Osnabrück Declaration on vocational education and training as an enabler to recovery and just transitions to digital and green economies*.
- Curtis, D. D. (2010). *Defining, assessing and measuring generic competences* [Doctoral dissertation, Flinders University of South Australia]. Flinders University Library. <https://theses.flinders.edu.au/view/78f1f4a4-27c7-454f-9ba3-106610c874ba/1>

- Daas, R., ten Dam, G., & Dijkstra, A. B. (2016). Contemplating modes of assessing citizenship competences. *Studies in Educational Evaluation*, 51, 88–95. <https://doi.org/10.1016/j.stueduc.2016.10.003>
- European Commission/EACEA/Eurydice. (2017). Citizenship Education at School in Europe – 2017. Publications Office of the European Union. <https://doi.org/10.2797/536166>
- Gibb, S. (2014). Soft skills assessment: Theory development and the research agenda. *International Journal of Lifelong Education*, 33(4), 455–471. <https://doi.org/10.1080/02601370.2013.867546>
- ISFOL. (2014). *Gli allievi di origine straniera nella IeFP: percorsi, inclusione ed occupabilità* [Foreign-born learners in VET: pathways, inclusion and employability]. ISFOL.
- Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed Methods Research: A Research Paradigm Whose Time Has Come. *Educational Researcher*, 33(7), 14–26. <https://doi.org/10.3102/0013189X033007014>
- Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a Definition of Mixed Methods Research. *Journal of Mixed Methods Research*, 1(2), 112–133. <https://doi.org/10.1177/1558689806298224>
- Kechagias, K. (2011). *Teaching and Assessing Soft Skills*. Measuring and Assessing Soft Skills Report (MASS) project.
- Losito, B. (2009). La costruzione delle competenze di cittadinanza a scuola: non basta una materia [Building citizenship competences at school: a subject is not enough]. *Cadmo*, (1), 99–112. <https://doi.org/10.3280/CAD2009-001013>
- Losito, B. (2014). Educazione alla cittadinanza, competenze di cittadinanza e competenze chiave. [Citizenship education, citizenship competences and key competences]. *Scuola democratica*, 4(1), 53–72. <https://doi.org/10.12828/76518>
- Losito, B. (2015). Si possono valutare le competenze di cittadinanza? [Can citizenship competences be assessed?]. *Rivista Dell'Istruzione*, 31(1-2), 99–104.
- Luppi, E., & Bolzani, D. (2019). The assessment of transversal competences in entrepreneurship education. In A. Fayolle, D. Kariv & H. Matlay (Eds.), *The Role and Impact of Entrepreneurship Education* (pp. 202–223). Edward Elgar Publishing. <https://doi.org/10.4337/9781786438232>
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative Data Analysis: A Methods Sourcebook* (3rd ed.). Sage.
- MIUR. (2019a). *Gli alunni con cittadinanza non italiana - a.s. 2017/2018* [Pupils with non-Italian citizenship - s.y. 2017/2018]. Gestione patrimonio informativo e Statistica.
- MIUR. (2019b). *I principali dati relativi agli alunni con disabilità per l'a.s. 2017/2018* [Key data on pupils with disabilities for the 2017/2018 school year]. Gestione patrimonio informativo e Statistica.
- OECD. (2018). *Preparing Our Youth for an Inclusive and Sustainable World: The OECD PISA Global Competence Framework*. OECD Publishing.
- Pellerey, M. (2004). *Le competenze individuali e il Portfolio* [Individual competences and the Portfolio]. La Nuova Italia.
- Pellerey, M. (2017). *Soft Skill e orientamento professionale* [Soft Skill and vocational guidance]. Cnos-Fap.
- Ponce, O. A., & Pagán-Maldonado, N. (2015). Mixed Methods Research in Education: Capturing the Complexity of the Profession. *International Journal of Educational Excellence*, 1(1), 111–135.
- Teddlie, C., & Tashakkori, A. (2009). *Foundations of Mixed Methods Research: Integrating Quantitative and Qualitative Approaches in the Social and Behavioral Sciences*. Sage.
- Trinchero, R., & Robasto, D. (2019). *I mixed methods nella ricerca educativa* [Mixed methods in educational research]. Mondadori Università.

- Torney-Purta, J., Cabrera, J. C., Roohr, K. C., Liu, O. L., & Rios, J. A. (2015). *Assessing Civic Competency and Engagement in Higher Education: Research Background, Frameworks, and Directions for Next-Generation Assessment*. ETS Research Report Series. <https://doi.org/https://doi.org/10.1002/ets2.12081>
- UNESCO. (2015). *Global citizenship education: topics and learning objectives*. UNESCO.

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## **Challenges and Helpful Conditions for Vocational Teachers in Europe. Findings from the “VETteach” Project**

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### **Abstract**

This study, conducted by the IBP at the University of Rostock and partners with responsibility for VET teacher education in an Erasmus+ project, aimed to identify challenges faced by these teachers and analyze similarities and differences in their qualifications across Finland, Norway, Spain, Sweden, Switzerland, and Germany. Using a quantitative survey, the study collected responses from 824 participants, including 389 VET teachers. The results showed that teachers from different countries face varying challenges depending on their vocational education systems. Key findings include the higher prevalence of "students with challenges" as a concern among German and Spanish teachers compared to their Nordic counterparts, and a lack of motivation among students in school-based training systems (Norway, Spain, and Sweden). Across all countries, teachers complained about a lack of resources, such as time for preparation and follow-up, staff shortages, and inadequate technical equipment. Additionally, teachers across the countries reported difficulties in staying up to date with market developments. These findings emphasize the need to better prepare vocational teachers for diverse challenges and adapt teacher training to address them. This includes linking theory and practice through school-company networks, enabling teachers to stay current with industry developments, and providing sufficient resources. Systemic steps are also needed to support vocational education, such as adequate financial resources. The study's results provide a basis for further research and can inform strategies for improving vocational teacher training across European countries.

### **Keywords**

VET-teacher, innovation, comparative study, teacher training improvement, challenges and opportunities



## 1 Context

High-quality initial training of future teachers and trainers in vocational education and training and their continuous professional development is a prerequisite and guarantee for successful vocational education and training. Considering the manifold challenges faced by VET personnel, the VET providers need to find answers on how to organize best their initial and continuing training (Cedefop, 2016).

For this reason, the Institute for Vocational Education and Training at the University of Rostock, under the responsibility of Prof. Dr. Franz Kaiser, cooperated over a period of two years with several universities that offer academic studies for vocational teaching professions to analyze the challenges vocational schoolteachers are facing. The partner countries are Finland (Haaga-Helia University of Applied Sciences, Helsinki), Norway (Oslo Metropolitan University - OsloMet), Spain (University of Valencia) and Sweden (University of Linköping) as well as the associated partners from Switzerland (University of Applied Sciences Northwestern Switzerland and University of Teacher Education Bern) (Hoppe & Kaiser, 2021).

During the project and based on experiences with a comparative study between VET teachers in Sweden and Finland (Kaiser, 2020), the VETteach project has set the goal to identify more similarities and differences between the systems of vocational teacher qualification and the actual requirements for vocational teachers in everyday life. Over a period of more than 1.5 years, a project working group has developed a questionnaire to help identify these differences. The theme of the survey was the abilities, needs and difficulties of VET teachers work, and was designed as a quantitative survey.

In this paper, we will describe the context and present selected results of the study that deal with vocational teachers' challenges in functioning as a good teacher and what the teachers believe strengthens their opportunities to be innovative in their teaching.

## 2 Study method

A comparative study of Finnish and Swedish VET teachers conducted in 2019, provides a first insight on the differences in the attitudes and training paths of teachers in the two Scandinavian countries (Kaiser & Lindberg, 2019). Main findings for these two countries have been:

- Related to the strengths of the respective VET system, the Finish teachers see especially the quality and structure of the education system, like the flexible and good-structured education- and learning systems, the highly educated teachers and in the existence and transfer of practical skills. While the Swedish respondents focus on cooperation with the regional economy. Probably it also reflects the increasing importance of workplace learning in Sweden combined with the hope to get a solution to reduce youth unemployment with that approach.
- Actors in a social field of action wish for or even demand better financial support and technical equipment.

Unfortunately, the small number of interviewees did not allow generalizations to be made about the findings. Due to this, the VETteach partners decided to jointly develop a questionnaire based on this study. This questionnaire consists of three parts. In the first part, we obtained the informants' affiliation and background. Following this, in the second part, two quantitative questions had to be answered each with ten factors in a matrix. In the third and last part, we asked the informants to enter their opinions in complete sentences in response to our two open questions. The question that our informants were asked, the answers to which form the data material in the study reported in this article, is as follows: *What do you think causes trouble as a vocational teacher? Or what do you fear most? (Mention up to three topics in full sentences).*

The digital survey, which was translated into the national languages of the project partners, was designed in such a way that not only teachers, but also VET teacher students, VET school

leaders and VET teacher educators were surveyed. The study was available to the informants in the period 1 April to 7 May 2022 via the QuestBack system. During the period, we received 824 valid responses, and of these 389 VET teachers.

This sub-study covers four of the six countries Norway (n=118), Spain (n=66), Sweden (n=81) and Germany (n=24) with a total of 289 respondents. Since the data material was analysed by the project partners from the respective countries, a common code book has been elaborated. The fact that a joint survey could take place is in itself a success (Isacsson et al., 2021). In order to form the basis for a joint code book, the analysis work started with coding the answers from the Norwegian data material using an abductive analysis method (Tjora, 2018). Based on the code book, the Spanish, Swedish and German data material was analysed. In this process, the codebook was adjusted according to an abductive analysis strategy, which meant that the Norwegian data material was analyzed again. The Norwegian and Swedish data were analyzed by the article's main author, the German by the article's second author and the Spanish data by VETteach's Spanish participants.

In order to obtain comparable data, we chose to quantify the results by summing up the answers from the number of respondents who were coded under a total of 22 different codes. Of these, there were 10 codes that represent the study's findings: Resources, Teaching obligations, Subject relevance, Non-curricular requirements, Students' motivation, Students with challenges, Lack of innovation, Not be up to date, External collaboration and Adapted teaching.

Although we have a total of 289 respondents, there is a weakness through an uneven distribution of the number of respondents in the various countries, and that we have quantified what can be described as qualitative data material. For that reason, our results are not generalizable, and must be seen as the results of a limited qualitative study. Another aspect that affects the results, and thus makes direct comparisons difficult, is the different vocational educational systems in the country of the informants. The results will, however, be able to form a basis for a more comprehensive quantitative study comparing the work of vocational teachers in European countries. However, we would like to claim that we have valid results as a qualitative study, as our findings have been compiled and discussed with the before mention study (Kaiser & Lindberg, 2019).

In summary, the results presented in this paper have been prepared from an abductive analysis of part three of the study where we coded the respondents' answers, then quantified the codes to see if there were any differences between the countries.

### **3 Main findings and discussions**

"This cannot be compared because it is not the same" (Lauterbach, 2003, p. 519). This statement is already countered by Lauterbach with the argumentation "that scientific interest in knowledge can be realised through comparison as an examination of the 'other'" (Lauterbach, 2003, p. 519). It is not only within the framework of EU projects that looking beyond national borders has now become the subject of numerous publications; comparisons of educational systems as a discipline are also coming into focus. Representatives of this have already included Abel (1962), Abraham (1962), Lauterbach (1999, 2003) and Czycholl (1971, 1975) to name but a few German researchers. International comparisons have four functions, which result from the juxtaposition of "particularities/universalities" and "theoretical/practical interest": evolutionist, quasi-experimental, idiographic, meliorist function (Hörner, 2004).

The research interest within the framework of this project pursues the goal of obtaining lively reports from the respective practices of teacher education and contrasting them on the basis of the systems involved in order to work out commonalities, but also differences. The national peculiarities provide the opportunity to discover regularities in the respective context and to develop common strategies and concepts or strategies adapted to the respective national

context. The research project can thus be seen as a synoptic-idiographical analysis. The respective national contextualisation makes it possible to go beyond juxtaposition, i.e. the mere juxtaposition of facts (Lauterbach, 2003, p. 523).

As an example, we would like to refer to the following results:

1. A crucial difference can be observed in the perception of “students with challenges”. Teachers from the Nordic countries like Norway and Sweden differ much from the Central European countries such as Germany and Spain. Where respectively 9.3% and 4.3% of the Norwegian and Swedish teachers thought this was problematic, 33.3% and 25.8% of the German and Spanish teachers reported that “Students with challenges” was something they were afraid of as teachers.
2. On the other hand, it is mainly the teachers from the Scandinavian countries who report that the students, due to a lack of motivation, are a great challenge in their daily work and cause excessive workloads. As an example of this, one of the Swedish teachers says:” Disinterested students create big problems and take a lot of time and energy” (R188-Se) Example of a Norwegian VET teacher's statements that has been coded under the category Recruitment to the profession “It is also a big problem that so many do not get an apprenticeship” (R407-No). One of the Swedish teachers explains the problem in this way “The industry is changing so there are few young people who choose a craft profession, which results in us vocational teachers having to put a lot of work and resources into marketing to get students. The difficulties in getting students out for internships” (R318-Se)

The main interest of the VETteach partners in the results of this study are the derivations regarding the specifications of the study programs that prepare students for the profession of vocational schoolteacher. To this end, let us first summarize some major findings:

- Pupils with challenges represent a major challenge in the teaching profession, especially in those countries that do not have school support systems (Spain and Germany). Since Sweden and Norway have some support mechanisms in place, this is of little importance here.
- The lack of a link between vocational training and company practice, and thus to companies, leads to a lack of motivation on the part of students, especially in the school-based training systems (Norway, Spain, and Sweden), and results in other tasks for teachers, such as building networks for internships. Our finding is supported by the previously mentioned Swedish-Finnish study where the Swedish respondents are concerned with cooperation with the regional economy (Kaiser & Lindberg, 2019).
- In all four countries surveyed, teachers complained about a lack of resources. The responses coded under “resources” were respectively from Norway (26.3%), Sweden (19.8%), Spain (25.8%) and Germany (37.5%). This corresponds to one of the main findings in the Swedish-Finnish study from 2019 where informants demanded better financial support and technical equipment (Kaiser & Lindberg, 2019). These refer to a lack of time for the preparation and follow-up of lessons, as well as a lack of staff in the schools. In addition, the lack of financial resources is reflected in the technical equipment of the schools, which makes everyday life more difficult for teachers and even hinders some aspects of education.
- It was also mentioned across the countries that the teachers have difficulties to follow the developments on the market and to stay up to date.

From this, we can derive findings that go far beyond those of the countries surveyed. Teachers should be prepared for the resulting teaching requirements, despite the possible existence of school support systems. To include this in the context of a university study seems to be indispensable.

The linking of theory and practice through the connection of school and companies, either through internships or practical training phases, is essential for the motivation of the students and thus for the actual tasks of the teachers. How school-company networks can be generated, what demands are placed on them and how they can be adequately used in vocational training should be addressed as part of teacher training. The connection to practice is also important for teachers because it gives them the necessary insights into new developments and enables them to constantly renew their own professional knowledge. This requires, first and foremost, the awareness and the willingness to constantly educate oneself and to stay open minded. At the same time, even in such a study, it should not be forgotten that learning from practice depends on good theory. It is needed as a basis for reflection and is based on insights into the history, the functional mechanisms of learning and the connection between socialization and personality in addition to the professional expertise that teachers must have and must be made accessible to them in their education.

However, this must not obscure the fact that, in addition to preparing prospective vocational schoolteachers for their work in vocational schools, systemic steps are also required to bring vocational education out of its shadowy existence. Providing adequate financial resources is the most obvious of these.

The selected results presented here in brief can primarily be attributed to systemic differences (Cedefop, 2021). At the same time, they suggest that very different challenges dominate the everyday life of teachers in the different countries and place corresponding adaptation strategies and demands on the training of prospective teachers. The benefit for research and teaching remains extraordinarily high and not least also for international understanding in these unpeaceful times. "Generally speaking, educators (in the broadest sense) are best prepared for the European diversity of education and upbringing by being taught the aforementioned contingency experience of the comparative perspective" (Hörner, 2004).

## References

- Abel, H. (1962). Die Bedeutung der vergleichenden Erziehungswissenschaft für die Berufspädagogik. *Die Deutsche Berufs- und Fachschule*, 8(2), 241-253.
- Abraham, K. (1962). Die Aufgaben der vergleichenden internationalen Wirtschaftspädagogik. *Zeitschrift für Pädagogik*, 8(2), 166-178.
- Cedefop. (2016). *Professional development for VET teachers and trainers*. European Centre for the Development of Vocational Training. [https://www.cedefop.europa.eu/files/9112\\_en.pdf](https://www.cedefop.europa.eu/files/9112_en.pdf)
- Cedefop. (2021). *Spotlight on VET – 2020 compilation: Vocational education and training systems in Europe*. Luxembourg: Publications Office. Retrieved from <http://data.europa.eu/10.2801/667443>
- Czycholl, R. (1971). *Vergleichende Wirtschaftspädagogik: Möglichkeiten und Grenzen einer vergleichenden erziehungswissenschaftlichen Disziplin*. Spee.
- Czycholl, R. (1975). Vom Nutzen einer vergleichenden Wirtschafts- und Berufspädagogik. *Die Deutsche Berufs- und Fachschule*, 71(1), 3-16.
- Hoppe, M., & Kaiser, F. (2021). Comparing vet teacher education at university level in six European countries. Pathways in Vocational Education and Training and Lifelong Learning. 4th Crossing Boundaries Conference in Vocational Education and Training, April 8-9 (pp. 165-171), MuttENZ and Bern online. <https://doi.org/10.5281/zenodo.4636423>
- Hörner, W. (2004). Systemwandel und Systemvergleich: Folgen des politischen Umbruchs in Osteuropa für die Methodologie der vergleichenden Bildungsforschung. *Tertium Comparationis. Journal für International und Interkulturell Vergleichende Erziehungswissenschaft* 10(2), 177-185.

- Isacsson, A., Brevik, B., Struck, P., & Juan, A. P. (2021). The Limitations of European Comparative Studies in Vocational Education and Training Research and the Development of a Perspective to their Reduction. Pathways in Vocational Education and Training and Lifelong Learning. 4th Crossing Boundaries Conference in Vocational Education and Training, April 8-9 (pp. 172-176), Muttentz and Bern online. <https://doi.org/10.5281/zenodo.4603726>
- Kaiser, F. (2020). Academisation of the vocational school teaching profession and the genesis of vocational educational science: A historic country comparison of Sweden, Finland and Germany. In F. Kaiser & M. Götzl (Eds.), *Historische Berufsbildungsforschung. Perspektiven auf Wissenschaftsgenese und Dynamik* (pp. 47-71). Eusl Verlag.
- Kaiser, F., & Lindberg, V. (2019). Vocational teachers in the Swedish and Finnish vocational education systems. Pedagogical concerns and market demands in VET. Proceedings of the 3rd Crossing Boundaries in VET conference, Vocational Education and Training Network (VETNET), May 2-3 (pp. 301-307), Valencia University. <https://doi.org/10.5281/zenodo.2641712>
- Lauterbach, U. (1999). Theorien und Methodologien der Vergleichenden Bildungsforschung und der Vergleichen-den Berufsbildungsforschung. In U. Lauterbach (Ed.), *Internationales Handbuch der Berufsbildung* (pp. 133-240). Nomos.
- Lauterbach, U. (2003). Vergleichende Berufsbildungsforschung und Vergleichende Erziehungswissenschaft als korrespondierende Disziplin? *Zeitschrift für Berufs- und Wirtschaftspädagogik*, 99(4), 514-535.
- Tjora, A. (2018). *Qualitative Research as Stepwise-Deductive Induction*. Routledge. <https://doi.org/10.4324/9780203730072>

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## A Bootcamp as an Experiential Learning Activity for Nurturing Creative Talent: A Hong Kong Case Study

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### Abstract

A three-day bootcamp in video production was held for 82 secondary school students enrolled in the CLAP-TECH Multimedia Storytelling Applied Learning Course. The bootcamp utilized an experiential learning model to provide students with out of classroom learning. This paper uses a case study approach to explore how the bootcamp enhanced student learning. The learning objectives, activity design, and manpower/resource support are described. Teacher observations and a post-activity survey of students are used to assess results. Altogether 16 short videos were produced. Student representatives explained the ideation and challenges they faced. Survey results and observations demonstrate that the bootcamp benefited students in personal, cognitive, and social dimensions. Among these, personal development and social benefits were particularly notable. Students appreciated for the hands-on content of the bootcamp. Vocational and professional education service providers can consider designing a bootcamp as a tool to develop a specific skill within a short period of time for creativity training.

### Keywords

Experiential learning, learning outside the classroom, creative industry, creativity education

### 1 Introduction

Launched in Hong Kong in 2019, CLAP-TECH Pathway is a model of career and life development education beginning in senior secondary school, with an articulation path into a Higher Diploma in ArtTech Design. It aims to provide alternative education pathways that nurture talent for new-collar jobs currently in high demand. As part of the Jockey Club Multiple Pathways Initiative funded by the Hong Kong Jockey Club Charities Trust, CLAP-TECH Pathway involves tripartite collaboration between three parties, namely Hong Kong Baptist University, industry partners, and secondary schools in Hong Kong. An initial track in



Information and Communication Technology was launched in 2019 and a second in Creative Technology and Innovation in 2022. In August 2022, 86 secondary students participated in a three-day bootcamp in video production. Using this bootcamp as a case study, this article demonstrates how a bootcamp model can be used to enhance vocational education in the creative industry among secondary students.

CLAP-TECH Pathway is largely based upon the P-TECH (Pathways in Technology Early College High School) model initiated by IBM in 2011. First launched in the United States, the P-TECH model involves an applied education pathway from high school to an associate degree in information technology, administered in close collaboration with industry. It has been adopted in 28 countries and regions, including Australia, Singapore, South Korea, Taiwan, Thailand, United Kingdom (Litow & Kelley, 2021). CLAP-TECH also draws heavily from CLAP@JC, a 5-year programme empowering Hong Kong youth to navigate their school-to-work journey, promoting career and life development (“CLD”) competence, and providing an environment with supportive enablers and infrastructure. CLAP@JC’s CLD perspective has been blended with P-TECH’s key success factors to produce CLAP-TECH Pathway. CLAP-TECH provides a learning journey filled with skills training as well as self-understanding and goal-setting education to empower young people to be job-ready in the selected industry.

According to industry leaders in Hong Kong, there is currently high demand in the job market for creative talent with strong digital skills (Google & Ipsos, 2019). CLAP-TECH’s Creative Technology and Innovation track was introduced in January 2022 in response to this demand. The program aims to develop students’ competence in storytelling, creativity, the use of technology, and entrepreneurship. It prepares graduates to take up future jobs as content curators, business designers, and creative technologists (Chan et al., 2022). The track starts with an Applied Learning (ApL) course at the senior secondary school level titled Multimedia Storytelling. This is bridged with a self-financed Higher Diploma program offered by the Hong Kong Baptist University (Hong Kong Baptist University, 2022). An important feature of the study pathway is that industry partners support the learning of students throughout the entire journey. They participate in curriculum design and program direction as well as offering mentorships, internships and other workplace experiences. There are currently 12 industry partners collaborating with the program.

CLAP-TECH’s Multimedia Storytelling Applied Learning course has five modules: overview of multimedia storytelling, content creation, multimedia production, creativity and design thinking, and creative project for social good (Chan et al., 2022). The entire course consists of 180 contact hours, with each module requiring between 25 hours and 40 contact hours. The final module is an exercise in project-based learning, requiring students to design a multimedia storytelling piece advocating for a social cause. The teaching and learning mode for the Applied Learning course includes classroom teaching, visits to companies and cultural sites, intensive learning experiences, and guest lectures from industry partners. Mentors recruited from industry partners also meet with groups of students to provide career guidance. To support tripartite collaboration in designing and implementing the program, a Program Management Committee comprised of representatives of secondary schools, industry partners, and the project management team at the Hong Kong Baptist University was formed to lead the curriculum design and the teaching and learning practice. The first cohort of Multimedia Storytelling students in 2022 comprised 120 Form 4 students (equivalent to Grade 10 in the US system) recruited from seven secondary schools.

As part of the program’s coursework, a three-day Innovation Bootcamp in video production was held for the first cohort of Multimedia Storytelling students in August 2022. Bootcamps in the technology industry refer to intensive training courses that teach a specific skill in high demand in the job market. They usually involve a focused agenda and project-based learning that requires students engage in realistic tasks (Sey & Garrido, 2016; Iron Hack, 2022). While



adult education bootcamps are often several-month courses preparing learners directly for the job market, mini-bootcamps used in primary or secondary education are usually designed to expose young people to the realities of the technology industry and to generate interest in related careers (Sey & Garrido, 2016; World Bank, 2018). The Innovation Bootcamp took place after students had completed the first module of the course, Overview of Multimedia Storytelling. Over the course of the bootcamp, students went through the full process of producing a self-directed short video, from brainstorming and creating storylines, to shooting, and finally editing and adding post-production effects. The bootcamp was carried out in a rented facility for media production managed by the Hong Kong Federation of Youth. A total of 82 students participated.

In the remainder of this article, we first explore conceptual frameworks for understanding the mini bootcamp model of intensive experiential learning. We then discuss our research method. Next, we introduce in detail the curriculum design, content, and daily schedule of the bootcamp. Subsequently, we present and discuss the evaluation results and findings from teachers and students. Finally, we provide conclusions and recommendations for both practitioners and researchers.

## **2 Conceptual framework**

### **2.1 Experiential learning**

The bootcamp carried out as part of CLAP-TECH's Multimedia Storytelling course can be understood both in terms of experiential learning and learning outside the classroom. Experiential learning can be variously defined as "learning by doing" (Lewis & Williams, 1994) or "learning through reflection on doing" (Smith, 2016). Keaton and Tate (as cited in Kolb, 2014) characterized experiential learning as a situation where "the learner is directly in touch with the realities being studied [...] rather than merely thinking about the encounter or only considering the possibility of doing something with it" (p. 7). Hands-on experiential learning is a central component of vocational and professional education. By transitioning students from merely thinking about phenomena to actually engaging with them, it fosters the development of contextualized, applied knowledge that prepares students for the workplace.

Experiential learning in vocational education ranges from project-based learning that can be conducted in the classroom to work-based learning such as internships. The tradition of project-based learning traces its roots to Italian architectural and engineering education in the 16<sup>th</sup> century. Students in these early schools completed challenging design assignments for competitions, mimicking real competitions for commissions (Knoll, 1997). Project-based learning is better known as a component of American progressive education, heavily inspired by Dewey and his theories of experiential learning (Knoll, 1997). Independent projects where students solve practical problems have become a popular component of vocational training. On the one hand, projects allow students to apply the disparate skills that they have learned to a complete piece of work. On the other hand, they help students contextualize their learning, seeing where different pieces of knowledge fit into a larger whole (Knoll, 1997). Projects give room for students to apply their knowledge to creatively solve realistic problems. They are seen as a way to develop student initiative, creativity, and judgement (Knoll, 1997). Internships and other work-based learning experiences are also forms of experiential learning commonly deployed in vocational education. By putting learners in contact with the real world of work, these allow for "authentic learning experiences" and enhance student readiness for the school-to-work transition (Watters, Pillay, & Flynn, 2016). In Europe, the German dual model of vocational education is widely recognized as a successful model of high-quality vocational education. This model combines experiential learning in the workplace and classroom-based education (Euler, 2013; Leney & Green, 2005). Experiential learning, in all of these forms,

helps to address the gap between school-based knowledge and the knowledge required in the workplace (Kolb, 2014).

While there are many forms of experiential learning, such as apprenticeships, that are older than the modern school system itself, the major traditions of experiential learning popular today emerged as part of a revolution in educational theory and methods in the late-19<sup>th</sup> and 20<sup>th</sup> centuries (Kolb, 2014). These experiential learning movements challenged traditional forms of top-down, teacher-led classroom education. They instead promoted more learner-centered forms of education, where learners would participate in knowledge development through reflection on their own experience. By respecting the personal experience of the learner, experiential learning de-centers the “expert” and encourages dialogue between personal experience and theory or established knowledge. It emphasizes learning through dialogue between people and between different forms of knowledge. The constructive conflict that can emerge through this dialogue stimulates the development of new knowledge (Kolb, 2014). This is conducive to critical thinking and creativity. Experiential learning has been central to efforts to expand education access for people with different modes of learning, who may be less well-served by traditional education. It is particularly relevant to disadvantaged groups whose social environments condition them less for classroom or textbook modes of learning and instead encourage modes of learning sometimes characterized as “street wisdom” (Kolb, 2014). Experiential learning approaches have also been seen as important for responding to the fast-changing knowledge environment of modern society, where learners must become self-directed learners, continuously learning from their own experience (Kolb, 2014).

Kolb’s (2014) seminal experiential learning theory responds to critics who contend that experiential learning overemphasizes narrow personal experience, at the expense of the broader accumulation of knowledge contained in theory and academic knowledge. He explains the importance of experiential learning in the context of a broader theory of the learning process. In Kolb’s theory, concrete experience (CE), abstract conceptualization (AC), reflective observation (RO), and active experimentation (AE) are mutually reinforcing. Different learners have different dominant modes of grasping experience (CE or AC) and different dominant modes of acting on experiences (RO or AE), which form different Learning Styles. Rather than standing in opposition to abstract conceptualization, concrete experience is an equally important and complementary form of knowledge. It serves both as a source of abstract knowledge (through RO) and a testing ground for abstract knowledge (through AE). Kolb reconciles abstract conceptualization and concrete experience in a dialectical relationship. By doing so, he provides theoretical support for experiential learning and for integrating it with classroom learning. He also explains the importance of varied approaches to education that cater to different learning styles, with experiential learning constituting an important component of diverse learning approaches.

## **2.2 Learning outside the classroom**

Experiential learning often, but not always, takes place outside the classroom. A separate literature on Learning Outside the Classroom (LOC) highlights the value that alternative settings can have for student learning. LOC can be defined as teaching and learning that takes place outside the formal classroom context (Malone, 2008; Parr, 2020). It includes a wide range of learning experiences in both indoor and outdoor settings. These can include museums, galleries, science centers, playgrounds, the wilderness, and of course workplaces (Malone, 2008). Eschach (2007) distinguishes structured forms of LOC from spontaneous, unstructured forms of learning that happen in everyday life. He refers to the former as “non-formal learning” as opposed to spontaneous “informal learning.” Today, non-formal learning that involves structured or semi-structured activities outside of the classroom is often promoted by educators and education policymakers as a complement to classroom learning. Initiatives to promote

learning outside of the classroom include the efforts of the Council for Learning Outside the Classroom in the UK and the udeskole movement in Norway (Bolling et al., 2018).

LOC has been advocated as a means of providing students with new, exciting, and challenging experiences to aid their learning. It has been associated with a broad range of benefits, including improvements in learning motivation, learning outcomes, interpersonal skills, problem-solving and critical-thinking ability, and even mental and physical health (Malone, 2008). Eschach (2007) groups the effects of LOC into cognitive and affective aspects. Affective aspects include self-efficacy, motivation, and interest or attitude towards a topic of learning, while cognitive aspects include knowledge and thinking skills. Malone (2008), through a broad survey of the literature, identifies a more extensive set of effects. She notes that LOC can benefit students in cognitive, personal, social, emotional, and physical dimensions. The cognitive dimension includes exposure to new knowledge that might not be found in the classroom and improved critical thinking and problem-solving skills that can come from engaged experiences. The personal dimension covers changes in attitudes and values, overlapping with Eschach's affective aspect. This may include the stronger sense of social or environmental responsibility that can come with experiences in nature or the community. The social dimension includes the development of relationships and interpersonal skills through the social interactions LOC encourages. The emotional and physical dimensions include various benefits to mental and physical health. This might take place through the therapeutic effects of natural environments or the opportunities for physical activity that LOC can provide (Malone, 2008).

While some have questioned the value of LOC, there are now many studies demonstrating the positive effects of well-designed LOC for learning (Eschach, 2007; Malone, 2008). The affective or personal effects of LOC are well-demonstrated. For example, a variety of studies demonstrate the ability of out-of-classroom activities such as museum or science center visits to foster student enthusiasm for science learning and positive attitudes towards science (Finson & Enochs, 1987; Ramey-Gassert, 1997). Although studies of the effectiveness of LOC for enhancing cognitive learning outcomes are more mixed, studies have also demonstrated that out-of-school learning can enhance student achievement, as reflected in test scores (Cheong & Swee, 1987; SEER, 2005). Furthermore, LOC has been shown to stimulate critical thinking skills (Malone, 2008). Scholars note that LOC is more likely to have positive cognitive effects when it is well-linked to and complements formal classroom learning (Cheong & Swee, 1987; Eschach, 2007). In terms of social effects, in a study of a class of Danish students who spent one day a week learning in a forest, Mygind (2009) found that the out-of-classroom environment expanded children's friendship circles while also promoting more positive social interactions among students. In a large-scale study of American summer camp participants, Thurber et al. (2007) have also found that these out of school learning experiences have positive effects for the social skills and emotional health of children. The qualitative difference in the way students learn in out of classroom settings is important to note. Out-of-classroom learning has been found to stimulate more inquisitive and exploratory mindsets and more student-centered learning that strengthens different competencies than classroom education (Bolling et al., 2018).

### **3 Method: Case study**

Case study research is typically used for the exploration of *how* or *why* questions (Yin, 2009). It aims to produce comprehensive accounts of a process that allow for in-depth analysis. Case study research is particularly relevant in cases where complex contextual conditions are important and the boundaries between the phenomenon being investigated and its context are not clear-cut (Yin, 2009). The use of diverse sources of evidence to triangulate information and produce comprehensive understanding is stressed in the case study method (Yin, 2006). Rather

than seeking generalized insight based on large samples, case study research pursues generalizable insight through logical inference based on thick understanding. Case studies may be approached through pre-existing theoretical lenses, but are also valuable for allowing new insights and explanations to emerge from in-depth knowledge of the case itself (Yin, 2006).

The present study is based upon CLAP-TECH's pioneering project to develop a new alternative education pathway in Hong Kong. It adopts a case study approach in order to reconstruct how the bootcamp, as a learning activity outside the classroom within the CLAP-TECH Multimedia Storytelling curriculum, contributed to student learning. As coordinators of the Multimedia Storytelling program, the research team has comprehensive understanding of the planning and implementation of the case. Observation and a post-event survey were adopted to understand the results of the bootcamp. Specifically, an anonymous post-event survey containing 24 questions was conducted with students on the final day of the bootcamp. The survey questions covered four areas: (1) bootcamp learning environment (3 questions); (2) bootcamp content (10 questions); (3) bootcamp learning and personal development (11 questions); and (4) open-ended questions reflecting on the bootcamp (2 questions). A total of 62 students completed the post-event survey. Observations were collected verbally from teachers in daily lunch debriefings and in a debriefing after the bootcamp.

#### **4 Overview of the case study: The Innovation Bootcamp**

The CLAP-TECH Multimedia Storytelling Innovation Bootcamp was held at M21, a media studio with facilities for multimedia training and production managed by the Hong Kong Federation of Youth. M21 focuses on serving youth and providing training, resources, and interactive space to support the development and expression of their creativity. The approximately 4000 square meter space features a variety of facilities for media production, including a recording studio, band room, audio room, computer room, theatre, make-up room, classrooms, and multi-functional spaces for filming and recording. M21 trainers provided facilities, programming, and trainers for the bootcamp. The cost of the bootcamp amounted to roughly 3800 HKD per student. Staff invested approximately 23 person-days of time in preparing for the camp.

The main learning objectives of the bootcamp were to identify the entire media production process, to learn about the different roles in the production process, and to develop collaborative working skills. The bootcamp was designed in line with Kolb's experiential learning theory, asking students to engage in hands-on practice and then learn through reflection on their experiences. It adopted a project-based model of learning, challenging students to work in groups to produce self-directed short videos. A central component of the bootcamp design was group work. The 82 students were divided into 16 work groups of roughly five students each, producing one collaborative project per group. Groups mixed students from different schools based on a pre-camp survey of students' interests and role preferences, such as whether they preferred to shoot with a professional camera or mobile phone, and whether they wished to act, direct or play a supporting role. The sixteen groups were supported by M21 tutors who were generally university students with media or training production experience. In addition to the M21 tutors, teachers from students' secondary schools provided conflict mediation support. The group set-up encouraged students to meet and work with new people.

The content of the bootcamp included lectures and workshops introducing basic shooting, editing, and post-production skills, alternating with self-guided practice. Table 1 summarizes the daily schedule of the bootcamp. Over the course of the three days (7 hours per day), students experienced the full production cycle of a short video. They brainstormed ideas, created storylines, acted out and shot their ideas, and finally edited their footage and added post-production effects. On the first day, hands-on learning activities introduced students to basic skills including Studio Filming, Live Broadcasting, Chroma Key Studio Technique, and

Podcast and Voice-Over Production. Students participated in a sharing by a key opinion leader (KOL) on content creation. In the afternoon and over the next two days, students began the process of producing their own short videos. Additional workshops guided them along the way in ideation, story writing, shooting, and video editing. The students' work resulted in 2-minute original short videos. On the final day, a representative from each group presented the final product, screening their video and sharing the group's story concept. Table 2 lists the titles of students' final products. A vote was then held to choose the winners of three awards—"Best Film," "Best Female Actor," and "Best Male Actor." One group was selected for each of the three award categories and each of the students matching the award category within the group were given an award (e.g. all female actors in the group awarded Best Female Actor). All students, M21 instructors, secondary school teachers, and CLAP-TECH staff participated in the vote. Given the occurrence of a significant group conflict during the bootcamp process and students' successful resolution of the conflict, instructors decided to provide a special award to this group for their conflict resolution skills.

Abstract conceptualization and experimentation were built-in throughout the bootcamp learning experience. Experimentation to test out abstract concepts through concrete experience was a critical part of the learning process. On each day of the camp, the relevant skills to be practiced during the day were first introduced. Students were then advised to experiment with the new ideas or different shooting styles they had learned. After transforming abstract concepts into concrete experience through their experimentation during the day, students were required to reflect on their experiences through the idea sharing, debriefing, and presentation sessions at the end of each day. During the learning process, instructors encouraged students to reflect on the concepts behind their content creation and relate these concepts with what they had learned from the first module of the Multimedia Storytelling curriculum—Overview of Multimedia Storytelling. This facilitated the use of concrete experience to deepen abstract conceptualization. The evaluation survey carried out on the final day also allowed students to reflect on their learning experiences and share their thoughts on how the bootcamp experience could be improved in the future.

**Table 1**  
Multimedia Storytelling Innovation Bootcamp Schedule

Time	Content	CLAP-TECH Pathway Essential Attributes
<b>Day 1</b>		
10:00-10:30	Opening ceremony	Motivation
10:30-12:30	A taste of the media world: hands-on experience workshops	Analytical Thinking Curiosity
13:30-16:00	Content creation Key-Opinion Leader (KOL) sharing	Analytical Thinking Communication
16:20-17:20	Group discussion of ideas	Collaboration Communication
17:20-18:00	Idea sharing	Communication Curiosity
<b>Day 2</b>		
09:00-10:30	Basics of video shooting (lecture)	Analytical Thinking Curiosity
10:30-12:30	Video shooting practice	Curiosity Self-management
13:30-17:20	Video shooting	Collaboration Integrity Leadership Resilience

		Responsibility Self-management
17:20-18:00	Debriefing	
<b>Day 3</b>		
09:00-10:30	Video editing workshop	Analytical Thinking Curiosity Self-management
10:30-12:30	Video editing session	Collaboration Integrity Leadership Resilience Responsibility Self-management
13:30-15:00	Final touch up & presentation preparation	Collaboration Communication Leadership Resilience Responsibility
15:30-18:00	Premiere, presentation & closing ceremony	Communication Integrity Motivation

**Table 2**  
Titles of Student Group Videos

Group	Video
1	If I Were Dead
2	Water-Level Person
3	Loss of Ability
4	Chaotic World
5	Friends who Cherish One Another
6	Heart Break
7	What's Wrong with Xiaoming
8	Friendship
9	Copying Homework
10	E——Love
11	Running in Two Directions
12	Mirror vs BTS pop singers team
13	Lesson
14	What a Coincidence to Run Into You
15	Young Love and Sickness Story – Go-Miracle
16	Tomato Wars

## 5 Evaluation and findings

The intensive project-based learning of the Innovation Bootcamp spurred student personal, cognitive, and social development. For many students, it served as their first contact with the actual video production process. Due to the influence of COVID-19 for the duration of the Multimedia Storytelling course thus far, it was also the first time many students had been able to work in a group on any form of hands-on learning. Instructors noted that this had a notable effect on student enthusiasm and commitment that was noticeable in later coursework and activities. However, a number of challenges also affected the bootcamp results. The achievements and challenges of the bootcamp were reflected both in observations from school teachers and M21 instructors and in student post-event survey responses.

In debriefing sessions during and after the bootcamp, teachers' most prominent observations concerned students' quality of collaboration during the bootcamp. The problems they noted included language barriers (some students were only competent in English or Putonghua) that had impeded collaboration in some groups. They also suggested that students might be more engaged if they were in teams with others from the same school and that keeping students from one school in the same group would make it easier for teachers to mediate conflicts. On the other hand, teachers noted many positive social results that resulted from the collaborative set-up of the bootcamp, including that students had made friends from other schools, that some inactive students were able to collaborate and felt motivated, and that students had learned how to resolve conflicts. With regard to facilitating cognitive learning, instructors suggested that allowing more time for students to debrief their final products, after completing their videos and before their presentations, would allow students to better process their learning experience and enhance project evaluation. Instructors also suggested training in presentation skills would help to present their insights about the video production process in a more logical way.

In the post-event survey for student feedback, with the exception of two open ended questions, the other 15 questions asked students to rate their experience or agreement with various statements on a five-point scale. Tables 3 and 4 summarize the learning outcome, activity, and logistics survey results. Students rated the Innovation Bootcamp highly in terms of personal development outcomes such as interest and confidence in goal setting, cognitive outcomes such as creativity and problem-solving skills, and social outcomes such as collaboration with groupmates and confidence in group work. Among the different activities, hands-on, engaged experiences including both the hands-on skills workshops and production process activities were generally rated more highly than the small number of less hands-on activities. In general, students also appreciated the M21 facilities where the boot camp was held, although some found the location and timing inconvenient.

On questions concerning personal outcomes of the bootcamp, most students agreed or strongly agreed that the bootcamp had been interesting, that they had been exposed to new experiences through the bootcamp, and that they felt more confident in setting future learning goals after the bootcamp. Slightly fewer reported that they found the KOL sharing inspiring. In addition, in the open-ended comments on their overall experience of the bootcamp, many students expressed that the bootcamp had been fun. Others indicated that they had had new experiences and that the bootcamp was exciting. One student commented that the bootcamp took a lot of time and effort but that s/he was very satisfied with the final result. Overall, survey results indicate that the bootcamp experience spurred student interest and that it gave them a stronger sense of their goals in future study.

**Table 3**  
Summary Post-event Student Survey Learning Outcomes

Dimension	Statement	% Agree/ Strongly Agree	Mean*	SD
Personal	The activities of the bootcamp are interesting.	79.0	4.16	0.79
	The Key Opinion Leader' sharing is inspiring.	66.2	3.95	0.88
	The bootcamp enriches my exposure.	77.5	4.23	0.80
	I feel more confident to set goals for my further study.	75.8	4.19	0.81
Cognitive	The activities of the bootcamp develop my creativity.	72.5	4.15	0.87
	The activities of the bootcamp enhance my problem-solving skills.	72.5	4.15	0.87
	After the bootcamp, I have a deeper understanding of the Multimedia Storytelling ApL course.	74.2	4.15	0.85

	The bootcamp equip me with the skills and knowledge to study in the Multimedia Storytelling ApL course.	77.4	4.21	0.79
Social	I found a clear role in my group.	75.8	4.16	0.91
	I collaborate well with my groupmates in the bootcamp.	71.0	4.16	0.99
	I feel more confident to work with others in groups to complete the assigned task.	72.6	4.16	0.87

\* Five-point scale

The rate of positive responses for cognitive results was slightly lower than for personal outcomes, although also generally positive. A majority of students agreed or strongly agreed that the bootcamp had enhanced their creativity, problem-solving skills, and understanding of the Multimedia Storytelling course content. In particular, a high percentage of students agreed that the bootcamp had helped equipped them with skills and knowledge to study in the Multimedia Storytelling ApL course. In their open-ended comments, a number of students commented that they had learned a lot.

Survey results concerning social interaction and social skills were mixed, with many very positive responses but also some negative responses, likely due to one group's difficult collaboration experience during the bootcamp. While 75.8% agreed or strongly agreed that they found a clear role in their group, 4.8% also disagreed. A majority of students indicated strong agreement that they had collaborated well with their groupmates—the highest rate of strong agreement among the survey questions, but another 6.5% disagreed. There was more general agreement, however, that the bootcamp experience had enhanced confidence in working with others, with only 1.6% of students indicating disagreement. This suggests that even those who had had negative collaboration experiences experienced growth in collaboration skills as a result. The negative results concerning groupwork in the evaluation survey seem likely to be due to one group's conflict on the first day of the bootcamp over choosing a topic for their film. While students conflicted sharply the first day, over the course of the bootcamp, and with the mediation of the M21 instructors and school teachers, they resolved the conflict and were able to produce a satisfactory final product. These difficult collaboration experiences nevertheless enhanced student learning.

In open-ended commentary, many students commented on their collaborative experience. One expressed being thankful to be able to produce a great product in collaboration with others; another reflected that the capacity of one person is limited and teamwork is key. One student commented on making new friends. At the same time, there were several comments suggesting that collaboration experiences for certain students could have been better. This included one student who indicated "I wish we had better communication," another who commented poor collaboration affected the quality of their work, and a third who expressed that they wished to be able to choose their own groups. In terms of social skills development, for the majority of students, collaboration experiences appear to have been a highlight of the bootcamp. Meanwhile, even for those who experienced challenges, the chance to resolve and work through conflict was a learning experience.

**Table 4**

Summary of Post-event Student Survey Activity and Logistics Ratings

Dimension	Component	%Good/ Very Good	Mean*	SD
Activities	Hands-on experience	79.0	4.21	0.77
	Content creation	77.4	4.19	0.83
	KOL sharing	64.6	3.94	0.88



	Group discussion	74.2	4.19	0.99
	Sharing	75.8	4.16	0.83
	Shooting	80.7	4.27	0.81
	Editing	79.0	4.31	0.80
	Post-production	79.1	4.24	0.78
	Presentation	69.3	4.06	0.86
Logistics	Location convenience	38.7	3.26	1.16
	Facilities	82.2	4.26	0.75
	Overall time arrangement of the bootcamp	67.7	3.84	0.94

\* Five-point scale

With regard to specific components of the bootcamp, Table 4 summarizes students' ratings of the different activities. Shooting, editing, and post-production were rated most highly among the activities. Ratings of the hands-on experience workshops, content creation, and group discussion were also high. Group discussion showed more variation and more negative responses, in line with the collaboration difficulties observed in a small number of groups. The KOL sharing and student presentations were slightly less popular. The lower rating for presentations may reflect the difficulties students experienced in presentation, as observed by the teachers. In general, students seemed to enjoy hands-on experiences the most.

Finally, in terms of the venue and logistics of the bootcamp, students were generally enthusiastic about the M21 facilities, but less satisfied with its location and with the time arrangements. As the bootcamp was a day camp, requiring students to commute back and forth each of the three days, students arriving late in the morning posed a challenge for camp logistics. In their open-ended commentary, students also expressed that it was difficult to get up so early in the morning and that the venue was far from their homes.

Overall, both students and teachers saw the bootcamp as having a positive impact on students' personal and social development. The bootcamp enhanced student interest and motivation, while helping them learn to collaborate with others. Its impacts for cognitive skills such as creativity, problem-solving, and enhancement of course related skills and knowledge were also assessed positively, although less prominently so. Teachers indicated room for enhancement by better preparing students for presentations and giving them more time to process their new experiences in a final debriefing session.

## 6 Discussion and Conclusion

The Innovation Bootcamp served as the first opportunity for the Multimedia Storytelling Applied Learning Course students to craft a complete piece of work under a tight deadline. It provided a project-based experimental learning opportunity outside the classroom that allowed students to engage in self-directed, collaborative learning. Students exercised their creativity and mimicked the real work process in the course of creating an original short video. The groupwork setting required students to work with unfamiliar people, developing communication and collaboration skills in the process. The out-of-classroom setting of the camp stimulated student interest and allowed for different modes of interaction than would usually happen in the classroom. Student feedback and teacher observation from the bootcamp corroborate that intensive experiential learning in an out-of-classroom setting has a positive impact on students' personal development, spurring their interest and motivation to learn. It also challenges them to develop social skills that are increasingly important in new collar jobs and fosters cognitive skills including creativity and problem-solving ability. At the same time, the camp served as an opportunity for instructors to identify talent among students. One prominent remaining challenge was students' reluctance to engage in written work such as writing reflections and their lack of preparation for presentations. More training in writing and

presentation skills could be incorporated into the regular curriculum to better prepare students for future bootcamps.

Based on the positive experiences of the Innovation Bootcamp, it is recommended that mini bootcamps involving intensive project-based learning experiences be included as a future part of vocational and professional education for young people. Ensuring the quality of the group collaboration experience is important for making the most of the learning experience. Instructors and program managers should pay attention to how to arrange groupings of students to facilitate communication and to putting in place conflict resolution mechanisms. With attention to these factors, bootcamp learning experiences can be a valuable model of experiential learning to foster the creativity, problem-solving, and team work skills young people will need in the world of work.

## References

- Ayres, R., & Melear, C. T. (1998). Increased Learning of Physical Science Concepts via Multimedia Exhibit Compared to Hands-On Exhibit in a Science Museum.
- Bølling, M., Otte, C. R., Elsborg, P., Nielsen, G., & Bentsen, P. (2018). The association between education outside the classroom and students' school motivation: Results from a one-school-year quasi-experiment. *International Journal of Educational Research*, 89, 22-35.
- Chan, K., Ho, A., Serban F. C., & Fung, M. (2022). Nurturing creative talent with industry partnership. *TVET@Asia*, 19, Article 1, 1-19.
- Cheong, A. C. S., & Swee, L. K. K. (1987). The contributions of enrichment activities towards science achievement. *Asia Pacific Journal of Education*, 8(1), 64-75.
- Council for Learning Outside the Classroom. (n.d.). *About CLOC*. <https://www.LOC.org.uk/>
- Eshach, H. (2007). Bridging in-school and out-of-school learning: Formal, non-formal, and informal education. *Journal of science education and technology*, 16(2), 171-190.
- Euler, D. (2013). *Germany's dual vocational training system: a model for other countries?*
- Finson, K. D., & Enochs, L. G. (1987). Student attitudes toward science-technology-society resulting from visitation to a science-technology museum. *Journal of Research in Science teaching*, 24(7), 593-609.
- Google & Ipsos (2019). *Smarter digital city 3.0: Collaborating for a smarter Hong Kong*. [https://services.google.com/fh/files/misc/google\\_smarter\\_digital\\_city\\_3\\_whitepaper.pdf](https://services.google.com/fh/files/misc/google_smarter_digital_city_3_whitepaper.pdf)
- Hong Kong Baptist University (2022). HKBU launches Jockey Club Multiple Pathways Initiative – CLAP-TECH Pathway Project. <https://bunews.hkbu.edu.hk/news/on-campus/hkbu-launches-jockey-club-multiple-pathways-initiative-clap-tech-pathway-project>.
- Iron Hack (2022, June 18). *What is a tech bootcamp?* <https://www.ironhack.com/en/courses/what-is-a-tech-bootcamp>
- Kolb, D. A. (2014). *Experiential learning: experience as the source of learning and development*. Pearson Education.
- Knoll, M. (1997). The project method: Its vocational education origin and international development. *Journal of Industrial Teacher Education*, 34(3).
- Leney, T., & Green, A. (2005). Achieving the Lisbon goal: The contribution of vocational education and training. *European Journal of Education*, 40(3), 261-278.
- Lewis, L. H., & Williams, C. J. (1994). Experiential learning: Past and present. *New directions for adult and continuing education*, 1994(62), 5-16.
- Litow, S. S., & Kelley, T. (2021). *Breaking Barriers: How P-TECH Schools Create a Pathway from High School to College to Career*. Teachers College Press.

- Malone, K. (2008). Every Experience Matters: An evidence based research report on the role of learning outside the classroom for children's whole development from birth to eighteen years. *Report commissioned by Farming and Countryside Education for UK Department Children, School and Families, Wollongong, Australia.*
- Mygind, E. (2009). A comparison of childrens' statements about social relations and teaching in the classroom and in the outdoor environment. *Journal of adventure education & outdoor learning*, 9(2), 151-169.
- Parr, E. (2020). What is learning outside the classroom? In J. Lord (Ed.), *Studying education: An introduction to the study and exploration of education* (pp. 139-154). Sage Publications.
- Ramey-Gassert, L. (1997). Learning science beyond the classroom. *The elementary school journal*, 97(4), 433-450.
- SEER. (2005). *California Student Assessment Project Phase Two: The Effects of Environment-Based Education on Student Achievement*. (Report) California: Department of Education.
- Sey, A., & Garrido, M. (2016). *Coding bootcamps: A strategy for youth employment in developing countries*. Research Report. Technology & Social Change Group, University of Washington. [https://en.unesco.org/icted/sites/default/files/2019-04/coding\\_bootcamps-\\_a\\_strategy\\_for\\_youth\\_employment.pdf](https://en.unesco.org/icted/sites/default/files/2019-04/coding_bootcamps-_a_strategy_for_youth_employment.pdf)
- Smith, A. (2016). Experiential learning. In *Encyclopedia of Human Resource Management*. Edward Elgar Publishing Limited.
- Thurber, C. A., Scanlin, M. M., Scheuler, L., & Henderson, K. A. (2007). Youth development outcomes of the camp experience: Evidence for multidimensional growth. *Journal of Youth and Adolescence*, 36(3), 241-254.
- Watters, J., Pillay, H., & Flynn, M. (2016). Industry-school partnerships: A strategy to enhance education and training opportunities.
- World Bank. (2018). *Coding Bootcamps for Youth Employment: Evidence from Colombia, Lebanon, and Kenya*.
- Yin, R. (2006). Case Study Methods. In F. M. Connelly, D. J. Clandinin, J. L. Green, G. Camilli & P. Elmore (Eds.), *Handbook of complementary methods in education research* (pp. 111-122). American Educational Research Association.
- Yin, R. K. (2009). *Case study research: Design and methods* (Vol. 5). Sage.

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## Competence Retention for Non-Routine-Situations in Digital Working Environments (Condition): Studies Based on the Professions of Chemical Technician and Pharmaceutical Technician

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### Abstract

Automation related skill decay and its consequences for the quality of professional work was widely being researched in high-risk industries, but no empirical studies concerning process-oriented industries have been conducted so far. The study CONDITION therefore investigated whether the problem of automation-induced skill decay also exists in the workplaces of the chemical and pharmaceutical production. Moreover, we wanted to find out which competences are affected, which factors influence the skill decay and what are the consequences. To answer the research questions a mixed methods approach was used. We started with a systematic literature analysis which was followed by 21 qualitative interviews and an online survey with 210 participants.

We found out that the problem of automation-related skill decay also exists at the workplaces of the chemical and pharmaceutical production. The consequences are mostly economical, but in some incidents also the workers in the plant could be affected. Moreover, we identified some essential competences to master these situations successfully such as process-knowledge, knowledge of the actual plant, the skill to operate the plant by hand and an attitude of calmness and curiosity. To acquire these competences, it is necessary to experience the actual plant. This leads to the conclusion that the problem of automation-related skill decay certainly will become bigger because opportunities for young professionals to experience the actual plant get less since from the very first day they mostly work in a highly digitized and highly automated environment.

### Keywords

competence, skill decay, digitization, automation, non-routine-situation

### 1 Introduction

During the last 10-15 years numerous studies have been carried out to identify and examine new competences that are required for the ongoing digitization of workplaces (acatech, 2016; Hammermann & Stettes, 2016; Schmidt et al., 2016). In contrast, only a few studies (Frank & Kluge, 2018; Webb & Angel, 2018) have dealt with the question of how to maintain existing competences that are still needed, especially in non-routine-situations (NRS). These competences differ remarkably from the competences that are used in the everyday routine at highly digitized workplaces. During NRS skilled workers have to mobilize a wealth of



knowledge and skills ad hoc in order to make decisions quickly and competently. Weyer (1997, p. 245) states for example that in these NRS it is necessary to interpret deviating values, to diagnose the cause of the malfunction in the shortest possible time and to take manual countermeasures in order to avoid a crisis-like escalation.

Because this special knowledge and skills are often not required for longer periods due to automation<sup>5</sup>, they are exposed to the danger of being forgotten or no longer being able to be activated (quickly enough) (Bjork & Bjork, 2006). This problem, technically referred to as skill decay was already being researched in high-risk industries or high-risk employments such as aviation (Wiener & Curry, 1980), military (O'Hara, 1990) or police (Angel et al., 2012), but no empirical studies concerning process-oriented industries such as chemical or pharmaceutical production have been conducted so far.

CONDITION aims to close this gap by addressing the question if the problem of automation-induced skill decay also exists in the workplaces of the chemical and pharmaceutical production as an example of the process-oriented industry. Furthermore, we wanted to find out in what way this decay applies to the occupational activities of chemical technician and pharmaceutical technician (which competences are affected, which factors influence the skill decay and what are the consequences of it).

## 2 Methodology

The research questions of the project were addressed using a mixed methods approach. First, we carried out a systematic literature analysis. The aim of this analysis was to check to what extent the research question of the project has already been dealt with in exactly the same or in a slightly modified way and to survey the current state of research in the field of skill decay in order to identify the main influencing factors, which should then, also be taken into account in our own surveys.

The systematic literature analysis was followed by the empirical collection of qualitative data. A total of 21 telephone interviews were conducted with professionals and supervisors. The interviews were semi-structured. The average time of the conversations was 30 minutes. The interviews were conducted by telephone, recorded, transcribed and evaluated using the content analysis according to Mayring (2022). The codes used were formed in a first step on the basis of the outcomes of the literature analyses which led to relevant factors concerning the loss of competence and were supplemented in a second step by codes inductively generated from the source material.

Based on the data from the qualitative interviews, an online questionnaire was developed in a further step. It was aimed at skilled workers (usually chemical and pharmaceutical technicians), supervisors and managers in the chemical and pharmaceutical production. The aim was to investigate the extent to which the findings of the interviews could also be confirmed within a larger group of skilled workers.

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<sup>5</sup> Talking about digitization and automation it is necessary to make clear that these are different topics which are nevertheless closely related. A comprehensive distinction is made by Schumacher, A., Sihn, W., & Erol, S. (2016b) which analyze the terms digitization and automation trying to understand about differences and common ground. They describe digitization as "(...) the conversion of continuous analog, noisy and smoothly varying information into clear bits of 1s and 0s," and stated that automation "Describes the implementation of technology, software and programs to accomplish a procedural outcome with little or no human interference". Moreover they make clear, that "(...) one cannot exist without the other as any kind of automation nowadays requires digital elements to work without human interference and any kind of digitization requires elements to automatically handle and display information. Therefore, research focusing on advanced or smart manufacturing has to include both concepts to allow for a comprehensive analysis." This is what we did in our investigation. When talking about automation we always imply digitization as the base Schumacher, A., Sihn, W., & Erol, S. (2016a) for it.

The general themes of the questionnaire were:

1. General data of the participants and their workplace
  - professional position
  - size of the enterprise/company
  - sector
  - plants serviced
  - work experience
  - degrees
  - age
2. Data about occurrence of (problematic) situations
  - non-routine situations (NRS)
  - reaction to the occurrence of a NRS
  - relevance and recall of knowledge/skills when a NRS occurs
  - relevance of different personal characteristics when a NRS occurs
  - possible consequences of the occurrence of NRS
3. Existing and wished support in (problematic) situations
  - general possibilities of support
  - training in particular

The original target of 700 participants was not reached. The difficulty due to the pandemic in establishing personal contacts in advance certainly played a role. The questionnaire was completed 210 times, with 50 professionals and 160 managers participating, with over 80% of the latter having been trained in chemistry or pharmacy.

### 3 Results

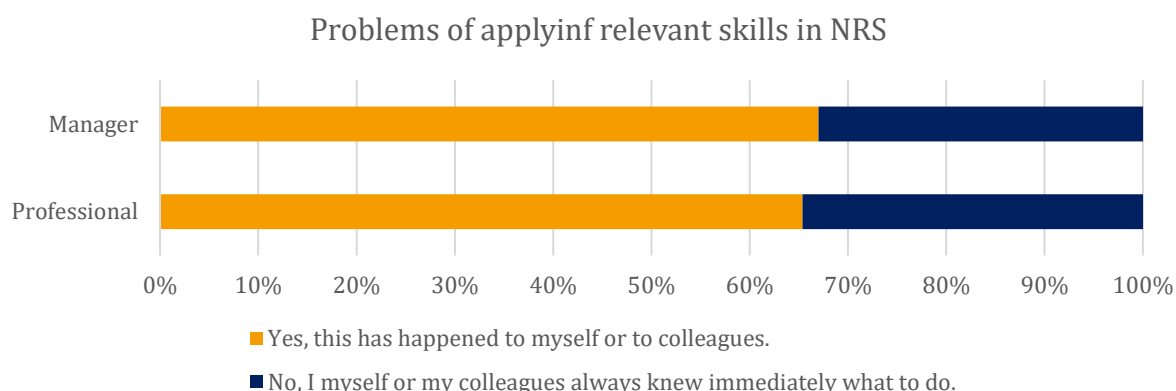
#### 3.1 Automation-related skill decay

We found strong evidence that automation-related skill decay also exists at the workplaces of the chemical and pharmaceutical production. Firstly, already on the basis of the data from the qualitative interviews we could see that NRS occur also at the respective workplaces. Moreover, we were able to distinguish three types of NRS: the frequent but unplanned NRS, the rare but planned NRS and the rare and unplanned NRS. Out of the three only the latter appeared relevant for our specific interest since it seems less likely that skill decay plays a role in frequent or planned NRS. The results from the online survey confirmed the data from the interviews. We asked professionals and managers whether one (or more) of the three types of NRS occur in their everyday work. Only 3% (managers) and 2% (professionals) of the respondents respectively stated that they did not experience any non-routine situations in their everyday work. 50% were aware of rare unplanned NRS and more than 60% confirmed that they experienced the other two types.

Secondly, we were able to establish that in this NRS a relevant proportion of the employees (67% of the managers and 65% of the professionals, see figure 1), who had previously reported that rare, unplanned non-routine situations occur in their daily work, stated that they or their colleagues or employees sometime do not immediately know what to do and therefore experience a lack of competences.

### Figure 1

Results from the question: „In the past, have you or a colleague ever been in a rare non-routine situation where you or a colleague did not immediately know what to do?“ Managers n=80, Professionals n=26



Thirdly, we could determine that the reason for the loss of competence is to be found due to a largely automated environment. Already the data from the interviews contain statements that support this hypothesis:

“I think it would certainly be good if we were to say in some places, take the process by hand and run it. I don't think the employees could do that anymore. I don't think they would be able to cope with all the temperatures, (...) they are basically dependent on the system, because the automated system can do that. And I'm convinced that it will be difficult if things actually get out of hand, and experience shows that they don't do the right thing” (Manager).

In the online-questionnaire the respondents who stated that they had experienced loss of competences for NRS or saw this in their colleagues or co-workers were asked to identify the reasons for this by rating five possible statements. The results show that forgetting knowledge due to the automation of the systems is named as the main reason for the difficulties in recalling the knowledge and skills relevant in the NRS with more than 75% agreeing strongly or rather strong to the statement: “Due to the automation of the system certain knowledge and skills are no longer needed and are forgotten”.

In conclusion it can be said that there is empirical evidence of an experienced automation-related loss of competence in the workplaces of the chemical and pharmaceutical production, which prevents or hinders the retrieval of the relevant competences in rare and unplanned non-routine situations.

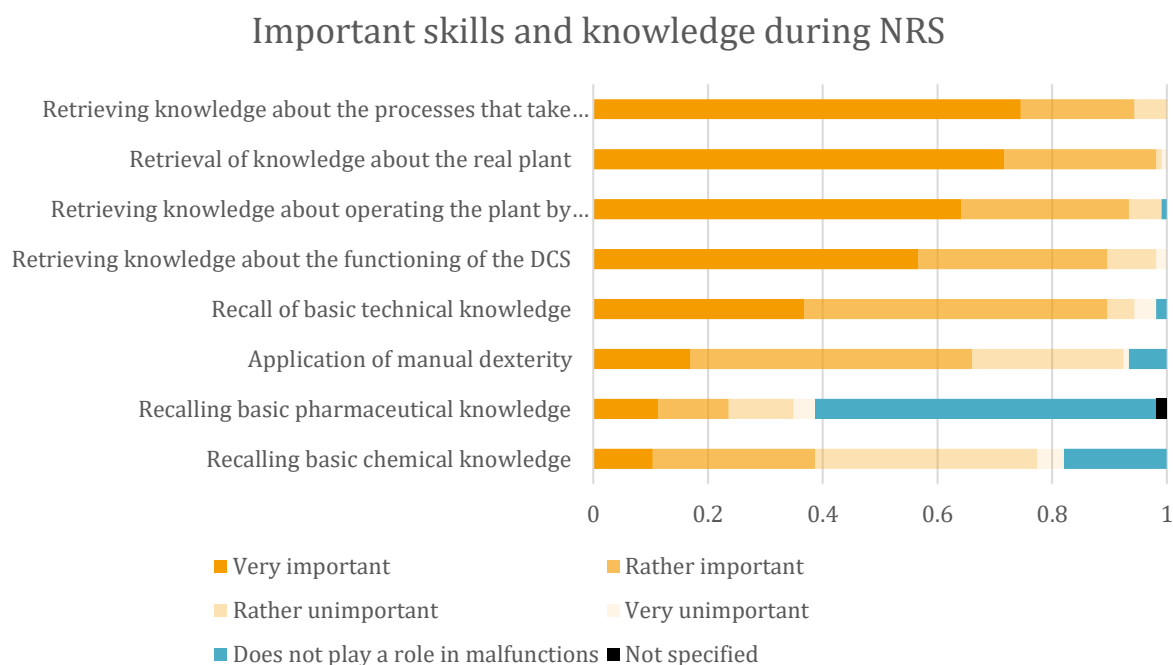
### 3.2 Competences

Competences consist in our understanding, according to the German Qualification Framework (Arbeitskreis Deutscher Qualifikationsrahmen, 2011), of knowledge, skills and attitudes. Concerning the relevant competences, the retrieval of knowledge about the actual plant, its dimensions and processes that take place as well as the skill to operate the plant by hand (e.g. with no or limited support from the process control system) are reported as most important to handle NRS. More than 90% of the respondents rated these three as very important or rather important (see figure 2).



**Figure 2**

Results from the question: „Imagine that you or your colleagues are confronted with such a non-routine situation at your current workplace. What is important or unimportant and what is easy or difficult for you or your colleagues in this situation?“ n=106



Attitudes were also seen as particularly relevant in the interviews. On the one hand, they are relevant in the non-routine situations themselves. Attitudes named as beneficial are calmness, composure but also courage. These attitudes support the reliable retrieval of the relevant knowledge and skills. On the other hand, in the run-up to the non-routine situation, an attitude of curiosity and interest in the plant and the processes taking place in it are necessary in order to develop a deeper understanding of the process. Here, the attitude conditions and supports the acquisition of competence.

### 3.3 Influencing factors

A large number of possible factors influencing the loss of competence could be identified in the literature analyses but within the framework of this research project, not all of them could be comprehensively investigated. According to Bryant & Angel (2000) they can be divided into:

- factors that are rooted in the individual, e.g. previous experience, intelligence, attitude,
- factors inherent in the characteristics of the work task such as cognitive vs. physical task or simple vs. complex tasks,
- factors related to the nature of the original instruction or training, such as the degree of structuring and
- factors that are rooted in the retention interval, i.e. the period between the acquisition of a competence and the current use of a competence, such as the length of the period or opportunities for refreshment within the interval.

In the interviews, mainly factors that are rooted in the individual were addressed. Therefore, in the online survey, we asked to evaluate different personal factors with regard to their relevance for coping with NRS.

It turns out that especially professionally experienced and calm colleagues are trusted to successfully cope with NRS. The reason for this is, on the one hand, that their experience gives

them the relevant competences to cope with NRS. On the other hand, this very experience also leads to them being calmer and more relaxed in the situations (the influencing factor that receives the second highest level of agreement), which in turn enables more reliable competence retrieval.

Thus, experience is on the one hand a cause for the existence of relevant competences and on the other hand also a support for the use of these competences in the NRS.

The experiences that lead to competent action in NRS are, according to the statements from the interviews, experiences that are made with all senses. Not only information is taken in with the eyes or manual activities are carried out, but also smells, sounds and even vibrations are added to the wealth of experience from which experiential knowledge is fed.

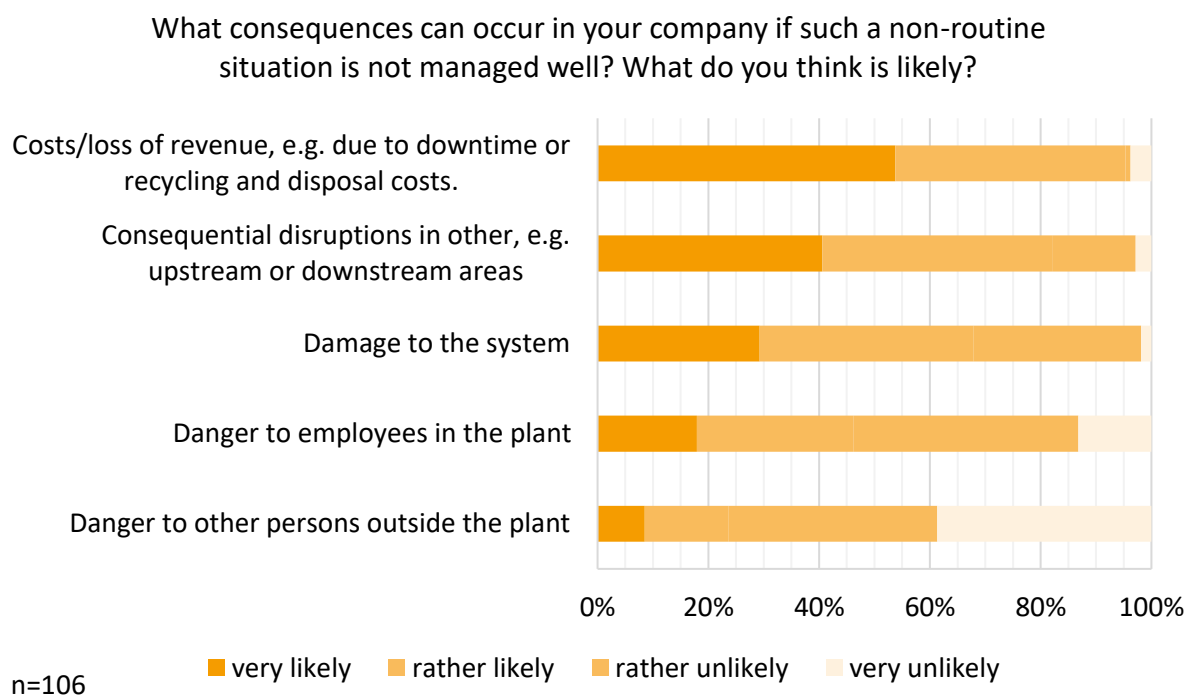
"In the past, when the plant was started up, I went outside and it was running visually well inside, and then I walked around outside and it wasn't just a matter of walking around and looking to see if something was splashing around or something, but you go into the plant and it's like a concert. Every piece of equipment makes its sound and the whole system is like a concert, so everyone plays their part. And if one plays wrong, this wrong tone, you have to hear it." (Professional)

### 3.4 Consequences

Difficulties in coping with unplanned, infrequent NRS can have (far-reaching) consequences. Participants in the survey were asked to rate the likelihood of such consequences occurring on a 4-point scale from "very likely" to "very unlikely". The most probable consequences were costs or loss of income (see figure 3). Almost all participants (95%) stated that they considered these consequences to be rather or very probable. In contrast to the high-risk-industry, where the problem of automation-related skill decay has been investigated since years, the risk to persons inside or outside the company was rated as not so likely. But still nearly one fifth saw a danger for people in the plant as a consequence of an unresolved NRS.

**Figure 3**

Results from the question: "What are the possible consequences in your company if such a non-routine situation is not managed well? What do you think is likely?" n=106



## 4 Conclusion

Our research could establish that the problem of automation-related skill decay also exists in the process-oriented industry. The consequences are above all material and monetary but sometimes also persons are at risk. As our investigation was the first in this field, further research is necessary to concretize our first results and also to get a better idea about the quantitative dimension of the problem.

We were able to identify several relevant competences that are necessary to handle NRS and moreover we learnt that these competences are prone to decay. The crucial influencing factor for the acquisition and retention of these competences is a special kind of experience that is made with all senses in the real plant.

This leads to our final assumption that the problem of automation-related skill decay certainly will become bigger and is not only about the individual but also about the whole staff. Because nowadays young professionals from the very first day mostly work in a highly automated environment that does not allow them make the necessary experiences, they miss the opportunity to acquire the relevant competences they needed to handle NRS.

## References

- acatech (Ed.). (2016). Kompetenzentwicklungsstudie Industrie 4.0 – Erste Ergebnisse und Schlussfolgerungen. München.
- Angel, H [Harry], Adams, B. D., Brown, A., Flear, C., Mangan, B., Morten, A., Ste-Croix, C., & Gruson, G. (2012). Review of the Skills Perishability of Police "Use of Force" Skills. Humansystems Incorporated.
- Arbeitskreis Deutscher Qualifikationsrahmen. (2011). Deutscher Qualifikationsrahmen für lebenslanges Lernen. Arbeitskreis Deutscher Qualifikationsrahmen.
- Bjork, R. A., & Bjork, E. L. (2006). Optimizing treatment and instruction: Implications of a new theory of disuse. In L.-G. G. Nilsson & N. Ohta (Eds.), *Memory and society: Psychological perspectives*. (pp. 109–134). Psychology Press.
- Bryant, D. J., & Angel, H [H.] (2000). Retention and fading of military skills: Literature review. Technical Report.
- Frank, B., & Kluge, A. (2018). Is there one best way to support skill retention? Putting practice, testing and symbolic rehearsal to the test. *Zeitschrift Für Arbeitswissenschaft*, 73(2), 214–228.
- Hammermann, A., & Stettes, O. (2016). Qualifikationsbedarf und Qualifizierung: Anforderungen im Zeichen der Digitalisierung. IW Policy Paper (3/2016).
- Mayring, P. (2022). *Qualitative Inhaltsanalyse: Grundlagen und Techniken* (13. Neuausgabe). Julius Beltz GmbH & Co. KG. <http://nbn-resolving.org/urn:nbn:de:bsz:31-epflicht-2019387>
- O'Hara, J. M. (1990). The retention of skills acquired through simulator-based training. *Ergonomics*, 33(9), 1143–1153. <https://doi.org/10.1080/00140139008925319>
- Schmidt, K., Winkler, B., & Gruber, B. (2016). Skills for the future: zukünftiger Qualifizierungsbedarf aufgrund erwarteter Megatrends. *Ibw-Forschungsbericht* (187).
- Schumacher, A., Sihn, W., & Erol, S. (Ed.) (2016a). Automation, digitization and digitalization and their implications for manufacturing processes.
- Schumacher, A., Sihn, W., & Erol, S. (2016b). Automation, digitization and digitalization and their implications for manufacturing processes: In: *Innovation and sustainability conference Bukarest* (pp. 1-5)., 2016, 1–5.
- Webb, B., & Angel, H [Harry] (2018). Maintaining skills and knowledge at work. *Applied Ergonomics and Human Factors*, 22–23.

- Weyer, J. (1997). Die Risiken der Automationsarbeit: Mensch-Maschine-Interaktion und Störfallmanagement in hochautomatisierten Verkehrsflugzeugen. *Zeitschrift Für Soziologie*, 26(4), 239–257. <https://doi.org/10.1515/zfsoz-1997-0401>
- Wiener, E. L., & Curry, R. E. (1980). Flight-deck automation: promises and problems. *Ergonomics*, 23(10), 995–1011. <https://doi.org/10.1080/00140138008924809>

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Descoux, G., Romanens, M., Lamamra, N. & Duc, B. (2023). The Covid-19 pandemic impacts on apprentices' occupational health in Western Switzerland: Between invisibilisation of their status and ordinary suffering. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 115–128). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://10.5281/zenodo.7808494>

## **The Covid-19 Pandemic Impacts on Apprentices' Occupational Health in Western Switzerland: Between Invisibilisation of Their Status and Ordinary Suffering**

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### **Abstract**

Vocational education and training (VET) plays an important role in Switzerland. The dual system directly confronts apprentices with real working conditions and societal context, such as the COVID-19 pandemic. Considering the limitation of the vast literature that apprehends the young workers' OHS through the lens of age and adolescent risk taking, this paper examines the impact of "apprentice status" on OHS during the pandemic. The examination of the federal and cantonal policies concerning apprentices during the pandemic highlights the apprentices' dual status as young workers and learners. This paper, then, shows that the potential consequences of this dual status on the apprentices' OHS during the pandemic are evacuated by the political and media discourses. Now, the use of five group interviews with apprentices (painters, hairdressers, retail professionals, healthcare assistants) highlights how much their suffering during the pandemic is inextricably linked to their particular status, considering their professional sector and company. Yet, the conversation shows that the apprentices' experience during the pandemic reveal an ordinary and silent suffering.

### **Keywords**

apprentices, occupational health, pandemic covid-19, suffering, dual training



## 1 Context

Vocational education and training (VET) plays an important role in Switzerland. VET is the most popular training pathway after leaving compulsory school, with two thirds of young people following this route, most often in its dual form (State Secretariat for Education, Research and Innovation [SERI], 2022). The dual system, which combines theoretical training in vocational schools and practical learning in companies, directly confronts apprentices with real working conditions and societal context, such as the COVID-19 pandemic.

Although on-the-job training can be an opportunity for professional and personal development, the Swiss official statistics on young workers that include apprentices indicate that their professional activity can affect their health and integrity in the short and long term (Federal statistical office [FSO], 2021). They are exposed to significant risks to their physical health (exposure to chemical substances, noise, vibrations, etc.) and psychological health (overload, stress, harassment, etc.). One study shows that the pandemic has had a considerable impact on adolescents' mental health (Prince & Barrense-Dias, 2021). Despite this pronounced vulnerability, no national statistical survey has yet provided information on COVID impacts on apprentices' health specifically.

This contribution examines the pandemic impacts on apprentices' occupational health (OHS) and how it brings to the fore the relevance of taking their status into account when dealing with occupational health.

## 2 Approach

The international literature generally starts from a twofold observation. On the one hand, young workers (Breslin & Smith, 2005) and apprentices (FSO, 2021; Rasmussen et al., 2011) are more likely to be victims of accidents than adult workers and students. On the other hand, they are exposed from an early age to a work environment that is potentially dangerous for their physical and mental health.

While the majority of the literature apprehends the young workers' OHS through the lens of age and adolescent risk taking, it "now seems to be established that short job tenure and workplace factors predict occupational injury more than age or other individual factors" (Grytnes, 2021, p. 1). In this perspective, some studies using qualitative methods adopt a perspective aimed at capturing the impact of "apprentice status" on OHS.

These studies, which are few, consider that the ambivalent status of apprentices, simultaneously employees and learners, partly explains their greater vulnerability. Indeed, being an apprentice means occupying a special position in the social division of labour. Apprentices as novices have a subordinate status within the professional hierarchy and the work group (Duc & Lamamra, 2022 ; Raykov & Taylor, 2013). As young workers, they are also more subject to physical and organisational constraints, depending on the company size and the training trade (Denave & Renard, 2019; Gervais et al., 2006; Ledoux et al., 2008). Their subordinate status gives them little room for manoeuvre in the performance of their work, sometimes confining them to repetitive, monotonous, or even dangerous tasks. They also show an inclination to submit to the requirements, social norms and injunctions existing in the work group (Grytnes, 2018 ; Raykov & Taylor, 2013). This can lead them to adopt costly attitudes and gestures affecting their health. Apprentices are also precariously inserted into the work group. Their presence within the company (between 2 and 4 years, during a few days per week) remains temporary. However, this precarious status influences their integration as well as the possibility of health knowledge transmission.

Thus, a systematic review of the international literature allows us to shift the focus from an individual centred approach on apprentices' OHS to a sociological and organisational one. This paper therefore examine the effects of apprentice status in four sectors (care, painting, hairdressing, sales) on the way in which apprentices were confronted with the effects of

COVID. To do this, we first study the policy measures implemented for apprentices during the pandemic as well as the media and political treatment of their situation. Secondly, the group interviews conducted with the apprentices are analysed in order to show how they experienced this period. In conclusion, the impacts of apprentice status on their experiences during the pandemic are discussed.

### 3 Methods

This contribution is based on a work in progress on apprentices' OHS in the French part of Switzerland. The analysis is based on a documentary corpus and five group interviews.

The corpus of documents is composed of press articles. Two local newspapers (*24 heures*, *Le Temps*) selected in this study have a wide readership in the French-speaking part of Switzerland, where our research takes place. This selection could be completed by other daily newspapers of the French-speaking Switzerland. The corpus results from a keyword search in both newspapers' online archives. Only articles dealing with youth (students, apprentices, young people) during the pandemic were selected (N=48). The corpus of documents also includes the measures and positions taken by political authorities and professional organisations. This contribution refers to three types of documents: the federal and cantonal ordinances on measures to tackle the coronavirus, the website and reports of the Swiss Confederation's "Apprenticeship Perspective" task force, and finally, the report of the Swiss Employers' Union (UPS) and the Swiss Union of Arts and Crafts (USAM).

Finally, the analysis of the apprentices' experience is based on five group interviews (see Table 1) conducted with six painters, eight hairdressers, five retail professionals and two groups of six healthcare assistants.

#### Chart 1

Participants in group interviews by occupation, canton and type of company

<i>Apprenticeship</i>	<i>Region</i>	<i>Number of participants</i>	<i>M</i>	<i>W</i>	<i>Non binary</i>	<i>Type of company</i>	<i>Group interview numbers</i>
Painters	Valais	6	3	2	1	Small to medium sized companies	1
Hairdressers	Fribourg	8	1	7		Hairdressing salons	2
Retail professionals	Vaud	5	4	1		Garden center (1), sportshop (1), food store (2), clothes and furniture store (1)	3
Healthcare assistants	Geneva	6	1	5		Retirement home (1), homecare (4), hospital (1)	4
Healthcare assistants	Geneva	6	0	6		Retirement home (2), homecare (2), hospital (2)	5

The semi-structured interviews conducted between October and December 2022 focused globally on issues of mental and physical health in the workplace of apprentices. The effects of the COVID on the health of apprentices were therefore not the central focus of the interviews. As such, the analyses presented in this contribution are exploratory in nature. They make it possible to raise avenues and questions that deserve to be explored through the production of new material.

## 4 Findings

### 4.1 Supporting the apprenticeship market first and foremost

The restrictions decided by the Confederation to cope with the pandemic indirectly inform on the apprentices' general situation. Different measures (closures and cessation of activity, teleworking, conditional openings) took place successively or simultaneously and affected the sectors of activity in different ways (see Table A in the appendix). While students were confined and working remotely, the vast majority of apprentices went to work. Indeed, the monitoring indicates that 64% of apprentices were going to work in April 2020 and 91% in July (Bolli et al., n.d.). However, the attendance of apprentices at their workplaces varies greatly from one sector to another. Within the retail sector, only essential shops remained open all the time. Hospitals, retirement homes and home care staff never stopped working. However, hospital caregivers (including trainers) were sometimes transferred to the COVID unit, which reduced the number of staff in the other departments.

In this context, the federal authorities adopted measures to ensure the smooth functioning of the VET system and to promote the creation of new apprenticeship positions. The federal task force "Apprenticeship Perspective" was created in May 2020 in response to Art. 20 of the Labor Law (LTr). It plans to correct "the imbalances that have occurred or threaten to occur in the initial vocational training market" during the pandemic. To achieve this, the task force set up a special fund to "provide targeted support [...] for projects by the cantons, labour organisations and associations aimed at maintaining, creating and filling apprenticeship positions" (Task Force "Prospects for Apprenticeship", 2021, p.13). The cantons' intervention is essentially part of this federal framework. The cantons in French-speaking Switzerland mainly use the premium for hiring an apprentice and the co-financing of training companies' networks (see Table B in the appendix).

The decisions taken by the federal authorities with regard to apprentices are part of a policy to promote training during the pandemic. These decisions give some indications of their special status during this period. First of all, the apprentices' legal status in terms of OHS is defined by the ordinance on "young workers" in accordance with the Labour Law (LTr). During the pandemic, young workers are not included among the "vulnerable persons" (pregnant women, persons suffering from certain pathologies or genetic abnormalities) for whom the Confederation enacted additional protective measures in April 2020. As young workers, apprentices did not benefit from measures to reduce their workloads and working hours or from measures to strengthen training support. As for the other categories of workers, the employer was nevertheless obliged to respect the prevention measures defined by the Federal Office of Public Health (mask, disinfection, reduction of contact with clients and colleagues, quarantine, etc.).

Secondly, compared to most other categories of workers, apprentices were only eligible for financial compensation (reduced working hours or 'RHT') at certain times of the year during the pandemic. These were received by companies when working hours were reduced, and only in the event of forced closure (Travail.Suisse, n.d.). This decision aims to keep apprentices at work in order to guarantee the normal continuation of their training in the company and their integration into the labour market. Thus, it appears that the special status of apprentices (between employees and trainees) had led to differential treatment compared to other categories of workers. This treatment confronts apprentices with working and training conditions altered by prevention measures, restrictions and staff reductions. This potentially exposes them to increased workload, stress and risks.

Finally, the measures concerning vocational training certification, and their comparison with those created for gymnasium students, show that apprentices have, in certain aspects and to a certain extent, benefited from student status. Like students, apprentices were subjected to



distance learning (by cantonal decision) for theoretical courses between March and June 2021, depending on the canton. In addition, the ordinances provided for the abolition of theoretical examinations for all apprentices and the possibility of waiving practical tests. The choice of one of the three possible variants (maintaining practical exams in the company, taking exams in a centralised examination centre, or having the trainer assess the experience gained in the company) is left to labour organisations. In comparison, the cantonal authorities that set the validation procedures for gymnasium students maintained written examinations and replaced oral examinations with written ones. This highlights the apprentices' dual status, who were both young workers subject to the COVID rules applied to adult workers, and learners for whom measures relatively identical to those applied to students were applied for examinations.

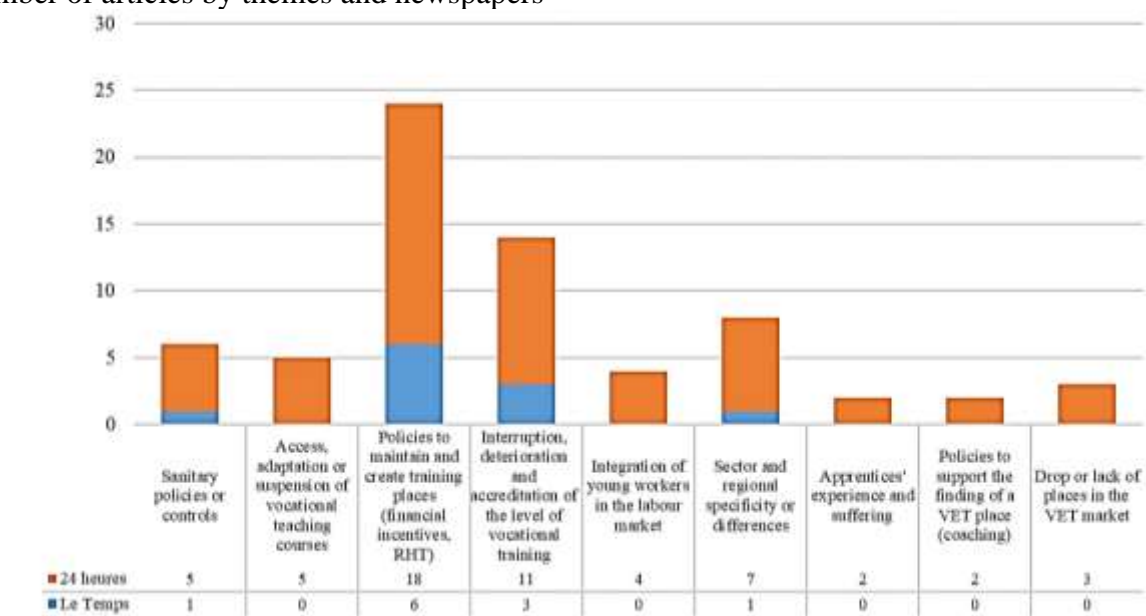
These COVID policy measures are intended to support the apprenticeship market and ensure timely completion of training. More generally, they are part of a broader policy aiming to maintain the "usual conditions" of VET (SERI, n.d.). As such, it is fully in line with the concerns of the professional organisations, in particular those of the UPS and the USAM. On the one hand, the latter were concerned about the loss of qualifications that would result from overly strict measures, since they would compromise the acquisition of skills based on face-to-face training at the three learning sites (training company, vocational school, inter-company courses) (Taddei, 2021). On the other hand, employers and professional organisations were concerned about the lack of new recruits in some sectors, which the pandemic could have further exacerbated if the examination and promotion schedule was postponed by several months. In their report on VET during the pandemic, the UPS and USAM were pleased to note that in some sectors (agri-food, construction) affected by the shortage of labour "it has almost been possible to work normally" (UPS & UPSAM, n.d., p.3). For their part, the cantonal and federal authorities were pleased with the results obtained, namely the very low rate of apprenticeship breakdowns and the high rate of successful transition to the labour market in comparison with European countries (OECD, 2021). By doing so, the Task Force report considers that the VET system as it exists, i.e. with the usual boundaries of public-private partnership (SERI, 2022), have proved its worth during the pandemic. According to the report "any state intervention in the VET system in the event of an economic crisis should therefore be avoided" (Task Force "Perspectives Apprentissage", 2021, p.16).

#### **4.2 The media erasure of apprentices' suffering**

The concerns of this training policy were widely reported in the local general press. Two thirds of the articles in the daily newspapers *Le Temps* and *24 heures* mentioning apprentices during the pandemic dealt with their situation from the point of view of apprenticeship positions and their training recognition (see graph below).

### Graph 1

Number of articles by themes and newspapers



Only a few articles mention the apprentices' experience. An article in *24 heures* (Collet & Ebinger, 2023) reveals a discrepancy between the views reported by apprentices and those of certain training professionals:

The director [of the training centre] believes that the pandemic is having less of an impact than expected. "The situation is under control, says the deputy director [of the training centre]. We are surprised by the ability of young people to adapt" (...). The teaching staff is more cautious: "The students complain a lot in class, says a teacher at the vocational school. They are tired, unmotivated and have difficulty concentrating, because of the mask, but also because of the tensions they feel at school and in the workplace". This was echoed by our three [interviewed apprentices].

In this example, the training centre management moderates the negative effects of the pandemic, underlining later the normal rate of success in the exams and the good progress of the apprenticeship, while some teachers mention the difficulties and sufferings endured by some of the apprentices.

The other articles consulted deal more extensively with the suffering of young people (depression, social isolation, anxiety, etc.). This media treatment tends to make invisible the part played by the working and training conditions in companies during the pandemic in the suffering of apprentices. Moreover, it erases the variable effects of the pandemic on their situations and potentially on apprentices' health depending on the professional sector. For example, retail professional apprentices in some sales sectors were assigned to work at home due to store closures, while healthcare assistants' apprentices were heavily involved in the care of COVID patients throughout the pandemic. These elements are addressed in the analysis of the group interviews with apprentices.

### 4.3 Contrasting experiences revealing ordinary suffering

The interviews conducted with apprentices show the pandemic impacts on their training and working conditions, as well as its effect on their health. These impacts are expressed very differently depending on the sector and the type of workplace. However, apprentices do not only associate their suffering with the pandemic context. Indeed, they do not talk at length about COVID, unlike other topics related to their ordinary condition as apprentices.

First of all, healthcare assistant apprentices in home care did not always have the appropriate protective equipment. For example, the masks provided did not meet the protection standard required during the pandemic (FFP2), mainly due to supply problems. In addition, some of them talk about having only one mask available for the whole day. In hospitals, apprentices reported a heavy workload and limited training and supervision, as the trainer was often required to work in other departments. Furthermore, both apprentices in retirement home, home care and hospitals stated that they had been more exposed to patients' suffering and death. Their words also show that they face a collective defence strategy according to which being a 'health professional' implies showing empathy without expressing emotions too strongly:

Estelle: Deaths, deaths, we've experienced... Well people dying and it was not easy for us. I think that in this class there are several of us who have seen deaths, it was not always easy.

(...)

Sylvia: They'll tell you "Ah, but you'll get used to it".

Camille: Yeah, that's it. "Yeah, it's the first one who hurts, then you'll see"

[interview n°4]

We can assume that this defensive strategy (Dejours, 1998) is more difficult to internalise for apprentices as professional socialisation is part of a long-term process. Its success depends partly on integration into the work group. However, their comments on their training conditions in an ordinary context (outside of the pandemic) indicate that they do not really feel that they belong to the work group.

Paul: There are weeks like this, one or two people are missing...

Amélie: We count when it suits them.

(...)

Camille: And for them, we're there to fill in the gaps

[interview n°5].

The feeling of being treated as "cheap" labour seems to be an obstacle to integration into the work group. We hypothesise that this lack of integration contributes to the feeling of having to face, without any real support, situations such as the pandemic for which they were not prepared. Indeed, they have not yet integrated strategies to deal with death, stress and suffering at the lowest cost. The suffering that results from this situation is reflected when they say that they are not really heard and supported in their ordinary work. Lucie who has been trained in the COVID unit for several months makes a mockery of the compulsory visits to the psychologist set up specifically during the pandemic:

Lucie: I've been in the acute COVID unit for three years now, so we had to go to the COVID psychologist.

Interviewer: Was that an instruction ?

Lucie: It was an instruction.

Interviewer: And was it a positive thing for you, did it help you?

Lucie: No, it was like thirty minutes, it was basic and trivial questions, so that's it.

Aurélie: Just to say that they are psychologically monitored in the unit, that's all.

[Interview 4]

Thus, experiencing a lack of support and listening from the hierarchy (including from trainers) during ordinary training resulted in a distancing, or even a rejection of this ad hoc measure during the pandemic. This measure also appears mismatched with the suffering experienced and is unable to respond to the lack of supervision.

Among retail professional apprentices, the pandemic experience varies according to the type of workplace. For some, like Pedro who is doing his apprenticeship in the food industry, managing the shop with a reduced number of staff and sometimes dealing with nervous customers lead to increased pressure:

Pedro: We weren't even 10 [employees] in the shop, we have 200 people in the shop. It's... It was quite complicated. And when there were too many people, well, we had to block people. And there were [customers] who didn't like it. And, especially us, well, we're younger than... for example, fathers who think they're strong enough because we're young. And they start to... Raising their voices and stuff like that, so it's a bit annoying. Especially as they used to put us in front all the time, so... (laughs)

[Interview 3]

However, others say that they have well experienced the pandemic in terms of customer management. Fernando, for instance, who is doing his apprenticeship in a sports shop (non-essential trade), explains that the restrictions involving distance selling (ordering, depot-selling, etc.) offered him a greater flexibility to meet customers demand:

Fernando: I loved it. I really liked it! Because... you don't have that negative side of selling, where sometimes you have all the customers at the same time and then for 1-2 hours you have nothing, and then it's all at once again. Well, there you managed your time as you wanted.

[Interview 3]

As Fernando points out, the measures against the pandemic have sometimes made it possible to reduce the workload and the tensions which retail professional apprentices are sometimes subjected to, particularly with the trainers and hierarchy. Retail professional apprentices talk at length about their ordinary suffering. They mention in particular the fatigue generated by the long working hours, including evenings and weekends, and particularly during Christmas, to which is added the burden of school work. Therefore, some apprentices report that they benefited from a relief when the shops were closed or when there were fewer customers in the shop.

For hairdressers, it was above all the mask wearing that made the work difficult:

Audrey: It was more when we wore the masks, because wearing the masks with the heat... At least we were protected from the products, but with the heat, it was awful!

Mathilde: Yeah, it was horrible.

[Unidentified participant]: The ears...

[Another unidentified participant]: On the sides it hurts!

(...)

Maëlle: You couldn't see anything, it makes pimples pop, it was hot... and breathing especially.

[Interview 2]

In addition to face mask discomfort, there were other sufferings, often trivialised, caused by the uncomfortable postures and the injunctions of appearance standards at work (Denave & Renard,

2019). The heat was more difficult to bear as the ventilation of the hairdressing premises, recommended during the COVID, was not always possible or came up against the clients' comfort:

Morgan: For example, we realise that it's time to open because there's a cloud of hairspray in the salon. We open the door a little bit and it's like, "Oh, it's cold"! In the summer, there's no problem, but in the winter, it becomes complicated to open the door [without disturbing the customers]

Anita: It's a bit complicated because I work in a shopping centre. It's air-conditioned, but there are no windows.

[Interview 2]

Here again, the customers decrease during the pandemic reduced the regular workload. In this regard, the hairdresser apprentices emphasised the stress caused by the continuous flow of hurried customers which forced them not to systematically respect basic protective measures, such as wearing gloves when using dye products.

Anita: If you're stressed, if there's a client in between waiting for you, you're not going to think: "Oh, I've got to put on a mask to do this." It has to be done quickly. So we don't necessarily think about it.

[Interview 2]

In this sense, the closure of the salons was sometimes experienced as a moment of respite.

Finally, the experience of painters' apprentices is quite different. Indeed, these apprentices continued to work under ordinary conditions, although the employer had an obligation to ensure that prevention measures were respected as indicated above. However, their comments reveal the unrealistic nature of these COVID measures, as the following excerpt about basic protective and safety equipment in the painting trade shows:

Oriane: We are not taught enough [about protective measures]. It's done quickly and the [usual] masks are more like 'Go to work! Did you forget your mask? Well, now we're doing [the job].

Ibrahim: Oh yes, there's that too.

Amal: They don't have time to go back [to the premises]. They are right, it's a waste of time. You go back to the depot just to look for masks...

(...)

Oriane: I feel stupid, clearly (laughs), to be the only one with a mask when everyone else is without a mask, all the other trades that come and go... No, really, I feel stupid when I'm the only one putting on a mask.

[Interview 1]

Everything indicates that the protective measures come up against the temporal constraints of the work, which are quite typical in the construction trades (Jounin, 2009).

## 5 Conclusion

The COVID policy measures taken in the VET system reveal the special status of apprentices as both workers and learners. Apprentices were given the same relief as students in terms of examinations and teaching courses by vocational school. However, there were also partly assimilated to young workers and, as such subject to the same conditions as adult workers. This

special status is part of a training policy based on a public-private partnership. The exceptional measures enacted during the pandemic concerning the apprenticeship market are a response to this training policy. These measures are justified by the authorities and labour organisations in terms of the high rate of retention in apprenticeship and integration into the labour market. This particular configuration has nevertheless exposed apprentices to work and training conditions that could potentially generate suffering. However, from the media's point of view, the overemphasis on the suffering of young people during the COVID makes invisible what the suffering of apprentices owes to their status. The conversation with the apprentices shows that their suffering during the pandemic is inextricably linked to their particular status. In some cases, the COVID period had accentuated the ordinary suffering associated with their status, particularly among the healthcare assistant apprentices. In other cases, particularly for retail professional apprentices, measures to restrict access to shops have reduced the workload and pressure which is usually a burden on apprentices' health. In all cases, the apprentices' experience during the pandemic reveal a ordinary suffering that has gone unnoticed in the political and media discourse.

### Ethics statement

The affiliation institution (SFUVET) for this research did not yet have clearly established ethical provisions. Consequently, this research referred to the fundamental principles of deontology and ethics in research, relying in particular on the SNSF recommendations. To this end, each participant received a consent form at the beginning of the interview, which was dated and signed. The participants received oral explanations on the objectives of the research, the respect of confidentiality and anonymity, as well as the data protection measures (e.g. server protected by an access code).

### References

- Bolli, T., Caves, K. M., Pusterla, F., Rageth, L., Renold, U., Sritharan, A., Díaz-Tejeiro, S.T., (n.d.). *Apprenticeship Pulse – Factsheet*, ETH, Chair of Education Systems, retrieved January 2023, from <https://ces.ethz.ch/research/apprenticeship-pulse-.html>
- Breslin, F.C. & Smith, P. (2005). Age-related differences in work injuries: A multivariate, population-based study. *American Journal of Industrial Medicine*, 48, 50-56. <https://doi.org/10.1002/ajim.20185>
- Collet, C., Ebinger, R. (15 February 2021), « Les apprentis face au défi de la crise sanitaire », *24 heures*.
- Dale, R., O'Rourke, T., Humer, E., Jesser, A., Plener, P.L., Pieh, C. (2021). Mental Health of Apprentices during the COVID-19 Pandemic in Austria and the Effect of Gender, Migration Background, and Work Situation. *International Journal of Environmental Research and Public Health*, 18, 8933. <https://doi.org/10.3390/ijerph18178933>
- Dejours, C. (1998). *Souffrances en France. La banalisation de l'injustice*. Edition du Seuil.
- Denave, S. & Renard, F. (2019). Des corps en apprentissage. Effets de classe et de genre dans les métiers de l'automobile et de la coiffure. *Nouvelles Questions Féministes*, 38, 68-84. <https://doi.org/10.3917/nqf.382.0068>
- Duc, B., & Lamamra, N. (2022). Apprentices' health: Between prevention and socialization. *Safety Science*, 147, 105584. <https://doi.org/10.1016/j.ssci.2021.105584>
- Federal Statistical Office [FSO] (2021). *Swiss Labour Force Survey (SLFS) 2020: work-related accidents and health problems*. Neuchâtel, FSO.
- Gervais, M., Massicotte, P., Champoux, D. (2006). *Conditions de travail, de santé et de sécurité des travailleurs du Québec*. Montréal : Institut de recherche Robert-Sauvé en santé et en sécurité du travail.

- Grytnes, R. (2018). A Sense of Security: Carpentry Apprentices Handling Uncertain and Dangerous Work Tasks. *Ethnos*, 83(2), 353-370. <https://doi.org/10.1080/00141844.2017.1282972>
- Grytnes, R. (2021). Safety learning among young newly employed workers in three sectors: A challenge to the assumed order of things. *Safety Science*, 143, 1-10. <https://doi.org/10.1016/j.ssci.2021.105417>
- Jounin N. (2009). *Chantier interdit au public. Enquête parmi les travailleurs du bâtiment*. La Découverte.
- Ledoux, E, Laberge, L, Thuilier, C, Prud'homme, P, Veillette, S., Gaudreault, M., Perron, M. (2008). *Étudier et travailler en région à 18 ans : quels sont les risques de SST ? Une étude exploratoire*. Montréal : Institut de recherche Robert-Sauvé en santé et en sécurité du travail.
- OECD (2021). *Quelles mesures ont été adoptées par les pays pour aider les jeunes face à la crise du COVID-19?*. <https://www.oecd.org/coronavirus/policy-responses/quelles-mesures-ont-ete-adoptees-par-les-pays-pour-aider-les-jeunes-face-a-la-crise-du-covid-19-c1d692cb/>
- Prince V, Barrense-Dias Y. « Pas au top à cause du Corona ? » *Sondage auprès des jeunes romand-es âgés de 10 à 25 ans*. Lausanne », Unisanté - Centre universitaire de médecine générale et santé publique, 2021 (Raisons de Santé : Les Essentiels 30) <http://dx.doi.org/10.16908/rds-essentiels/3>
- Rasmussen, K., Hansen, C. D., Nielsen, K. J., Andersen, J. H. (2011). Incidence of work injuries amongst Danish adolescents and their association with work environment factors. *American journal of industrial medicine*, 54(2), 143-152. <https://doi.org/10.1002/ajim.20911>
- Raykov, M., & Taylor, A. (2013). Health and Safety for Canadian Youth in Trades. *Just Labour*, 20. <https://doi.org/10.25071/1705-1436.17>
- SERI (2022). *Vocational and professional education and training in Switzerland – Facts and figures 2022*. [https://www.sbf.admin.ch/dam/sbf/fr/dokumente/webshop/2020/bb-f-z-2020.pdf.download.pdf/fakten\\_zahlen\\_bb\\_e.pdf](https://www.sbf.admin.ch/dam/sbf/fr/dokumente/webshop/2020/bb-f-z-2020.pdf.download.pdf/fakten_zahlen_bb_e.pdf)
- SERI (n.d.). *Quand instruments et mesures sont mis au service du marché des places d'apprentissage et de l'insertion professionnelle*. <https://www.sbf.admin.ch/sbf/fr/home/services/publications/base-de-donnees-des-publications/s-n-2021-3/s-n-2021-3f.html>
- Taddei, M. (23 februar 2021). « Une formation en présentiel pour les apprentis », AGEFI, <https://agefi.com/actualites/acteurs/une-formation-en-presentiel-pour-les-apprentis>
- Travail.Suisse (n.d.). *Indemnité en cas de RHT pendant la pandémie : qui avait droit quand à l'ind. en cas de RHT ?*. [https://www.arbeit.swiss/dam/secoalv/fr/dokumente/unternehmen/versicherungsleistungen/kae-anspruch-pandemie.pdf.download.pdf/Wer\\_hatte\\_wann\\_Anspruch\\_auf\\_KAE\\_FR.pdf](https://www.arbeit.swiss/dam/secoalv/fr/dokumente/unternehmen/versicherungsleistungen/kae-anspruch-pandemie.pdf.download.pdf/Wer_hatte_wann_Anspruch_auf_KAE_FR.pdf)
- Task Force « Perspectives Apprentissage », (15 november 2021). *Rapport de la Task Force « Perspectives Apprentissage » à l'intention du Sommet national de la formation professionnelle*. [https://taskforce2020.ch/images/2021-11-15\\_Task\\_Force\\_Bericht\\_2021\\_FR.pdf](https://taskforce2020.ch/images/2021-11-15_Task_Force_Bericht_2021_FR.pdf)
- UPS-USAM, (n.d.). *Orientation professionnelle et choix de carrière en période de pandémie de COVID. Transfert de savoir-faire entre les entreprises formatrices, les associations professionnelles et les organisations du travail (OrTra) pendant la pandémie de COVID. Rapport de résultats 2021 (french version)*. [https://www.sgv-usam.ch/media/16614/20211126\\_ergebnisbericht-bb\\_kurz\\_fr.pdf](https://www.sgv-usam.ch/media/16614/20211126_ergebnisbericht-bb_kurz_fr.pdf)

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## Appendix

### Chart A

Main measures taken by the Confederation between March 2020 and October 2022

13 March 2020	<ul style="list-style-type: none"> <li>- Face-to-face activities in compulsory and post-compulsory schools and other educational establishments are prohibited. Examinations whose date has already been set may be held if the necessary protective measures are taken. The competent cantonal authority may, however, grant exceptional exemptions from these bans if the training institution, the organisers or the operator present a protection plan including preventive measures (exclusion of sick persons, protection of persons at risk, hygiene rules by disinfecting hands, masks and distance).</li> <li>- Continuation of business activities, including for apprentices.</li> </ul>
16 March 2020	<ul style="list-style-type: none"> <li>- Companies are obliged, if they can, to use telework.</li> <li>- Shops and markets, restaurants, entertainment establishments, hairdressers must close. Current food shops, small take-away food services (canteens, meal delivery, catering for hotel guests), health care facilities (clinics, hospitals, etc.) may remain open.</li> <li>- The competent cantonal authority may derogate from these prohibitions if there is an overriding public interest in doing so, for example in educational establishments or in the event of supply difficulties, and if the educational establishment or the operator complies with the prevention measures.</li> </ul>
21 March 2020	<ul style="list-style-type: none"> <li>- Employers in the main and secondary construction sectors and employers in industry are obliged to comply with the recommendations of the Federal Office of Public Health regarding hygiene and social distancing. This includes limiting the number of people present on construction sites or in companies accordingly, adapting the organisation of construction sites and the operation of companies, and preventing gatherings of more than five people in break rooms and canteens.</li> </ul>
16 April 2020	<ul style="list-style-type: none"> <li>- Derogation from the provisions on examinations at secondary level I and II (schools, gymnasiums, vocational training establishments) in favour of the guidelines applicable throughout Switzerland, which have been drawn up jointly by the Confederation, the cantons and the organisations of the working world.</li> </ul>
24 April 2020	<ul style="list-style-type: none"> <li>- Face-to-face activities in post-compulsory schools and universities as well as in other educational establishments are prohibited. The FOPH's recommendations on hygiene and social distancing must be respected in the case of authorised face-to-face activities. Examinations in educational establishments may take place if the FOPH's recommendations on hygiene and social distancing and the preventive measures (wearing of masks, distance, etc.) are observed.</li> </ul>
27 April 2020	<ul style="list-style-type: none"> <li>- Hairdressers must be reopened if they have a protection plan.</li> <li>- The cantons must ensure that the inpatient sector of hospitals and clinics has sufficient capacity (e.g. beds and staff) for COVID-19 patients and other urgent examinations and treatments.</li> </ul>
11 May 2020	<ul style="list-style-type: none"> <li>- Reopening of shops (including DIY shops and garden centres) if they have a protection plan.</li> <li>- Resumption of face-to-face teaching in post-compulsory schools and other training establishments, in groups of up to five people.</li> </ul>
6 June 2020	<ul style="list-style-type: none"> <li>- Face-to-face teaching in compulsory schools, post-compulsory schools, universities and other educational institutions is permitted if a protection plan is implemented. The cantons decide whether face-to-face teaching takes place in compulsory schools, post-compulsory schools and cantonal tertiary schools.</li> </ul>
19 June 2020	<ul style="list-style-type: none"> <li>- End of telework, under the following conditions:             <ol style="list-style-type: none"> <li>1. Operators of installations or establishments accessible to the public, including training establishments, must draw up and implement a protection</li> </ol> </li> </ul>

	<p>plan. The distance may be disregarded if appropriate protective measures are provided, such as the wearing of a face mask or the presence of adequate partitions. The cantons may grant relief or temporarily limit the number of clients, visitors or participants in training facilities and establishments more strictly.</p> <p>2. The employer shall ensure that employees are able to comply with the FOPH's recommendations on hygiene and distance. If the recommended distance cannot be observed, measures must be taken to implement the STOP principle (substitution, technology, organisation, personnel), including teleworking, physical separation, team separation or the wearing of face masks.</p>
22 June 2020	- End of prevention measures on construction sites and in industry.
29 October 2020	- Prohibition of face-to-face teaching at universities and other educational institutions, except for compulsory schools and post-compulsory institutions.

### Chart B

#### Main cantonal measures to promote VET in the face of COVID

Canton	Measures
Vaud	<ul style="list-style-type: none"> <li>- CHF 16 million (2020) to support training companies ready to take on an apprentice at the start of the school year. They can be relieved of half of the salary of their new apprentice during the first year of training. The same benefit has been promised to companies willing to rehire a 2nd or 3rd year apprentice who has lost their place under Covid-19.</li> <li>- The deadline for apprentices to be engaged in 2020-2021 training is extended from 31 July to 15 November.</li> <li>- CHF 3.2 million (2020) to encourage training companies to create networks of companies to share the responsibility and burden of training an apprentice in small and medium-sized companies. Apprentices who lost their jobs during the pandemic period are supported by vocational commissioners and apprentice advisors to ensure that their training can be completed.</li> </ul>
Geneva	<ul style="list-style-type: none"> <li>- CHF 2.1 million (2020) and 2.3 million (2021) to finance the CHF 10,000 bonus for the creation of a new network of training companies, the payment of the first three months' wages for companies experiencing economic difficulties, and the one-off bonus of CHF 3,000 for all new training companies.</li> <li>- The deadline for apprentices to start training in 2020-2021 has been extended to 31 October 2021. Candidates for an apprenticeship place can attend theoretical courses until they sign a contract, while receiving placement assistance and academic upgrading.</li> </ul>
Fribourg	<ul style="list-style-type: none"> <li>- CHF 5 million (2020-2023) to finance the first months' salary of a first-year apprentice in the form of a cheque for CHF 1,000, which cannot be accumulated.</li> <li>- CHF 200,000 (2021) for the "last minute" measure aimed at putting young people looking for an apprenticeship in touch with training companies.</li> <li>- CHF 1.8 million (2022) for the extension of existing measures.</li> <li>- The deadline for apprentices to start training is extended to the end of October 2020.</li> </ul>
Neuchâtel	<ul style="list-style-type: none"> <li>- CHF 2.5 million (2021) to finance a support fund granting between CHF 2,600 and CHF 6,900 for any company in Neuchâtel training a new apprentice.</li> </ul>
Valais	- No information.

Doroftei, A. (2023). Young apprentices' critical perspectives on the curriculum of Portuguese apprenticeship courses. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 129–137). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7808507>

## Young Apprentices' Critical Perspectives on the Curriculum of Portuguese Apprenticeship Courses

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### Abstract

**Context:** The paper focuses on young apprentices' perspectives on the curricula of a Portuguese IVET pathway, the apprenticeship courses (AC). AC provide an EQF level 4 certificate, and a diploma equivalent to upper secondary education (12<sup>th</sup> grade). The paper discusses the implications of the devaluation of the curricula on the social image of IVET in the Portuguese context.

**Methods:** A qualitative approach was used to analyse data from semi-structured interviews with 54 young apprentices attending apprenticeship courses in nine training entities in northern Portugal.

**Results:** Young apprentices refer to the curricula of the sociocultural, scientific and technological components of AC in distinct ways. The first two are classified as simplified and summarised, without much value to apply to the work context. The subjects are levelled down to the level of lower secondary education, that young apprentices attended before enrolling in AC. The technological component is seen as useful and demanding, although young apprentices also point out that it should be more practical and that some subjects need to be updated. This component is valued because the apprentices find a linear application of their knowledge to the work context.

**Conclusion:** The epithet of 'easiness' attributed to AC curricula, and to Portuguese IVET in general, contributes to a negative social image of IVET, as it is echoed to society. This label can also contribute to young apprentices feeling socially disregarded. Improving the level of the knowledge of the AC curriculum would contribute to improving the social image of these courses and of IVET in general.

### Keywords

apprenticeship courses, apprentices, Portugal, curriculum

### 1 Introduction

Portuguese apprenticeship courses (AC) are a modality of initial vocational education and training (IVET) in the Portuguese VET system. As in other VET systems around the world (Lehmann et al., 2014; Ryan & Lőrinc, 2018), Portuguese IVET is subject to stigma (Doroftei, 2020; Torres & Araújo, 2010). The social image of IVET is deeply rooted in the divide between theoretical and practical knowledge (Hyland, 2017; Tarabini & Jacovkis, 2019), the latter being considered less noble (Hyland, 2017; Lehmann et al., 2014) and accessible to all learners, while the former is associated with intellect and culture and therefore not accessible to all learners



(Hyland, 2017; Tarabini & Jacovkis, 2019). The former, associated with IVET, is considered easy, while the latter, associated with mainstream education, is considered difficult to learn (Tarabini & Jacovkis, 2019). Consequently, the social image of IVET is linked to the social perception that the knowledge conveyed in the curriculum is easy and, subsequently, IVET is attended by young people who were not able to succeed in mainstream education.

Alternative contexts to mainstream education can provide “meaningful education” (McGregor et al., 2015) for young people who have become disengaged from school at some point in their lives, as we have argued elsewhere (Macedo et al., 2018). In those contexts, young people can rediscover their motivation to learn, rebuild their relationship with knowledge (Charlot, 2009) and experience that learning can be translated into skills, knowledge and even self-esteem. However, meaningful education must go hand in hand with opportunities for further study, in particular in higher education. It must also contribute to the development of an analytical sense of the world, including all the dimensions of the profession for which one is being trained.

This paper aims to present the perspectives of young apprentices on the curricula of Portuguese AC, and discuss them within the scope of the concepts of “meaningful education” (McGregor et al., 2014) and “powerful knowledge” (Young et al., 2014). Since IVET students are the main target of the stigma surrounding IVET (Doroftei, 2020), it is relevant to know their perceptions and opinions about the curricula.

## 2 Theoretical framework

The concepts of “meaningful education” (McGregor et al., 2015) and “powerful knowledge” (Young et al., 2014) were used to supporting the analysis of the data. The concept of meaningful education refers to programmes that are close to students’ lives in the sense that they involve pedagogical experiences that combine theory and practice (McGregor et al., 2015). “Powerful knowledge” (Young et al., 2014) is knowledge that is generalisable and that applies to all dimensions of life, but, as the authors argue, it can only be imparted at school. It enables individuals to become more aware of the mechanisms of power to which they are subject. The authors contend that what they call “powerful knowledge”, is a necessary dimension for the existence of social justice.

Powerful knowledge can only be imparted at school because Young and colleagues (2014, p.10) believe that school is the place where all students can “acquire knowledge that takes them beyond their experience”. This conception of knowledge shared by Young and colleagues (2014) seems to be conflicting with the conception of a meaningful education defended by McGregor and colleagues (2015). The former focus on conceptualisations and content that enable students to know and think about the world beyond their concrete lives. The latter focus on building programmes that students can understand from their life experiences.

Promoting meaningful education does not necessarily mean that powerful knowledge cannot be fostered. It is possible to start from students’ life experiences and provide them with knowledge that allows them to reconceptualise and move beyond their life experiences. Yet, promoting meaningful education can be understood as adapting the curriculum to the kind of students attending a particular programme, which seems to be the case in AC. Tailoring the curriculum to specific groups, based on a preconception of their abilities, can limit the aspirations, expectations and development of those included in the groups. This contributes to social reproduction (Bourdieu & Passeron, n.d.), because it does not stimulate the overcoming of the limitations implied by a “non-schooling” culture (Young, 2015).

The curricula of Portuguese apprenticeship courses is composed by four components: Sociocultural (subjects like languages, ICT and Personal Development), Scientific (subjects like Mathematics, Law, Economics, Chemistry), Technological (subjects specific of the professional area), and Practical (work-based training). Although the AC provide a certificate

of equivalence to upper secondary education (12<sup>th</sup> grade), the curricular content of the sociocultural and scientific components, which should be equivalent to mainstream education, is levelled down to the level of lower secondary education. This levelling down means that young people who complete the 12<sup>th</sup> grade through the AC are not in an equal condition in terms of knowledge as those complete 12<sup>th</sup> grade through mainstream education. At the same time, this levelling down seems to have an underlying social representation of the young people who attend these courses as being unable to follow “a ‘normal’ curriculum” (Alves, 2007). This is a representation that contributes to the categorisation of vocational education as an ‘easier’ educational pathway. This is reflected in its social image, in its attractiveness (Cedefop, 2014), and, consequently, in the representations about the students who attend it.

### 3 Methods

The research presented here stems from a larger mixed-methods study, on the social image of initial vocational education and training in Portugal.

Qualitative data was collected through semi-structured interviews with four groups of stakeholders in nine training entities offering apprenticeship courses in the North of Portugal. However, for the purpose of this paper, 54 semi-structured interviews with young apprentices (61% male) who were attending AC at the time of data collection are considered. The young apprentices who participated in the study were selected by the directors of the training entities according to the criteria defined by the researcher. The 54 young apprentices interviewed, six per training entity, were attending 23 different AC, corresponding to 16 areas of education and training.

The analysis presented in this paper focuses on the perspectives of young apprentices on the knowledge provided by the courses. The research question underlying the paper is: *what are the perspectives of AC students on the knowledge conveyed by AC curricula?*

Findings are derived from content analysis (Tonkiss, 2004) using the NVivo 12® software. Data were coded in a parent code: *Perspective on the knowledge in the AC*, and in a child code: *Opinion on the AC curriculum*. An inductive analysis was performed on the content of the child code, resulting in the categories shown in Table 1.

**Table 1**  
Opinion on the AC curriculum

<b>Codes</b>	<b>Number of References</b>
Subjects are simplified or summarised	62
Subjects are different from mainstream education	12
It should be more practical and less theoretical	12
The technological component is very useful and demanding	9
One learns more in the course than in mainstream education	5
Subjects are interconnected	5
Subjects have applicability in real life	4
There are subjects that are not useful for the profession	3
We learn more by doing than by listening	2
It does not prepare us to practise a profession autonomously	2
Here we are prepared for a profession, at school to be somebody	1
There is overlap of content between subjects	1
There are subjects missing from the technological component	1
There are subjects that are obsolete; they no longer make sense	1
On the course we learn more in practical terms	1
	<b>121</b>

Triangulation of the analysis of the opinion on the AC curriculum was made with a code about the negative perspectives that young apprentices infer about the society's social representations on IVET. Table 2 presents the five child codes with higher number of references coded at the codes: Social image of IVET – representations from society / negative perspectives / micro level. The micro level code reports to the references directly related with IVET students.

**Table 2**

**Negative perspectives on the social image of IVET – Micro level**

<b>Codes</b>	<b>Number of references</b>
It is for dumb people; who do not succeed in mainstream education	26
For young people who are not interested in school; who do not want to study	6
For young people who don't want to do anything; lazy	5
For young people without support at home; disadvantaged	4
For young people who fail and do not succeed at school	3

The study was in accordance with the ethical regulations of the researcher's University. Informed consent was given to the participants and signed by all.

#### **4 Results**

Young apprentices were asked about their opinion on the curricula of AC. Table 1 gathers the categories emerged from their perspectives. The following reports to each of those categories.

*Subjects are simplified or summarised*

As denoted in Table 1, young apprentices report most frequently (62 references) the easiness of the subjects that compose the sociocultural and scientific components of the AC curricula. The following excerpt from Laura's interview illustrates this perception:

*I: What do you think about what is learned in the AC, the subjects, or... the contents?*

*Laura: They are subjects that are easier, that is, they are easier than in mainstream education, which is really for us to get good grades and have a good mean at the end. They're very easy subjects.*

*I: And do you think that's good or bad?*

*Laura: It's a bit bad, too. It's good for us, because we can get high grades, but it's bad because in the future... if someone asks us for more elaborate things, we don't know how to do them, right?*

*I: But you're talking about what subjects, for example?*

*Laura: Like Maths... we're in grade 11, we don't have 11th grade material, we're taking 7th, 8th or 9th grade material... we're taking very basic subjects. In terms of... Portuguese, we also don't have very... in-depth subjects, right? It's more basic subjects, it's always like that, those subjects that are more... mathematics, English or something, they are also very easy subjects. (Laura, F, 22 years old, 11<sup>th</sup> grade of Hospitality and Catering)*

Laura's interview suggests that the subjects she mentions form part of the sociocultural and the scientific components of AC curricula. Laura's vision is reinforced by Nair, in the same grade, but a different area of education and training:

*The subjects... I feel are basic on the verge of mainstream secondary school. Because... I used to get negative grades in English and here I get 20s. It has nothing to do with it! I think it also has something to do with age, because before I was younger, maybe I didn't care so much, but... I think the subjects help us in many ways, but they are easier and more... you don't need a lot of study to be on a course like we are. (Nair, F, 22 years old, 11<sup>th</sup> grade of Craftwork)*

Nair mentions the learning maturity of young apprentices, suggesting that she wasn't mature enough to get a good grade in English before the AC, carrying to herself a kind of 'guilt' for not being a good learner. But she went from a negative grade to the highest grade possible and still finds she feels the subjects very basic.

*Subjects are different from mainstream education*

The excerpts from Laura and Nair suggest that young apprentices are aware of the differences between the subjects in AC curricula and those in mainstream education (12 references). This may be due to the fact that some of the interviewees have attended mainstream upper secondary education. Others who haven't had that experience also perceive it, but from the testimonies of colleagues, as Fernando mentions:

*I finished the 9th grade, I had no other experience, I don't know what mainstream education is like in the 10th, 11th, 12th grades, but from what they say it's a bit easier here, the subjects are different, but you can still learn something. But for example, we have equivalency for the 12th grade and then we can take exams to apply for university... we no longer have... the subject we learn is not compatible with what we need to go to university. (Fernando, M, 17 years old, 12<sup>th</sup> grade of Metallurgy and Metalomechanics)*

Therefore, students report that the subjects they learn in AC, that should be equivalent to those in mainstream education, are different and also simplified, which means 'easier' than in mainstream education. This position is also related to the perception that there are subjects in AC *that are not useful for the profession* (3 references). Usually, these subjects are the ones from the sociocultural component.

*It should be more practical and less theoretical*

Young apprentices are aware that the sociocultural subjects are part of the AC curricula because of their equivalence to upper secondary education. However, as young apprentices do not find a real equivalence, they claim that the hours spent on sociocultural subjects should be transferred to the technological component, which is the one that is more linearly connected to on-the-job training. Leonardo, for example, highlights this by mentioning not knowing enough to work:

*We have to have socio-cultural subjects because of the equivalence for secondary school, but in practice this doesn't happen, does it? Because the subjects we have are not at all equivalent to what we teach in secondary school, far from it! So, we could have many more hours of technical subjects, which we really need! Because... my course has a lot of things to know and we don't give a tenth of what we need to go to work! So, I think, perhaps, either the number of hours of some socio-cultural subjects should be reduced, or they should not be given at all, or... I don't know, I think it's a waste of time. We are in the internship and we feel that we don't know how to do anything! And yet we have given a lot of things here and it's still not enough! (Leonardo, M, 22 years old, 11<sup>th</sup> grade of Textile, Clothing, Footwear and Leather Industries)*

As a result of this feeling of unpreparedness, young apprentices believe that the knowledge they learn in the course does *not prepare to practise a profession autonomously* (2 references).

*The technological component is very useful and demanding*

In contrast to the 'easiness' of the sociocultural and scientific components, young apprentices report that the technological component is useful and demanding, especially because of its applicability to the work context.

*The subjects that are linked to the course, the more technical ones, I think they are very... worthwhile, right?... because then we go to the internship, we go to work and we have the knowledge we have learned here. Of course, there are subjects that we won't use in the world of work... those subjects that are more... that are compulsory. But those more practical ones are very useful.* (António, M, 25 years old, 11<sup>th</sup> grade of Trade)

Despite the importance that students attribute to the technological component, they also point out that some of the subjects they learn in class are already outdated in the work context and need to be updated.

In sum, when asked for their opinion on the AC curriculum, students generally describe it as being easy. They tend to devalue the sociocultural and scientific components of the curriculum because the subjects that compose it are levelled by lower secondary education, which students have already studied up to the 9<sup>th</sup> grade. In contrast, they tend to value the technological component as it is the one where they perceive a linear application to the work context. Nevertheless, they claim that the latter component should have more teaching hours, be more practical, and updated.

Young apprentices were also asked about their perceptions of what society thinks about the courses and about IVET students. In the following we refer to the first two categories in Table 2.

*It is for dumb people; who do not succeed in mainstream education*

As can be seen in Table 2, the code with the largest number of references (26 references) reports that young apprentices perceive that society thinks that IVET students are 'dumb' and that they had to enrol in vocational education because they could not succeed in mainstream education, as Raquel states:

*I sometimes hear comments such as "ah, those who go to the vocational course are also a bit dumb" because they don't have the skills to go to an upper secondary course.* (Raquel, F, 20 years old, 12<sup>th</sup> grade of Beauty Care)

However, young apprentices perceive the connection between this social representation and the curricula of AC, as Patrícia's words make clear:

*According to what people think, it's for dummies, isn't it? the courses, so to speak. I wouldn't say it's for dummies, but... also myself, who've been in both types of education, I think that it really demands a lot less of people... not a lot less, but... less. It's easier to do.* (Patrícia, F, 23 years old, 11<sup>th</sup> grade of Textile, Clothing, Footwear and Leather Industries)

Thus, young apprentices feel that society has a negative opinion of IVET students (young apprentices included), namely considering that vocational education is *for young people who are not interested in school; who do not want to study*, as Yara asserts:

*Unfortunately, I think that society in general thinks that people are here because they don't want to study and want life to be easier, and that's it.* (Yara, F, 21 years old, 12<sup>th</sup> grade of Hospitality and Catering)

These findings suggest that young apprentices' perceptions of the curricula are closely related to the social representations they perceive from society. Their perceptions about the curricula



are likely to reflect the same perceptions that society has, leading to a negative social representation of IVET<sup>6</sup>.

## 5 Conclusions

The sociocultural and scientific components of the Apprenticeship Courses curricula are characterised by a very low academic level comparable to that of lower secondary education. This levelling down could be seen as proxy to ‘meaningful education’ programmes that are close to students’ lives (McGregor et al, 2015). However, it could also affect the ability to read and interpret the world and the critical sense that goes beyond the limits of their professionalisation (Nussbaum, 2014; Young, 2016; Young et al., 2014). Moreover, it may also limit the full acquisition of key competences for lifelong learning (European Commission, 2019) which are considered fundamental for personal and professional development. However, it seems that students only assign value to knowledge that they can perceive as linearly applicable to the profession for which they are being trained. This is in line with the work of Hiim (2017) that mentions that Norwegian VET students do not see the connection between the subjects and the vocational field they are being trained for.

Notwithstanding, the epithet of ‘easiness’ attributed to AC curricula, and to Portuguese IVET in general, gives rise to a negative social image of IVET, as this labelling is echoed to society.

The level of curricular demands in the AC can create a self-fulfilling prophecy effect in the young apprentices in the sense that they feel incapable and also socially disregarded. This situation is in line with Clavel’s (2004, p. 113) statement that “disadvantaged populations are subjected to a pedagogical work whose purpose is to internalise the legitimisation of their exclusion”, assimilating an idea of “inaptitude” (*ibidem*) to follow the “normal” curriculum (Alves, 2007).

Therefore, fostering ‘powerful knowledge’ (Young et al, 2014) in IVET – meaning improving the level of the knowledge of the AC curriculum, and levelling it by upper secondary education – would contribute to improving the social image of these courses and of IVET in general. It could also contribute to the empowerment of AC students and to a greater parity of esteem between vocational and mainstream education (Cedefop, 2014).

## Ethics statement

This paper results from a doctoral study conducted from 2015 to 2020. At the time there was no ethics committee at FPCEUP, therefore, the research has not an ethics approval or opinion from an ethics committee. Nevertheless, the supervisors of the doctoral research project have approved the ethics principles guiding the research.

The participants were given an informed consent document which included: 1) a presentation of the research project and its main objectives; 2) the interview topics; 3) the express request for audio recording, ensuring that the data collected would only be used for this research and would not be passed on to third parties in raw form; 4) information that a code would be assigned to each participant and each training entity they attended, and that all identifying elements would be removed from the transcript, thus ensuring anonymity; 5) information that the participants could leave the study at any time without any detriment; 6) and an indication that the results would be published. The consent also included the researcher's

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<sup>6</sup> AC are a specific modality of Portuguese IVET system, and not the most representative, but, as the study showed, people, including those who participate in IVET do not distinguish between training modalities. Thus, when asked about the social representations around the courses, young apprentices reported to IVET in general.

contact details. Before the interview the informed consent was explained orally to the participants, who were then asked of the subsistence of any doubts. The document was then read for signature. The demographic data of the participants were collected in a separate document, without names, where only the codes were mentioned. The participants were given a alias that did not match any of their real names. Another ethical option, related to the participants' anonymity, was to not indicate the title of the apprenticeship courses the participants attended. The designation of the corresponding education and training areas which aggregate more than one apprenticeship course was used instead. This reduced the possibility of identifying the courses and, therefore, the participants.

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### References

- Almeida, S. (2005). *O Sistema de Aprendizagem e a transição dos jovens da escola ao mundo do trabalho. A relação com o saber: Formas e temporalidades identitárias*. Universidade do Porto.
- Alves, N. (2007). E se a melhoria da empregabilidade dos jovens escondesse novas formas de desigualdade social? *Sísifo. Revista de Ciências da Educação*, 2, 59–68. <https://www.researchgate.net/publication/28156803>
- Bourdieu, P., & Passeron, J. C. (n.d.). *A reprodução: Elementos para uma teoria do sistema de ensino*. Editorial Vega.
- Cedefop. (2014). Attractiveness of initial vocational education and training: Identifying what matters. In Cedefop (Ed.), *Research Paper No. 39*. Publications Office of the European Union. [http://www.cedefop.europa.eu/files/5539\\_en.pdf](http://www.cedefop.europa.eu/files/5539_en.pdf)
- Charlot, B. (2009). *A relação com o saber nos meios populares. Uma investigação nos liceus profissionais de subúrbio*. Livpsic.
- Clavel, G. (2004). *A Sociedade da Exclusão. Compreendê-la para dela sair*. Porto Editora.
- Doroftei, Alexandra. (2020). *Cursos de Aprendizagem e equidade no campo educativo: Um estudo sobre representações, reconhecimento e imagem social do ensino profissionalizante de jovens em Portugal*. Universidade do Porto.
- European Commission. (2019). *Key competences for lifelong learning*. Publications Office of the European Union. <https://op.europa.eu/en/publication-detail/-/publication/297a33c8-a1f3-11e9-9d01-01aa75ed71a1/language-en>
- Hiim, Hilde. (2017). Ensuring curriculum relevance in Vocational Education and Training: Epistemological perspectives in a curriculum research project. *International Journal for Research in Vocational Education and Training*, 4(1), 1–19. <https://doi.org/10.13152/IJRVET.4.1.1>
- McGregor, G., Mills, M., te Riele, K., & Hayes, D. (2015). Excluded from school: Getting a second chance at a 'meaningful' education. *International Journal of Inclusive Education*, 19(6), 608–625. <https://doi.org/10.1080/13603116.2014.961684>
- Neves, A. O. das, & Figueiredo, A. (Coords. ) (2007). *Estudo de avaliação do Sistema de Aprendizagem - Relatório Final* (Vol. 1). IIEFP.
- Neves, A. O. das, Pedroso, P., & Matias, N. (1993). *O Sistema de Aprendizagem em Portugal. Experiência de avaliação crítica*. IIEFP.

- Nussbaum, M. C. (2014). *Educação e Justiça Social*. Edições Pedagogo.
- Tonkiss, F. (2004). Analysing text and speech: Content and discourse analysis. In C. Seale (Ed.), *Researching society and culture* (pp. 367–382). Sage.
- Young, M. (2015). What is learning and why does it matter? *European Journal of Education*, 50(1), 17–20. <https://doi.org/10.1111/ejed.12105>
- Young, M. (2016). Por que o conhecimento é importante para as escolas do século XXI? *Cadernos de Pesquisa*, 46, 18–37. <https://doi.org/http://dx.doi.org/10.1590/198053143533>
- Young, M., Lambert, D., Roberts, C. R., & Roberts, M. (2014). *Knowledge and the future school: curriculum and social justice*. Bloomsbury Academic.

### Biographical note

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## On the Planned Apprenticeship Guarantee for Germany: An Attempt to Reduce the Risk of Social Exclusion During the Transition from School to VET?

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### Abstract

At the end of 2022, the German government published a draft for an apprenticeship guarantee. One measure proposed in the draft is to fund apprenticeships for those young people who do not find an apprenticeship despite actively searching. It is assumed that around 7,000 young people would start such extra-company training each year. This number seems rather low compared to the more than 200,000 young people who start preparatory courses every year. In the 18-34 age group, the risk of unemployment is five times higher if a person has not obtained a vocational or higher education qualification – this goes along with other forms of social exclusion. The paper raises the question of whether such an apprenticeship guarantee, due to its small scale, could only bring about minor changes for the disadvantaged, or whether it could represent a paradigm shift on a conceptual and political level, as it aims to integrate disadvantaged young people directly into the regular system instead of separating them from the rest.

### Keywords

access to education and training, education and training reform, Germany, policy implications, social inclusion

### 1 Introduction

In 2021, the German government declared its intention to introduce an apprenticeship guarantee (SPD et al., 2021, p. 66). One year later, at the end of 2022, the Federal Ministry of Labour and Social Affairs presented a draft bill and a shorter concept paper for the apprenticeship guarantee (Bundesministerium für Arbeit und Soziales [BMAS], 2022a, 2022b). This article analyses this political reform initiative, which addresses a long-known shortcoming of the German VET system: The lack of a fully qualified VET option for those school leavers who cannot find an apprenticeship. Since the adoption of the Vocational Training Act in 1969, there have been several attempts to introduce some form of apprenticeship guarantee in (West) Germany – all of which have so far failed (Busemeyer, 2009). Using the approach of critical policy analysis, this paper discusses the ministerial draft bill in context of the social and political situation in Germany. Research questions are:

- What are the elements of the draft apprenticeship guarantee and what are the reasons to introduce such a proposal?
- What social problems and structural aspects of the German VET system does the draft apprenticeship guarantee address?
- What is the political constellation behind this reform initiative and what are the possible outcomes of such an apprenticeship guarantee?

## 2 Reform proposal: An apprenticeship guarantee for Germany

The ministerial bill calls for "strengthening support for initial and continuing vocational training and the introduction of a training period"<sup>7</sup>. The bill includes a larger legislative package for the reform of the German Social Code (Sozialgesetzbuch, SGB). It does not deal exclusively with the apprenticeship guarantee, but the following discussion will only focus on this aspect, as there is no internal connection with the other parts of the bill. Notably, the draft bill is designed in the context of German labour market regulation rather than as an education reform, since educational policy is mainly the responsibility of the 16 German federal states (*Länder*).

The aim of the apprenticeship guarantee is to give all young people without a vocational qualification access to a fully qualifying, preferably in-company vocational training.<sup>8</sup> To this end, the bill proposes four measures: (1) strengthening vocational orientation, (2) increasing regional mobility, (3) preparing for and supporting in-company vocational training and (4) offering extra-company vocational training as an "ultima ratio" (BMAS, 2022b, pp. 3–7). These measures relate to different aspects of finding an apprenticeship and are regulated in different paragraphs of the SGB.

As a first step – strengthening vocational orientation – existing careers guidance should be improved to help young people find a training place in their region. To this end, the Ministry also calls on the *Länder* to set up a data exchange that enables the Federal Employment Agency to contact school leavers (BMAS, 2022b, pp. 3–4). As a new instrument (new §48a SGB III), the Ministry proposes that the Federal Employment Agency should finance internships between one and six weeks for young people without an apprenticeship position (BMAS, 2022a, p. 6).

As a second step, young people shall be supported in finding an apprenticeship in another region. In addition to the announcement of further efforts to expand residential facilities (BMAS, 2022a, pp. 4–5), an individual allowance (new §73a SGB III) is planned for trainees who move to another region (BMAS, 2022a, pp. 8–9).

The third step – preparation and support for in-company training – refers to improving existing opportunities for preparatory courses and individual assistance. The only change announced here is a reduction in the minimum duration of long-term work internships for young people without an apprenticeship from six to four months (BMAS, 2022b, pp. 5–6).

Only as a last step – as an "ultima ratio" after all the above measures have been applied – is the Federal Employment Agency to offer fully qualifying extra-company vocational training opportunities. There is already a legal possibility for young people to conclude an apprenticeship contract with a private training provider that is financed by the Federal Employment Agency, but this option is restricted to socially disadvantaged and learning-disabled persons (§76 SGB III). The draft bill proposes to expand the group of eligible participants to include all young people who have not found an apprenticeship despite actively searching for one (BMAS, 2022a, p. 14).

<sup>7</sup> German title: „Entwurf eines Gesetzes zur Stärkung der Aus- und Weiterbildungsförderung und Einführung einer Bildungszeit“.

<sup>8</sup> German original: „Um allen jungen Menschen, die nicht über einen Berufsabschluss verfügen, den Zugang zu einer vollqualifizierenden, möglichst betrieblichen Berufsausbildung zu eröffnen, wird eine Ausbildungsgarantie eingeführt.“ BMAS (2022a, p. 3).

This brief summary of the proposed apprenticeship guarantee shows that only this last step aims to create additional apprenticeship offers, while the other elements are designed to make the use of this measure – the ultima ratio – dispensable. The Ministry assumes that around 7,000 young people would start such extra-company training each year (BMAS, 2022a, p. 37). Wherever possible, extra-company vocational training should take place in cooperation with regular companies. Transition into regular in-company vocational training should be possible and intended. The apprentice shall be able to continue the training with accreditation of the time previously completed. Continued socio-pedagogical assistance by the previous training provider should be possible after the transfer (BMAS, 2022a, pp. 34–35).

The need for the entire reform proposal is justified above all by the structural change in the economy and the shortage of skilled workers. The competitiveness and innovative capacity of the German economy is the higher goal. For this, a sufficient number of skilled workers are needed and the workforce must be trained accordingly (BMAS, 2022a, 2-4, 29-32). In this context, the apprenticeship guarantee is an instrument to prevent young people from entering the labour market without vocational qualification; making their employability the main goal. On the other hand, this employability is framed as a way to offer all young people the chance of secure future prospects and thus the key to social inclusion (BMAS, 2022a, p. 36).

The necessity for an apprenticeship guarantee is then specifically justified by the fact that despite an existing shortage of skilled workers, not all young people find an apprenticeship. The reason for this is essentially seen in matching problems. Hence, priority should be given to better vocational guidance and counselling as well as to providing more internships and facilitating regional mobility to make full use of companies' existing apprenticeship offers. For young people who cannot find a regular apprenticeship, additional apprenticeship opportunities should be created in line with the regional economic structure and needs (BMAS, 2022a, p. 34). An additional reason mentioned is the implementation of the European Youth Guarantee (BMAS, 2022a, p. 32), which was first adopted in 2013 and last updated in 2020 (European Council, 2020).

#### **4 Context: School-to-VET transition and the risk of social exclusion**

The German educational system is based on compulsory education for all children in primary and lower secondary education until the age of 15 to 16 years. In this respect, education systems around the world are quite similar (OECD, 2022, p. 429). In contrast, VET systems differ a lot. In Europe, three types of VET systems exist: A liberal market model (e.g. in England), a state focussed education-driven model (e.g. in France) and a dual system (e.g. in Germany) (Greinert, 2004).

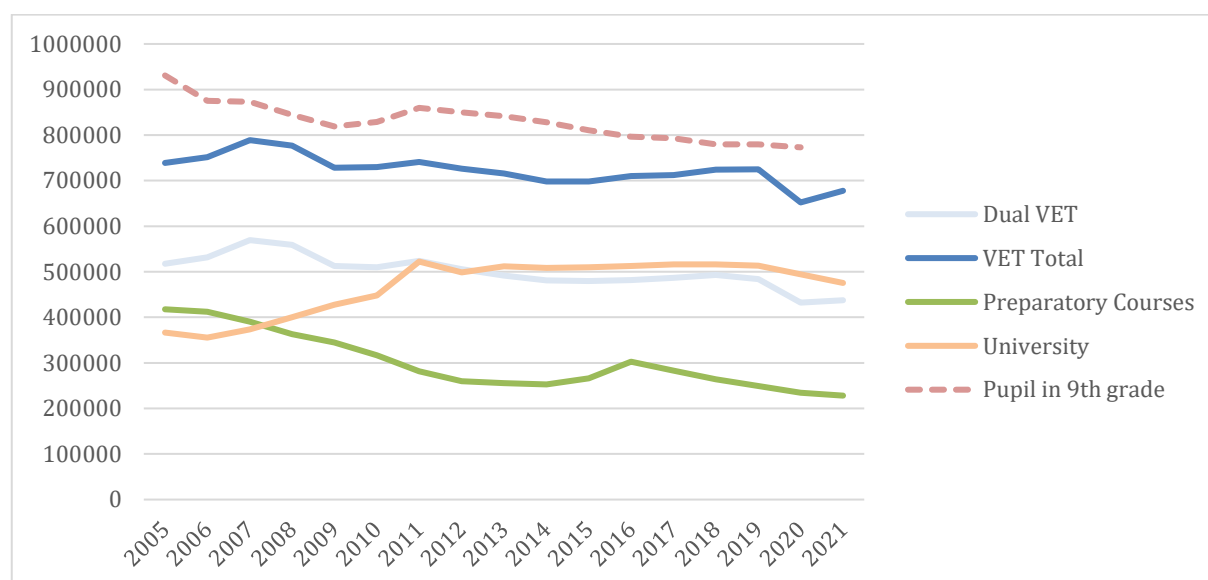
The strong advantage of dual systems is their proximity to the labour market. Because of the high transition rate from in-company apprenticeship to work, dual VET systems are associated with low youth unemployment. The European Union is therefore promoting dual VET as a measure against high youth unemployment (European Council, 2013). Even though the number of new apprentices decreased sharply in Germany due to the COVID-19 pandemic, the employment opportunities of young people in the dual VET track remain positive (Mouillour, 2022).

VET in Germany offers a non-academic route to secure and decent employment. Without a VET qualification, the prospects are rather poor. Unskilled young people – around 15 % in the 18-34 age group – are five times more likely to be unemployed (15.7 % vs. 3.2 %) (Bundesinstitut für Berufsbildung [BIBB], 2022, p. 255). This nexus is well known from other countries: “It has become a widely held assumption that those young people who are outside all education, training or employment between the ages of sixteen and eighteen are condemned to an economically and socially marginalised future.” (Rinne & Järvinen, 2010, p. 521)

Therefore, the vulnerability of the German VET system lies especially in the access to apprenticeships. Even during the economic boom of the last decade, when skilled labour was scarce, many low-performing school leavers failed to enter apprenticeships. And of those who enter preparatory programmes, more than a third do not start an apprenticeship in the four years after leaving school. Those most at risk of not entering the VET system are those who leave lower secondary school without a diploma or with a lower-level diploma (*Hauptschulabschluss*). Four years after leaving school, 27% of girls and 20% of boys in this group have neither successfully completed an apprenticeship nor are they currently in one (Michaelis et al., 2022, pp. 83–87). Other risk factors for the transition from school to VET include parents with a low socio-economic status and low educational attainment, as well as immigrant background (Michaelis et al., 2022, p. 42; see also Autorinnengruppe Bildungsberichterstattung, 2022, Chapter E). The social transmission of disadvantages from parents to their children through the education system is evident in this context (Eckelt & Burkard, 2022, p. 26).

**Figure 1**

Beginners in educational sectors & cohort at the end of lower secondary (by year)



Sources: destatis: Integrierte Ausbildungsberichterstattung; Fachserie 11 Reihe 1 (different years)

In Germany the number of young people leaving school has declined in the last years. Currently, about 800,000 pupils are in the 9th grade, the last year of obligatory lower secondary education. After finishing their lower secondary education, young people have different possibilities for how and when to enter educational courses. During the last decade before the COVID-19 pandemic, around 700,000 persons began a VET course each year, almost 500,000 of them in the dual VET system. Around  $\frac{1}{3}$  of the German VET systems consists of so-called school-based vocational courses outside the dual VET system. VET in health, education and social professions is not regulated by the national Vocational Training Act mentioned above, but by various laws of the *Länder* and the federal state. Another 500,000 persons enrol in universities each year, which is the alternative way to a professional qualification next to the VET system.

Even though the numbers of those entering preparatory courses (*Übergangssektor*) are declining in the last 15 years, still more than 200,000 young people enter those programs each year. These persons need to enter a VET programme or – less likely – a university programme

to acquire a professional qualification. They can therefore be counted as an indicator of potential additional demand for apprenticeships.<sup>9</sup>

During the last decades, German VET policymakers created various educational programmes for those with difficulties to access the VET system. These programmes, however, were not able to solve the problem of a significant share of school leavers to find an apprenticeship. Due to the formal requirements for access, dual training is usually the most likely option for this group as it is the only programme that does not require proof of a specific school-leaving qualification. In fact, the access to apprenticeships in the dual VET system is organized like a job market: companies offer training places and have a free hand in the selection of apprentices. Their contracts usually last three years. During this time, the apprentice receives a monthly payment by the company. Besides working in the company, apprentices also visit vocational schools (see for an overview, Cedefop, 2020).

Depending on the relation of supply and demand on this market, either the companies looking for new apprentices or the school leavers looking for an apprenticeship are in a better position (BIBB, 2022, pp. 15–25). Such a market model explains very well, why a significant number of school leavers are not able to find an apprenticeship when the number of school leavers is rising or when there is an economic crisis. But the fact that there are still more than 200,000 young people entering preparatory courses after years of economic growth shows the need for more complex models. A first theoretical auxiliary construction is the assumption that market participants are unwilling to accept offers that do not meet their minimum expectations. In this way, apprenticeships on the one hand and training applicants on the other hand can remain without a match, even though there would still be a suitable offer in purely mathematical terms (Kohlrausch, 2012).

## 5 Discussion: Minor changes or paradigm shift?

In view of the dimensions of the social problem described above, the Ministry's proposal for an apprenticeship guarantee is surprising in purely quantitative terms: 7,000 additional extra-company apprenticeships could only create an alternative offer for a fraction of those who are entering preparatory courses each year. Assuming that this instrument worked with a 100% success rate and that 7,000 more people successfully completed an apprenticeship each year, this would reduce the 15% of young people without a vocational qualification by only one percentage point.<sup>10</sup>

The proposal focuses only on the dual VET system and aims to give more power to the Federal Employment Agency. The reasons for this lie mainly in legislative competencies of the Federal Ministry of Labour and Social Affairs that simply has no legal competencies in the other fields of the (vocational) education system. Additional apprenticeships outside the dual system are not taken into account, which is problematic from a gender perspective as women enter VET in health, education and social professions disproportionately.

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<sup>9</sup> Each year, the total number of beginners in the various sectors is significantly higher than the number of pupils of one cohort. This is mainly due to the fact that people use more than one of those educational opportunities in their educational biography. In addition, these statistics in Germany are not based on individual data. Therefore, there can be multiple counts within a year. The positive immigration balance in Germany, almost exclusively into higher education, also comes into play here. The numbers relating to dual VET deviate slightly from the most frequently cited numbers. They come from a different set of statistics with a different cut-off date than the figures published by BIBB. However, these numbers are also used by BIBB for the sector comparison. See: BIBB (2022, p. 79).

<sup>10</sup> Austria introduced an apprenticeship guarantee in the late 1990s. The German proposal is clearly inspired by this Austrian model. In 2020, around 7 % of all Austrian apprentices had an apprenticeship contract with a private training provider. See: Wieland (2020).



On the political level, the reform initiative might challenge the balance of power between trade and industry umbrella associations, trade union confederations and the state, which are the main actors of the German tripartite governance in the VET policy field. Not surprisingly, the trade and industry umbrella associations refuse the proposal as such. They deny that there are too few apprenticeship offers in Germany. In contrast, they put the problems of the companies finding apprentices into the spotlight (Redaktionsnetzwerk Deutschland, 2022). From this perspective, young people are not in VET, either due to their missing initiative or necessary qualifications. On the other hand, the trade unions demand an apprenticeship guarantee, but refer mainly to it as an apprenticeship levy to be paid by companies (DGB-Bundesvorstand, 2022). These actors are thus continuing a political dispute that goes back to the 1970s, when such a levy was introduced and a few years later abolished again due to legal formalities (Steib & Ketschau, 2022).

Given that the constellation between the social partners has not changed, the question arises as to why the Ministry has put this issue back on the agenda. Two reasons show up here: Firstly, Germany's largest private think tank, the Bertelsmann Foundation, has launched a political campaign in favour of the apprenticeship guarantee, which has been joined by other political actors such as the Friedrich-Ebert-Stiftung.<sup>11</sup> Secondly, Minister Hubertus Heil (SPD) has been pursuing a correction of earlier liberalisations of the labour market and also with regard to dual VET for several years. The introduction of a minimum training allowance in 2020 can in this regard be seen as a blueprint for the current situation (BMAS, 2020). As an overarching research question for the next years, it can be asked whether the German state has abandoned its traditional restraint in the field of VET policy and to what extent.

From an educational and moral philosophical perspective, an education guarantee addresses a problem of justice. In modern Western societies inequality is considered morally acceptable only if it is not the result of chance but of individual choice and merit (Rawls, 1971). In this context, education systems have a key role to play. “Hence, to allow significant inequalities of schooling tends to exclude children from socially and economically disadvantaged families from access to elite positions. Therefore, inequalities of schooling threaten the dignity of the disadvantaged.” (Giesinger, 2011, p. 53) Obviously, in the case of an apprenticeship guarantee, the issue is not access to elite positions, but whether young people have a realistic chance at all of finding a decent job with a stable income as a skilled worker, or whether they are at high risk of poverty and dependence on state welfare.

Lacking education and training opportunities, youth unemployment and early school leaving are challenges that – next to others – constitute an important European policy field (Siurala, 2007). European youth policy aims to prevent social exclusion of disadvantaged groups in all member states. Also, in the rich and ‘educationally most successful’ countries like Finland, social exclusion in the transition from school to work is a problem (Rinne & Järvinen, 2010). Social exclusion as a form of social injustice is always a relative concept that implies comparison. There is no such thing as an absolute standard, neither with regard to the social categories nor to the place of comparison (Sen, 2009). There are many aspects and forms of social exclusion, which affect different groups. A paradoxical effect of tackling social inequality is that it often leads to an increased awareness of new inequalities and injustices (El-Mafaalani, 2021, p. 55). Thus, such social problems cannot be completely eradicated. Rather, there is a dialectic of inclusion and exclusion that creates a constant tension in society. In the field of VET, the intent to tackle social exclusion has led to political reforms that create supplementary educational offers in the VET system. This dynamic is not only evident in

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<sup>11</sup> See the campaign website <https://ausbildungsgarantie.de> and the concept for an apprenticeship guarantee published by Friedrich-Ebert-Stiftung: Euler and Seeber (2023).

Germany, but also in other countries. The result has been the creation of specialised courses to prevent the social exclusion of specific groups, such as school drop-outs or refugees (Jørgensen et al., 2021; Marhuenda et al., 2015).

On this conceptual level, the question that arises is whether the proposal for the apprenticeship guarantee indicates a paradigm shift in the German context, as it aims to integrate disadvantaged young people directly into the regular system instead of separating them into preparatory training courses. In this respect, this approach is reminiscent of the inclusion paradigm known from the debate on people with disabilities. To tackle their social exclusion in the educational system, the idea of inclusive education became popular in the international educational policy debate in the 1990s. Inclusion is not strictly defined, but it is “an idea, a word, a term, or a pedagogical concept that ‘travelled far’, was used in different ways, and thereby gained a whole variety of meanings” (Kiuppis, 2016). In that sense, the proposal may be interpreted as a cautious attempt at a paradigmatic reorientation simply by offering a conceptual alternative to existing problems. The small number of apprenticeship seekers affected by the guarantee could then be addressed at a later phase by scaling the instrument.

At this moment, one can only speculate about the empirical effects of the apprenticeship guarantee. First of all, it remains to be seen whether and in what form the reform will be carried out. Should the apprenticeship guarantee really come, its introduction will be a worthwhile object of research for VET research in the coming years. In the end, the utility of such an instrument has to prove itself in practice by enabling more young people to start and successfully complete an apprenticeship. Research to accompany the process is absolutely necessary to assess whether and how this is being achieved.

## References

- Autor:innengruppe Bildungsberichterstattung. (2022). *Bildung in Deutschland 2022*. wbv Media.
- Bundesinstitut für Berufsbildung (Ed.). (2022). *Datenreport zum Berufsbildungsbericht 2022: Informationen und Analysen zur Entwicklung der beruflichen Bildung*. Budrich.
- Bundesministerium für Arbeit und Soziales. (2020). *Mindestvergütung für Auszubildende tritt in Kraft*. <https://www.bmas.de/DE/Service/Presse/Meldungen/2020/neue-gesetze-mindestausbildungsverguetung.html>
- Bundesministerium für Arbeit und Soziales. (2022a). *Entwurf eines Gesetzes zur Stärkung der Aus- und Weiterbildungsförderung und Einführung einer Bildungszeit: Referentenentwurf* (Stand: 16.12.2022). [https://www.bmas.de/SharedDocs/Downloads/DE/Gesetze/Referentenentwuerfe/ref-weiterbildungsfoerdungsgesetz.pdf?\\_\\_blob=publicationFile&v=2](https://www.bmas.de/SharedDocs/Downloads/DE/Gesetze/Referentenentwuerfe/ref-weiterbildungsfoerdungsgesetz.pdf?__blob=publicationFile&v=2)
- Bundesministerium für Arbeit und Soziales. (2022b). *Gesamtkonzept zur Ausbildungsgarantie*. [https://www.bmas.de/SharedDocs/Downloads/DE/Aus-Weiterbildung/gesamtkonzept-zur-ausbildungsgarantie.pdf;jsessionid=F670536A8374F36B6EE924807ABE0673.delivery1-replication?\\_\\_blob=publicationFile&v=1](https://www.bmas.de/SharedDocs/Downloads/DE/Aus-Weiterbildung/gesamtkonzept-zur-ausbildungsgarantie.pdf;jsessionid=F670536A8374F36B6EE924807ABE0673.delivery1-replication?__blob=publicationFile&v=1)
- Busemeyer, M. R. (2009). *Wandel trotz Reformstau: Die Politik der beruflichen Bildung seit 1970*. Campus.
- Cedefop. (2020). *Vocational education and training in Germany: Short description*. Publications Office of the European Union. <https://doi.org/10.2801/329932>
- destatis (Statistisches Bundesamt). (2021). *Bildung und Kultur. Allgemeinbildende Schulen: Schuljahr 2020/2021* (Fachserie 11 Reihe 1). <https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-Forschung-Kultur/Schulen>

- destatis. (2022). *Schnellmeldung Integrierte Ausbildungsberichterstattung 2021: Anfänger/innen im Ausbildungsgeschehen nach Sektoren/Konten und Ländern - vorläufige Ergebnisse*.  
[https://www.statistischebibliothek.de/mir/receive/DESerie\\_mods\\_00000870](https://www.statistischebibliothek.de/mir/receive/DESerie_mods_00000870)
- DGB-Bundesvorstand. (2022). *Erholung auf dem Ausbildungsmarkt schwächt sich ab (PM 076)*.  
[https://www.dgb.de/presse/++co++f21b0ea8-7b94-11ed-b8e2-001a4a160123?display\\_page=1&end\\_date=2999-12-31&start\\_date=2022-02-27](https://www.dgb.de/presse/++co++f21b0ea8-7b94-11ed-b8e2-001a4a160123?display_page=1&end_date=2999-12-31&start_date=2022-02-27)
- Eckelt, M., & Burkard, C. (2022). *Nachschulische Bildung in Deutschland: Zentrale Ergebnisse und bildungspolitische Einordnung*. Bertelsmann Stiftung. [www.chance-ausbildung.de/nachschulischebildung/NEPS2022](http://www.chance-ausbildung.de/nachschulischebildung/NEPS2022)
- El-Mafaalani, A. (2021). *Mythos Bildung: Die ungerechte Gesellschaft, ihr Bildungssystem und seine Zukunft. Mit einem Zusatzkapitel zur Coronakrise* (2. ed.). Kiepenheuer & Witsch.
- Euler, D., & Seeber, S. (2023). *Ausbildungsgarantie: Ein Instrument zur Fachkräftesicherung und gesellschaftlichen Integration junger Menschen*. Bonn. <https://library.fes.de/pdf-files/a-p-b/19972-20230209.pdf>
- European Council. (2013). *European Alliance for Apprenticeships: 14986/13*. Brussels.
- European Council. (2020). *A Bridge to Jobs – Reinforcing the Youth Guarantee and replacing the Council Recommendation of 22 April 2013 on establishing a Youth Guarantee*. 2020/C 372/01. Brussels.
- Giesinger, J. (2011). Education, fair competition, and concern for the worst off. *Educational Theory*, 61, 41–54.
- Greinert, W.-D. (2004). European vocational training systems: the theoretical context of historical development. In Cedefop (Ed.), *Towards a history of vocational education and training (VET) in Europe in a comparative perspective: Proceedings of the first international conference October 2002, Florence* (Cedefop Panorama series No. 103, pp. 17–27). Luxembourg.
- Jørgensen, C. H., Hautz, H., & Li, Junmin (2021). The role of vocational education and training in the integration of refugees in Austria, Denmark and Germany. *International Journal for Research in Vocational Education and Training - IJRJET*, 8(3), 276–299.
- Kiuppis, F. (2016). From Special Education, via Integration, to Inclusion: Continuity and Change in UNESCO's Agenda Setting. *Zeitschrift Für Internationale Bildungsforschung und Entwicklungspädagogik - ZEP*, 39(3), 28–33.
- Kohlrausch, B. (2012). Betriebe als Gatekeeper. *Sozialer Fortschritt*, 61(10), 257–265.
- Marhuenda, F., Salvà, F., Navas Saurin, A., & Abiétar López, M. (2015). Twenty Years of Basic Vocational Education Provision in Spain: Changes and Trends. *International Journal for Research in Vocational Education and Training - IJRJET*, 2(2), 137–151.
- Michaelis, C., Busse, R., Seeber, S., & Eckelt, M. (2022). *Nachschulische Bildungsverläufe in Deutschland: Schulentlassene zwischen institutionalisierten Idealwegen und schwierigen Umwegen*. wbv Media.
- Mouillour, I. Le. (2022). Dual VET: Germany. In Cedefop (Ed.), *Built to last: Apprenticeship vision, purpose, and resilience in times of crisis: Short papers from the Cedefop community of apprenticeship experts* (pp. 95–103). Publications Office of the European Union.
- OECD. (2022). *Education at a glance 2022: OECD indicators*. OECD Publishing.
- Rawls, J. (1971). *A Theory of Justice*. Belknap Press.
- Redaktionsnetzwerk Deutschland. (2022). *Kritik an Ausbildungsgarantie: Bewerbermangel, kein Ausbildungsplatzmangel*. <https://www.rnd.de/wirtschaft/ausbildungs-garantie-kritik-an-hubertus-heil-bewerbermangel-kein-ausbildungsplatzmangel-MSWM2QZSTDJNKHM2HUWHLAM3F4.html>

- Rinne, R., & Järvinen, T. (2010). The 'losers' in education, work and life chances - the case of Finland. *Zeitschrift für Pädagogik* 56(4), 512–530.
- Sen, A. (2009). *The Idea of Justice*. Penguin Books.
- Siurala, L. (2007). A European framework for youth policy. What is necessary and what has already been done? *Diskurs Kindheits- Und Jugendforschung*, 2(4), 377–390.
- SPD, Bündnis 90/Die Grünen, & FDP. (2021). *Mehr Fortschritt wagen: Bündnis für Freiheit, Gerechtigkeit und Nachhaltigkeit*.  
[https://www.spd.de/fileadmin/Dokumente/Koalitionsvertrag/Koalitionsvertrag\\_2021-2025.pdf](https://www.spd.de/fileadmin/Dokumente/Koalitionsvertrag/Koalitionsvertrag_2021-2025.pdf)
- Steib, C., & Ketschau, T. J. (2022). Die Ausbildungsplatzabgabe als Instrument staatlicher Verantwortung. In M. Eckelt, T. J. Ketschau, J. Klassen, J. Schauer, J. K. Schmees, & C. Steib (Eds.), *Berufsbildungspolitik: Strukturen – Krise – Perspektiven* (pp. 181–196). wbv Media.
- Wieland, C. (2020). *Die Ausbildungsgarantie in Österreich: Funktionsweise - Wirkungen - Institutionen*. Gütersloh.

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## Swiss VET – A Successful Model and its Sacrifices on the Balance of Power Between Company- and School-Based VET in the Political Governance of the Transition to Upper-Secondary Level in Switzerland

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### Abstract

**Purpose.** In the past, Switzerland's VET policy highly fostered the integration of youths at the lower end of the academic performance range. Against the increasing competition for high-achieving youths among general and vocational education at the upper-secondary level, today an important issue is the attraction of high-achieving youths to company-based VET. While the latter has a strong support in Switzerland, school-based VET programmes receive only little attention. This study investigates the role of such school-based VET programmes, which explicitly target high-achieving young people, in the political governance of the transition to upper-secondary education in Switzerland.

**Approach.** The study relies on the theoretical background of the Economy of Conventions and is based on cantonal case studies. Qualitative document analysis and interviews with actors of the cantonal education administration form the data sources. The data are analysed by a combination of theory-based qualitative content analysis and argumentation-analytical strategies.

**Results.** In both cantons studied the quantitative development of VMS was purposefully limited as targeted attempts to control the competition among school- and company-based VET regarding high-achieving youths. By doing so, the balance of power between company-based VET and school-based VET can be reproduced and the status of company-based VET as the unquestioned standard protected.

**Conclusion.** Overarching, the results emphasise that the distribution of youths across different education programmes cannot solely be understood as the result of individual decisions, but also of targeted steering interventions in the context of the political governance of transitions.

### Keywords

governance, transitions, educational policy, dual system, vocational education and training

## 1 Introduction

Since 2011 the Swiss Confederation and the cantons have been pursuing the joint education policy goal of at least 95 per cent of all 25-year-olds obtaining an upper-secondary certificate (Federal Department of Economic Affairs, Education and Research & Swiss Conference of Cantonal Ministers of Education, 2019).<sup>12</sup> At the same time, education policy faces different and partly conflicting issues in Switzerland: skill shortage, saving measures, rising pupil numbers (Babel, 2019). This situation poses a challenge to national and cantonal actors of education policy and administration to provide enough training places for youths with different levels of academic achievement at the upper-secondary level.

In Switzerland upper-secondary level consists of three federally recognised education programmes: baccalaureate schools, specialised middle schools as well as company- and school-based vocational education and training (VET) programmes.<sup>13</sup> While general education predominates in many European education systems, VET has maintained its dominant position in Switzerland (Kriesi et al., 2022; OECD, 2015): Around two-thirds of youths choose a VET programme at the upper-secondary level, 27 per cent a baccalaureate school and 7 per cent a specialised middle school.<sup>14</sup> This relative distribution varies between the cantons and shows regional patterns (a.o. Cortesi, 2017; Geser, 2003). This variation cannot be explained solely by differences in students' academic performance (a.o. Combet, 2019; Meyer, 2009), but it can rather be assumed that these differences are the result of targeted governance mechanisms: regulations and restrictions at the institutional level of the transition to the upper-secondary level (Hafner et al., 2022). Particularly in German-speaking cantons of Switzerland, the paths via general education middle schools (baccalaureate schools and specialised middle schools) are deliberately restricted by means of education policy steering measures in order to strengthen company-based VET (Esposito, 2022; Kriesi et al., 2020; Leemann et al., 2021; Steimann, 2022). This situation is controversial and related education policy positions in Switzerland differ widely (Kriesi et al., 2022).

In the past, one of the main goals of Swiss VET policy was the integration of youths at the lower end of the academic performance range in the formal VET system. In the context of the increasing demand for highly qualified workers, the VET lobby fears that company-based VET might not be attractive enough for high-achieving youths compared to school-based educational programmes at the upper-secondary level (Elsholz & Neu, 2019). Thus, today an additional focus of the Swiss VET policy lies on the question of how to attract high-achieving youths to company-based VET (Kriesi et al., 2022; Leemann et al., 2021).

In fields such as commerce, IT and health, the Swiss VET system provides a specific type of school-based VET targeting high-achieving youths, so-called Vocational Middle Schools (VMS). VMS consist of a full-time school-based setting geared towards tertiary education as well as a longer internship, where apprentices acquire practical skills. Graduates obtain a federal VET Diploma (formal qualification for the entrance in the labour market) and a federal vocational baccalaureate, which provides direct access to universities of applied sciences. For company-based VET the number of training places available and the corresponding selection

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<sup>12</sup> All data were collected as part of the research project “Governance of Transitions in the Swiss Education System. A Study on the Political Regulation of Moving from Primary to Lower-Secondary and from Lower-Secondary to Upper-Secondary Education (GovTrans)”, funded by the Swiss National Science Foundation (SNF 10001A\_188906) 7/2020–6/2024.

<sup>13</sup> Youths who do not enter directly one of these types of schools often take advantage of so-called upper-secondary interim solutions (Landert & Eberli, 2015).

<sup>14</sup> <https://www.bfs.admin.ch/bfs/de/home/statistiken/bildung-wissenschaft/bildungsindikatoren/themen/zugang-und-teilnahme/ausbildungswahl-sekii.assetdetail.22024449.html>

criteria and procedures depend fundamentally on the companies. For VMS, in contrast, the supply of training places and the selection of apprentices are directly controlled and steered by the cantons. VMS, as well as school-based VET programmes in general, receive only little attention from education policy and research in German-speaking Switzerland. To French- and Italian-speaking Switzerland this does not apply to the same extent (a.o. Cortesi, 2017; Gonon & Bonoli, 2022; Wettstein & Amos, 2010).

On the other hand, company-based VET has a strong lobby in society and education policy in Switzerland, is regarded as the unquestioned standard (Esposito, 2022; Leemann, 2019) and idolised as model for success far beyond national borders (Kriesi et al., 2022; Lamamra & Moreau, 2016; Steimann, 2022). With its very high proportion of company-based VET (90%) in relation to school-based VET, Switzerland's VET system clearly stands out in an international comparison (OECD, 2015; State Secretariat for Education, Research and Innovation [SERI], 2022).

## **2 Objective and research questions**

Applying a governance perspective, this study assumes that educational decisions of youths and their distribution among different educational programmes are embedded in institutional conditions such as admission regulations, selection processes, supply, and accessibility. Thus, the paper complements previous studies in the field of transition research which have focused on individual factors of educational decisions, by adding the perspective of a political governance of transitions. Against this background, the aim of the paper is to investigate the role of VMS in the political governance of the transition from lower to upper-secondary level in Switzerland. For this purpose, the following questions are addressed:

- What relevance and 'qualities' are attributed to VMS? How do actors justify their positions?
- How, i.e., by means of what strategies and instruments, do relevant actors steer the supply of training places within VMS and the related selection regulations?
- What tensions and conflicts arise?
- What can be learned from the results regarding the governance of dual VET systems in other national contexts?

## **3 Theoretical approach**

The research questions are examined from the theoretical perspective of the Economy of Conventions (EC) (Boltanski & Thévenot, 2006; Diaz-Bone & de Larquier, 2022). The EC assumes that situations of coordination of action are fraught with uncertainty about their course and outcome. To cope with this, actors rely on various socio-historically established principles of action, worth and justice, so-called conventions (Boltanski & Chiapello, 2005; Boltanski & Thévenot, 2006): industrial, civic, opinion, market, domestic, inspired, network, green. Each of these conventions refers to a specific common good and thus generates its own quality of education (Derouet, 1989; Imdorf & Leemann, 2023). This is summarised in Table 1.

**Table 1**Conventions in education<sup>15</sup>

<b>Convention</b>	<b>Common good, quality, logic of action</b>
<i><b>Industrial</b></i>	Efficiency, productivity, expertise, performance, long-term planning, standardisation
<i><b>Civic</b></i>	Collective interest, equality, social integration, general education
<i><b>Opinion</b></i>	Reputation, fame, visibility, popularity, image
<i><b>Market</b></i>	Price, profit, competition, value for money

Source: Derouet 1989; Imdorf &amp; Leemann, 2023.

The political governance of transitions in the education system is understood as a situational practice in which actors rely on these conventions in their actions, evaluations, and decisions. From an EC perspective ‘quality’ is therefore socially ascribed and constructed as well as plural and contradicting in view of different conventions. This means that in the same situation the evaluation of actors can be oriented towards different quality criteria, which leads to disputes and criticism. Conventions can also relate positively to each other and form compromises (Diaz-Bone & de Larquier, 2022). By investing in (im-)material forms, conventions gain stability, reach and power in the coordination of actions (Dodier, 2010; Thévenot, 2014). Standards are a special form with a particularly high scope and are accepted unquestioningly in the coordination situation. They require a closing of the eyes of actors to alternative forms that could have been used for coordination and thus reinforce the trust in the established (Thévenot, 2009). From an EC perspective, power is not inherent to certain actors but distributed in a coordination situation: It goes to those actors who succeed in extending the reach of the convention and the related arguments they rely on (Diaz-Bone, 2017).

#### 4 Design, data and methods

The study is based on a case study design (Yin, 2009) and includes two German-speaking cantons, which differ among theory-driven characteristics regarding the upper-secondary level: (1) proportion of general education in relation to VET; (2) quantitative relevance of school-based in relation to company-based VET; (3) proportion of VMS. To ensure that personal data are protected, the cantons are not named. The data base consists of publicly available documents (a.o. education policy initiatives, statements of the cantonal parliament; political decisions, media releases). Additionally, following the EC’s methodological standpoint, the perspective of the actors were captured by qualitative problem-centered in-person interviews (Meuser & Nagel, 2009) with representatives of the cantonal educational administration. The data were analysed by a theory-based qualitative content analysis (Gläser & Laudel, 2010), in line with EC premises (focus on conventions, form investments, criticisms, and compromises). As conventions cannot directly be asked for in interviews, but must be reconstructed by the researcher based on the arguments put forward by the interviewee, argumentation-analytical strategies were additionally made use of (Toulmin et al., 1979).

#### 5 Main results

Relying on different, partially conflicting conventions, actors controversially discuss, evaluate, and legitimize the relevance of VMS. Referring to the industrial convention, supporters stress the quality of VMS regarding the provision of required skilled workers in areas with skills shortage. By targeting high-achieving youths, VMS help to exploit the domestic talent potential.

<sup>15</sup> Only the conventions relevant to this paper are shown in Table 1. For a complete overview see (Imdorf & Leemann, 2023)



Further, VMS were supported based on a civic argument: Their selection mechanisms are not susceptible to discriminatory mechanisms, as it is the case for company-based VET (Imdorf, 2005). On the other hand, critics delegitimise the relevance of VMS by arguments of the market convention: VMS cause higher cantonal costs than company-based VET, without having any added value in terms of the qualifications that can be achieved (Steimann, 2022). In view of the political efforts to strengthen the position of company-based VET as an attractive educational pathway for high-achieving youths, VMS are further criticised of being a school-based competition undermining this VET policy goal. This critique relies on rationalities of the convention of opinion.

Based on the contested relevance of VMS, supporters and critics advocated either for an expansion or a limitation regarding the future development of VMS. Although the two cantons studied are very different in terms of the quantitative importance of school-based VET, in both cantons critics have succeeded in pushing through their positions based on a powerful and highly stable dispositive of investments in forms (a.o. newspaper headlines, financial reports and statistical forecasts, discourse of equal opportunities): Consequently, a limiting education policy strategy regarding VMS could be identified for both cantons. To limit the number of training places at VMS, Canton A has placed a ceiling on the number of VMS classes. This ceiling can be interpreted as a steering instrument in the sense of hard governance (Moos, 2009): With reference to the official cantonal admission regulations for VMS, Canton A can actively and directly control the number of training places at VMS, and thereby steer the further development of VMS in the desired way. To limit the expansion of the VMS, Canton B has introduced an additional admission requirement for the access to VMS: Applicants must additionally complete a specially designed online tool regarding the education selection before applying for a VMS. With its introduction, the education policy and administration tried to reduce the number of youths choosing a VMS (instead of company-based VET) by a steering instrument, which seeks to ensure that the youths take an informed, conscious, and considered decision at the transition from lower to upper-secondary level. We can interpret this as a steering instrument of soft governance (Moos, 2009): Canton B passively and indirectly controls the number of training places at VMS and thus steers the development of the VMS in the sense of a tool-based «governance by guidance» (Romito, 2017) through the educational choice of the youths at the transition to upper-secondary level.

From a power-theoretical point of view, the limiting steering strategies pursued, and instruments introduced in both cantons must be understood as targeted attempts to control the competition among school- and company-based VET for high-achieving youths in favor of the latter. By doing so, the balance of power between company-based VET and school-based VET within the Swiss VET system can be stabilised, maintained, and reproduced. Thus, also regarding high-achieving youths who are interested in VET, the status of company-based VET as the unquestioned standard (Esposito, 2022; Leemann, 2019) can be protected. As this paper has shown, the sacrifices for this are made at the expense of other education programmes at the upper-secondary level, that get purposefully limited in their further quantitative development by education policy. Based on this, the question arises as to whether this fully exploits the entire potential of Swiss VET in terms of training high-achieving young people.

Overarching, and looking beyond the borders of the Swiss education system, the results emphasise that the distribution of youths across different education programmes can't solely be understood as the result of individual decisions, but also of targeted steering interventions in the context of the political governance of transitions within a national education system.

### **Ethics statement**

Ethical review and approval were waived for this study because it is an organizational analysis based on official documents and interviews with persons holding public positions giving

information about political and administrative processes. Since no children, minors or individuals under disability have been included in the study, the research project had not to be subjected to the ethics review of the School of Education FHNW. Informed consent was obtained from all subjects involved in the study. The author declares no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

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### References

- Babel, J. (2019). Demografische Entwicklung und Auswirkungen auf den gesamten Bildungsbereich. Bericht des Bundesrats in Erfüllung des Postulats 12.3657 der Kommission für Wissenschaft, Bildung und Kultur NR vom 17. August 2012. <https://www.bfs.admin.ch/bfs/de/home/statistiken/kataloge-datenbanken/publikationen.assetdetail.6826154.html>
- Boltanski, L., & Chiapello, E. (2005). The New Spirit of Capitalism. *International Journal of Politics, Culture, and Society*, 13(3/4), 161–188.
- Boltanski, L., & Thévenot, L. (2006). On Justification. Economies of Worth. Princeton University Press.
- Combet, B. (2019). The Institutional Dimension of Class-based Educational Decision-making: Evidence from Regional Variation in Switzerland. *Zeitschrift für Soziologie*, 48(4). <https://doi.org/10.1515/zfsoz-2019-0021>
- Cortesi, S. (2017). La formation en école à plein temps du secondaire II en Suisse: Hétérogénéité institutionnelle et traditions de formation. Université de Bâle. <https://edoc.unibas.ch/62589/1/Texte%20publication%20edoc.pdf>
- Derouet, J.-L. (1989). L'établissement scolaire comme entreprise composite: Programme pour une sociologie des établissements scolaires. In L. Boltanski & L. Thévenot (Eds.), *Justesse et justice dans le travail* (pp. 11–42). Presses universitaires de France.
- Diaz-Bone, R. (2017). Dispositive der Ökonomie: Konventionentheoretische Perspektiven auf Institutionen und Instrumentierungen der ökonomischen Koordination. In R. Diaz-Bone & R. Hartz (Eds.), *Dispositiv und Ökonomie: Dispositivanalytische Perspektiven auf Märkte und Organisationen* (pp. 83–111). Springer VS.
- Diaz-Bone, R., & de Larquier, G. (2022). Conventions: Meanings and Applications of a Core Concept in Economics and Sociology of Conventions. In R. Diaz Bone & G. de Larquier (Eds.), *Handbook of Economics and Sociology of Conventions* (pp. 1–27). Springer VS. [https://doi.org/10.1007/978-3-030-52130-1\\_2-1](https://doi.org/10.1007/978-3-030-52130-1_2-1)
- Dodier, N. (2010). Konventionen als Stützen der Handlung. *Elemente der soziologischen Pragmatik*. Trivium, 5.
- Elsholz, U., & Neu, A. (2019). Akademisierung der Arbeitswelt—Das Ende der Beruflichkeit? *AIS-Studien*, 12(1), 6–18. <https://doi.org/10.21241/SSOAR.64880>
- Esposito, R. S. (2022). Ausbildungsqualitäten – Andersartig, aber gleichwertig? Ein Vergleich konkurrierender Gesundheitsausbildungen in der Schweiz. Springer VS.
- Federal Department of Economic Affairs, Education and Research & Swiss Conference of Cantonal Ministers of Education. (2019). Chancen optimal nutzen: Erklärung 2019 zu den gemeinsamen bildungspolitischen Zielen für den Bildungsraum Schweiz. <https://www.news.admin.ch/news/message/attachments/58299.pdf>

- Geser, H. (2003). Beruf und Bildung diesseits und jenseits der Saane. Panorama, 3.
- Gläser, J., & Laudel, G. (2010). Experteninterviews und qualitative Inhaltsanalyse als Instrumente rekonstruierender Untersuchungen. Springer VS. <http://dnb.info/1002141753/04>
- Gonon, P., & Bonoli, L. (2022). Bildung: Etwa doch ein Polenta- und Röstigraben? <https://sgab-srfp.ch/bildung-etwa-doch-ein-polenta-und-roestigraben/>
- Hafner, S., Esposito, R. S., & Leemann, R. J. (2022). Transition to Long-Term Baccalaureate School in Switzerland: Governance, Tensions, and Justifications. *Education Sciences*, 12(2), <https://doi.org/10.3390/educsci12020093>
- Imdorf, C. (2005). Schulqualifikation und Berufsfindung: Wie Geschlecht und nationale Herkunft den Übergang in die Berufsbildung strukturieren. Springer VS. <https://doi.org/10.1007/978-3-322-93537-3>
- Imdorf, C., & Leemann, R. J. (2023). Education and Conventions. In R. Diaz-Bone & G. de Larquier, *Handbook of Economics and Sociology of Conventions*. Springer VS. (in print)
- Kriesi, I., Bonoli, L., Grønning, M., Hänni, M., Neumann, J., & Schweri, J. (2022). Vocational education and training (VET) internationally and in Switzerland – tensions, challenges, developments and potential. Fifth trend report by the Swiss Observatory for Vocational Education and Training, Swiss Federal University for Vocational Education and Training SFUVET. <https://www.ehb.swiss/forschung/obs/themen-und-trends/spannungsfelder-der-berufsbildung-international-schweiz>
- Kriesi, I., Leemann, R. J. (2020). Tertiärisierungsdruck: Herausforderungen für das Bildungssystem, den Arbeitsmarkt und das Individuum. Schweizerische Akademie der Geistes- und Sozialwissenschaften. [https://www.sagw.ch/fileadmin/redaktion\\_sagw/dokumente/Publikationen/Bildung/Tertiärisierungsdruck.pdf](https://www.sagw.ch/fileadmin/redaktion_sagw/dokumente/Publikationen/Bildung/Tertiärisierungsdruck.pdf)
- Lamamra, N., & Moreau, G. (2016). Introduction: Les faux-semblants de l'apprentissage en Suisse. *Formation emploi*, 133, 7–16. <https://doi.org/10.5281/ZENODO.5775965>
- Landert, C., & Eberli, D. (2015). Bestandsaufnahme der Zwischenlösungen an der Nahtstelle I: Bericht im Auftrag des Staatssekretariats für Bildung, Forschung und Innovation (SBFI). [https://www.kip-pic.ch/media/1066/landert\\_2015.pdf](https://www.kip-pic.ch/media/1066/landert_2015.pdf)
- Leemann, R. J. (2019). Educational Governance von Ausbildungsverbünden in der Berufsbildung – die Macht der Konventionen. In R. Langer & T. Brüsemeister (Eds.), *Handbuch Educational Governance Theorien*, (pp. 265–287). Springer VS. [https://link.springer.com/content/pdf/10.1007/978-3-658-22237-6\\_13.pdf](https://link.springer.com/content/pdf/10.1007/978-3-658-22237-6_13.pdf)
- Leemann, R. J., Esposito, R. S., & Imdorf, C. (2021). Governance Mechanisms in the Institutionalisation of Upper Secondary Education in Switzerland. Insights from the Policy Debates on the Status of VET and General Education. In R. Bürgi & P. Gonon (Eds.), *Governance Revisited. Governance Revisited. Challenges and Opportunities for VET* (pp. 243–271). Peter Lang. <https://doi.org/10.3726/9783034343824.003.0009>
- Meuser, M., & Nagel, U. (2009). Das Experteninterview – konzeptionelle Grundlagen und methodische Anlage. In S. Pickel, D. Jahn, H.-J. Lauth, & G. Pickel (Eds.), *Methoden der vergleichenden Politik- und Sozialwissenschaft: Neue Entwicklungen und Anwendungen* (pp. 465–479). Springer VS.
- Meyer, T. (2009). Wer hat, dem wird gegeben: Bildungsungleichheit in der Schweiz. In C. Suter, S. Perrenoud, R. Lévy, U. Kuhn, D. Joye, & P. Gazareth (Eds.), *Sozialbericht 2008. Die Schweiz vermessen und vergleichen* (pp. 60–81). Seismo. <https://boris.unibe.ch/130982/>

- Moos, L. (2009). Hard and Soft Governance: The Journey from Transnational Agencies to School Leadership. *European Educational Research Journal*, 8(3). <https://doi.org/10.2304/eej.2009.8.3.397>
- OECD. (2015). Focus on Vocational Education and Training (VET) Programmes. Education Indicators in Focus, No 33. <https://www.oecd-ilibrary.org/docserver/5jrxtk4cg7wg-en.pdf?expires=1667571923&id=id&accname=guest&checksum=256E0FC71EC208EE6495468BC0F68E6B>
- Romito, M. (2017). Governing Through Guidance: An Analysis of Educational Guidance Practices in an Italian Lower Secondary School. *Discourse: Studies in the Cultural Politics of Education*, 6(1). <https://doi.org/10.1080/01596306.2017.1314251>
- State Secretariat for Education, Research and Innovation (SERI). (2022). Vocational and Professional Education and Training in Switzerland. Facts and Figures 2022. <https://www.sbfi.admin.ch/sbfi/en/home/services/publications/data-base-publications/vocational-and-professional-education-and-training-in-switzerland.html>
- Steimann, O. (2022). Leitlinien der Wirtschaft. Bildungs-, Forschungs- und Innovationspolitik. Economiesuisse. <https://economiesuisse.ch/sites/default/files/publications/Bildungs-%2C%20Forschungs-%20und%20Innovationspolitik.pdf>
- Thévenot, L. (2009). Governing Life by Standards: A View From Engagements. *Social Studies of Science*, 39(5). <https://doi.org/10.1177/0306312709338767>
- Thévenot, L. (2014). Voicing Concern and Difference: From Public Spaces to Common-Places. *European Journal of Cultural and Political Sociology*, 1(1). <https://doi.org/10.1080/23254823.2014.905749>
- Toulmin, S., Rieke, R., & Janik, A. (1979). An Introduction to Reasoning. Macmillan Publishing Co.
- Wettstein, E., & Amos, J. (2010). Schulisch organisierte berufliche Grundbildung: Bericht. <https://edudoc.ch/record/109417?ln=en>
- Yin, R. K. (2009). Case Study Research: Design and Methods. Sage.

### Biographical note

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Finken, L. & Pilz, M. (2023). Sitting on the fence: Adapt or import? - A study on training activities of foreign multinationals in Germany. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 155–164). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7808542>

## **Sitting on the Fence: Adapt or Import? - A study on Training Activities of Foreign Multinationals in Germany**

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### **Abstract**

Even though Germany has been an attractive location for foreign investors for many years and foreign subsidiaries in Germany create a significant number of jobs on an intermediate qualification level, whether and how these foreign companies act regarding training at their German locations is largely unknown. Therefore the paper asks the question how multinational companies, which are socialized in differing skill-formation systems, practice training in their subsidiaries in Germany, where the German dual apprenticeship system is predominant. The focus lies on multinational companies from France, Japan and the United States, as these countries are significant in terms of direct investments in Germany and as the selection follows a ‘most different design’ regarding their respective skill-formation system. Qualitative methods, i.e. expert interviews and a qualitative content analysis, were used in order to adequately reflect the explorative approach of the study. Using neo-institutionalist organisational theory, the study first examines how companies act in the area of training and recruiting on the intermediate skill level and second how they are influenced by the two different country environments. The differing training practices of foreign multinational companies in Germany are presented, and the influence of environmental conditions on adaptation towards local practices is discussed.

### **Keywords**

training practices, foreign subsidiaries in Germany, multinational companies, German dual apprenticeship system

## 1 Introduction

Germany has been an attractive location for foreign investors for many years and foreign subsidiaries in Germany have created a significant number of jobs (GTAI, 2021, 2022; KPMG, 2018). As these subsidiaries are often active in marketing and sales, business services or production and research (GTAI, 2022), they have a high demand for skilled workers on an intermediate qualification level. This demand can be met by recruiting already trained skilled workers, by participating in the German dual training system or by creating their own training programmes. Due to the growing shortage of skilled workers on an intermediate qualification level in the labour market in Germany, offering apprenticeship positions in these fields could be an important opportunity for foreign subsidiaries to generate skilled and loyal long-term employees that meet their demand.

However, whether and how these foreign companies act regarding training at their German locations is largely unknown (Lorscheid & Pilz, 2017). Existing studies focus instead on cases of German companies abroad. They analyse how German dual practices are transferred and how they contribute to the qualification of employees in the respective host countries (Gessler, 2017; Li et al., 2019; Pilz & Wiemann, 2021; Wiemann & Pilz, 2020). The paper at hand turns this question upside down by asking:

*How do multinational companies, which are socialized in differing skill-formation systems, practice training in their subsidiaries in Germany? Do they adapt to the German system and offer apprenticeship places or do they 'import' practices from their country of origin?*

## 2 Research design

The questions are answered for multinational companies from France, Japan, and the United States. These countries are significant in terms of direct investments in Germany (GTAI, 2021). Moreover, this selection follows a 'most different design' regarding their respective skill-formation system (Pilz, 2012, 2016; Zenner-Höffkes et al., 2021), as the common practices in their home countries do not only differ from the dual training system in Germany but also among each other based on Pilz's typology (Pilz, 2016). Training in the US can be described as liberal because vocational education and training is decentralised and individually organised in the private sector with a practical 'learning by doing' approach and a focus on specific work tasks (Barabasch & Rauner, 2012; Pilz, 2009; Zenner-Höffkes et al., 2021). Even though also in Japan each company carries out its own training without the involvement of the state, the training there is often extensive and not exclusively aimed at becoming commercialised (Pilz & Alexander, 2020). The system in France is strongly influenced and financed by the state and training takes place in vocational schools (Brockmann et al., 2008; Busemeyer & Trampusch, 2012; Pilz & Li, 2014). The focus in this study lies on the 'intermediate skill level' (Ryan, 1991) and includes dual apprenticeships as well as dual study courses, as they are of major importance within the German system of VET and higher VET. In the dual training system in Germany, young people spend about two thirds of their training time, which in total usually encompasses 2.5 to 3.5 years, in the company. This in-company training is curricular interlinked with classes at vocational schools, where the remaining third of the training takes place. In addition, besides the state, also chambers, employers' organisations and trade unions take care of aspects like financing, organisation, certification, curricular design and teaching staff (Bosch & Charest, 2008; Fürstenau et al., 2014). Dual study courses are also characterised by the combination of theory and practice and take place in cooperation between companies and polytechnics (Fachhochschulen), vocational academies (Berufsakademien) or universities at a bachelor's degree level (Deissinger, 2000; Hofmann et al., 2020).

The study mainly focuses on greenfield investments, as it can then be assumed that the German education system was new to the companies when they arrived. For those companies included in the study, which acquired existing German companies, a retrospective look was taken.

### **3 Theoretical approach**

In the sociological neo-institutional approach, companies are regarded as open systems. They are in exchange with their environment and can only be regarded within this environment (Scott, 2003, 2014). Organisations, in this case foreign companies, are consequently influenced by their environment. In the field of training in Germany, they enter an environment, which is largely shaped by the German dual training system and, as described previously, differs significantly from the environment of their countries of origin.

Different elements of institutions (regulative pillar, normative pillar, cultural-cognitive pillar) shape the training environment in their country of origin and in Germany (Kostova et al., 2008; Scott, 2014; Stavrou et al., 2021). Every institution is based on these pillars, but not all three dimensions necessarily have to be found at the same time (Scott, 2014). Elements from the three pillars can also be identified for the VET sector, which then form the institutions and thus the institutional environment. The regulative pillar represents explicit and sanctionable rules. One example are laws and requirements, like training regulations in Germany, that companies must obey if they offer dual apprenticeships (BIBB, 2017; Pilz & Fürstenau, 2019). The normative pillar includes norm- and value-based role behaviour as well as moral obligations that arise from these norms and values. These social obligations are reflected, for example, in the idea of how training should be designed and what the 'right' behaviour of actors is. This behaviour includes, for example, the aspect that companies engage in training and thus enhance their reputation (Fürstenau et al., 2014). The cultural-cognitive pillar is characterised by values. The importance of certain degrees and their value can be cited here as an example. In Germany, for example, the inter-company recognised certificate is attributed a high value as a symbol of completed training (Clement, 1999; Pilz, 2019).

In summary, it can be said that companies are caught in the tension between the German environment on the one hand and their home country's environment on the other. In order to act effectively, organisations must adapt their training strategy accordingly (Garavan et al., 2020; Paauwe & Boselie, 2003) to ensure legitimacy under conditions of this institutional duality (Kostova & Roth, 2002). Using neo-institutionalist organisational theory, the study consequently examines how companies act in the field of training and recruiting on the intermediate skill level and how they are influenced by the two different country environments.

### **4 Methodology**

Qualitative methods were used to adequately reflect the explorative approach of the study. The findings presented are based on more than sixty semi-structured interviews with experts in foreign companies in Germany and thirty interviews with representatives of regional stakeholder organisations, such as chambers, business development agencies and vocational schools, all located in Germany. Small, medium-sized, and large foreign companies were included in the analysis, whereby the subsidiaries predominantly employed more than 20 people and had a maximum of 1,500 employees. Due to assumed different levels of familiarity with the German training system, both young and longer-established companies were considered. Two main approaches were used to find the specific companies: an initial selection was made via a database with data on direct investments (fDi Markets) and further companies were identified through a web search to cover both unknown, smaller companies and important foreign firms.

The interviewed experts in the organisations were individually selected based on their knowledge (Meuser & Nagel, 2009). Depending on the structure of the companies, experts responsible for training and/or recruiting skilled workers (e.g., subsidiary managers, training managers, HR managers) were selected. While most of the interviews were with one interviewee, there were also individual interviews with several interviewees. Most of the interviews lasted about one hour.

Qualitative content analysis has been used for the interpretation of the fully transcribed interviews to ensure a deep understanding (Kuckartz & Rädiker, 2019). By inductively forming categories from the material, the different activities of the companies were identified. In addition, on the basis of the theoretical approach by Scott (Scott, 2014), environmental conditions influencing the subsidiary in their decision were identified as initial explanatory approaches for the training activity.

## 5 Results and discussion

Overall, the results show a spectrum of different training practices and indicate how companies from differing skill-formation systems behave in the institutional training context in Germany. The data revealed mainly three different practices that foreign subsidiaries use to meet their needs for skilled workers. All three activities could be found in foreign companies from all three selected countries of origin, and thus, the type of training practiced cannot be explained by a company's headquarter location. Additionally, there is no evidence of extensive importing of training practices from their home countries.

### *Dual training in the subsidiary*

The first solution is to offer dual training and partly additional dual study courses. In these cases, the demand at a medium qualification level for young skilled staff is mainly covered by the company's own dual training activity. In many companies during annual planning, the training places on offer are adapted regarding occupations/study courses and number according to current and future needs of skilled workers. Some companies offer additional in-company training, on top of the general training plan prescribed by training regulations to support the apprentices. Furthermore, in some cases companies also offer training in cooperation with the headquarters in the home country. In some rare cases an exchange with the headquarters is planned or, which is more common, training on company-specific aspects like production processes as well as safety standards or corporate values.

### *Recruitment of trained professionals*

Other companies do not provide comprehensive initial training (neither in the dual training system nor in any other form) but rather cover their demand for skilled workers on entry-level positions by recruiting different groups of applicants. The trained professionals either hold recognized vocational qualification or a university degree, often at a bachelor's level. The already trained professionals are then, with induction, directly employed in positions for (junior) professionals. While some companies prefer a bachelor's degree, others deliberately search for professionals with a vocational qualification. Furthermore, individual companies explicitly include either degree as a requirement in their selection process as they see both paths of prior qualification as equivalent.



### Own training in the subsidiary

In individual cases, the interviews revealed a third activity. Some exceptional companies provide extensive training (mainly on-the-job) in the company outside of the dual training system. For these companies the previous education of applicants is either irrelevant or it is even important for them that the junior staff do not yet have extensive previous knowledge in this field or experience in other companies. The comprehensive training, some of which lasts for years, is planned exclusively in the company.

Most companies used more than one practice to meet demand of skilled workers in the different divisions of their subsidiary and in the case of short-term needs. For an initial overview, companies were assigned to the practice category that they predominantly used to cover their needs. Figure 1 presents the three different practices and gives an overview of the results.

**Figure 2**

Practices to meet the demand of skilled workers.



Referring to the research question if companies adapt to the local practices or import their own training culture, it can be stated that the majority of subsidiaries (around two thirds) adapts to local practices by offering extensive dual training themselves and therefore being an active part of the German dual training system. Some companies also partly adapt by recruiting the professionals trained within the German system or with a university degree (around one third). While some companies use comprehensive training outside of the German system additionally to dual training, only a few company use this practice as the main strategy.

Based on the findings generated in this study, no significant differences of companies' choices regarding mainly used training practice based on country of origin could be found. However, individual aspects, such as the extensive training of rather inexperienced junior staff in a Japanese company can be interpreted as indications of a proximity to the practices in the home country in this individual case. This result corresponds with the findings from interviews with regional actors, such as vocational schools and chambers of industry and commerce. Apart from individual anecdotes, the German experts in chambers and vocational schools report no differences to German companies.

Some companies which are not involved in dual training yet, consider setting up their own dual apprenticeship or dual study courses as an option for the future. Most companies plan to provide initial training in the future if a correspondingly large demand can be expected. In other companies, no training is planned even in the long term. They hardly define needs at the skilled labour level and predominantly require specialists. Unskilled workers, on the other hand, play only a subordinate role in the subsidiaries. A closer look at the companies reveals that - in addition to technical and work process-related needs - age and size play the largest role. These critical factors influencing training commitment have also been identified in other studies (Fuchs et al., 2021; Fuchs et al., 2022). One interviewee summarized this process as follows: *'I think we are still a bit too small [...]. For us, one employee is already a bigger factor. That's why we don't have one [apprentice] yet, but that's certainly a question of time.'*<sup>16</sup> (U026/J).

The wide-ranging adaptation of foreign companies' training practices to the German environment found in the data may indicate a strong influence of the local environment. A clear influence of the local environment was also shown for German companies operating abroad in different destination countries (Vogelsang & Pilz, 2020). The particular environmental conditions that might influence adaptation will be considered in the following section.

#### *Influence of environmental conditions on adaptation towards local practices*

When planning to start training activities, the decision was always first initiated, discussed, and reviewed in the German subsidiary. In none of the interviews, concrete specifications on the design of initial training at the intermediate qualification level from the home country are mentioned. Overall, the decision-making autonomy regarding training activities is particularly high compared to other areas in HR and HR managers, who are generally German-socialised, often choose dual apprenticeships and sometimes also dual study courses as a suitable solution. In some companies, training and recruiting is ultimately carried out in line with the forms of training common in Germany, but it was found that there is a more extensive consultation with the parent company in the home country, which made different understandings apparent. Here, the duality is evident in the form of influences from the parent company, but also from the German local environment and institutions, which are based on the three different pillars - regulative, normative, and cultural-cognitive - of an institution according to Scott (2014). In Germany, interview partners often emphasised the regulatory pillar (such as laws regulating the training of young people) and some of those companies that do not offer training themselves mentioned it as a hurdle to offering apprenticeships. Frequently mentioned are e.g. the influence of a works council (Betriebsrat), regulations regarding the scope of content to be taught or the ordinance on trainer aptitude (Ausbildereignungsverordnung). However, in addition to the predominantly regulatory pillar, the social obligations also become clear, for example, the idea of a company offering high quality training as a societal contribution *'[...] I wish for every company in Germany that training is a matter for the boss, that they really say: it is a high social responsibility to invest in the education of young people'* (U037/U). This focus on social responsibility may be based on the assumption that a certified qualification is important for young people in Germany but possibly also on the calculation that it would lead to a good prestige of the company. Another German interview partner emphasised *'[...] we train our own skilled workers [...] when they are finished, they are not only skilled workers, but can also be directly employed by us, because they know our processes, they know our factory[...]. These are really perfect candidates that we have trained.'* (U041/U) Thus, it becomes clear that the interviewees have a conception of 'good' training, how companies behave within the framework and the meaning of associated symbols.

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<sup>16</sup> Quotations are translated in English by the authors.

Some influences from the home country specifically on the strategy of training / recruiting of young professionals manifest in the form of regulatory requirements for the subsidiary. Often found are fixed parameters regarding HR budget and/or the headcount. But there are also societal perceptions about training behind the decision on the involvement in the training of young professionals. For example, social obligations influence which role of companies in professional training is perceived as correct. HR managers in Germany do not always share the same understanding with decision-makers in the home country: *'The only thing I can say is that vocational training is completely foreign to them and that we have to fight every time it comes to issues like budgets. Because [...] (French colleagues) are not aware [...] that vocational training costs money at the first moment but is only profitable at a later stage.'* (U038/F). As shown in this example, the interviewee interprets the different understanding of colleagues in the headquarters for as an influence from the French environment. The reason behind could be the long-term nature of the investment in training, which is unusual for some other countries. Further experienced differences in the institutional environment mentioned were for example the different valuation of an apprenticeship compared to a university degree as well as and the understanding of an occupation.

The influences reveal different elements of the pillars of institutions, some of which are interrelated in a complex way, overlap and are anchored in the different societies of the countries. Human resource managers are also influenced in their decision on the aspects that do not exist as fixed guidelines or laws (regulative pillar) but that are equally based on the normative and cultural-cognitive pillar. In summary, it can be seen that the influences on the decisions regarding design of training and recruiting practices are multi-layered and that companies are well aware of the duality of their institutional environment. Through local autonomy in decision-making or coordination with the parent company the solution seems to be legitimised in both environments.

## 6 Conclusion and outlook

It is clear that if training activities are offered as initial training for young professionals, most companies fall back on the German dual training system, which indicates a strong influence of the local environment. In contrast to the studies on German companies abroad, here, no extensive training is imported from abroad, and only in a few individual cases is training offered outside the system at all. Other studies on training and further HR practices showed a stronger adaptation of the strategy to the two environments that partly also include hybrid solutions (Pilz & Wiemann, 2021; Stavrou et al., 2021; Wiemann & Pilz, 2020), but also the influence by the local environment (Vogelsang & Pilz, 2020), which seems to be especially strong in Germany. However, the fact that such hybrid solutions do not show up in this study does not mean that there are no influences from the home country at all. A closer look at the influences on this decision shows that despite the predominant use of the dual training system as a form of training, the subsidiaries still do not act 'like German companies' in their internal decisions and the influences from the home country sometimes become apparent in intensive negotiation processes with the parent company. Thus, the different systems with the underlying rules, norms and cultural aspects anchored in the institutional environment become clear in the discussions and exchanges with the parent company.

Nevertheless, this knowledge on foreign companies can be used to better address the target group of (potential) training companies to support them in their pursuit to meet their demand for skilled workers.

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## References

- Barabasch, A., & Rauner, F. (Eds.). (2012). *Work and Education in America*. Springer Netherlands. <https://doi.org/10.1007/978-94-007-2272-9>
- BIBB. (2017). *Training regulations and how they come about*.
- Bosch, G., & Charest, J. (2008). Vocational training and the labour market in liberal and coordinated economies. *Industrial Relations Journal*, 39(5), 428–447. <https://doi.org/10.1111/j.1468-2338.2008.00497.x>
- Brockmann, M., Clarke, L., Méhaut, P., & Winch, C. (2008). Competence-Based Vocational Education and Training (VET): the Cases of England and France in a European Perspective. *Vocations and Learning*, 1(3), 227–244. <https://doi.org/10.1007/s12186-008-9013-2>
- Busemeyer, M. R., & Trampusch, C. (2012). The Comparative Political Economy of Collective Skill Formation. In M. R. Busemeyer & C. Trampusch (Eds.), *The Political Economy of Collective Skill Formation* (pp. 3–38). Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199599431.003.0001>
- Clement, U. (1999). Die transnationale Kommunizierbarkeit des Berufes. Verständigungsprobleme im globalen Dorf. In K. Harney & H.-E. Tenorth (Eds.), *Zeitschrift für Pädagogik, Beiheft: Vol. 40. Beruf und Berufsbildung. Situation, Reformperspektiven, Gestaltungsmöglichkeiten* (pp. 209–231). Beltz Verlag.
- Deissinger, T. (2000). The german ‘philosophy’ of linking academic and work-based learning in higher education: the case of the ‘vocational academies’. *Journal of Vocational Education & Training*, 52(4), 605–626. <https://doi.org/10.1080/13636820000200134>
- Fuchs, M., Westermeyer, J., & Finken, L. (2022). Evolutionäre Dynamiken: Multinationale Unternehmen und duale Ausbildung. *Berichte Geographie Und Landeskunde*, 1–21. <https://doi.org/10.25162/bgl-2022-0017>
- Fuchs, M., Westermeyer, J., Finken, L., & Pilz, M. (2021). Training activities in subsidiaries of foreign multinational companies: Local embeddedness in Germany? *International Journal of Training and Development*, 25(4), 414–432. <https://doi.org/10.1111/ijtd.12244>
- Fürstenau, B., Pilz, M., & Gonon, P. (2014). The Dual System of Vocational Education and Training in Germany – What Can Be Learnt About Education for (Other) Professions. In S. Billett, C. Harteis, & H. Gruber (Eds.), *Springer International Handbooks of Education. International Handbook of Research in Professional and Practice-based Learning* (pp. 427–460). Springer Netherlands. [https://doi.org/10.1007/978-94-017-8902-8\\_16](https://doi.org/10.1007/978-94-017-8902-8_16)
- Garavan, T., McCarthy, A., Lai, Y., Murphy, K., Sheehan, M., & Carbery, R. (2020). Training and organisational performance: A meta-analysis of temporal, institutional and organisational context moderators. *Human Resource Management Journal*, 1–26. <https://doi.org/10.1111/1748-8583.12284>
- Gessler, M. (2017). Educational Transfer as Transformation: A Case Study about the Emergence and Implementation of Dual Apprenticeship Structures in a German

- Automotive Transplant in the United States. *Vocations and Learning*, 10(1), 71–99. <https://doi.org/10.1007/s12186-016-9161-8>
- GTAI. (2021). *Deutschland mit Greenfield-Projekten auf dem Vormarsch*. <https://www.gtai.de/gtai-de/invest/business-location-germany/fdi/deutschland-mit-greenfield-projekten-auf-dem-vormarsch-82910.pdf>
- GTAI. (2022). *Germany Trade & Invest's FDI Reports 2021*. <https://www.gtai.de/en/invest/business-location-germany>
- Kostova, T., & Roth, K. (2002). Adoption of an Organizational Practice by Subsidiaries of Multinational Corporations: Institutional and Relational Effects. *The Academy of Management Journal*, 45(1), 215–233.
- Kostova, T., Roth, K., & Dacin, M. T. (2008). Institutional Theory in the Study of Multinational Corporations: A Critique and New Directions. *Academy of Management Review*, 33(4), 994–1006. <https://doi.org/10.5465/amr.2008.34422026>
- KPMG. (2018). *Business Destination Germany*. <https://home.kpmg/de/de/home/themen/2017/11/business-destination-germany-2018.html>
- Kuckartz, U., & Rädiker, S. (2019). *Analyzing Qualitative Data with MAXQDA: Text, Audio, and Video*. Springer eBooks Social Sciences. Springer. <https://doi.org/10.1007/978-3-030-15671-8>
- Li, J., Wiemann, K., Shi, W., Wang, Y., & Pilz, M. (2019). Vocational education and training in Chinese and German companies in China: a 'home international' comparison. *International Journal of Training and Development*, 23(2), 153–168. <https://doi.org/10.1111/ijtd.12151>
- Lorscheid, K., & Pilz, M. (2017). Yes, we can! Eine Untersuchung zum Ausbildungsverhalten indischer Unternehmen in Deutschland. *Kölner Zeitschrift Für Wirtschaft Und Pädagogik*, 32(62), 64–84.
- Meuser, M., & Nagel, U. (2009). The expert interview and changes in knowledge production. In A. Bogner, B. Littig, & W. Menz (Eds.), *Research methods series. Interviewing experts* (pp. 17–42). Palgrave Macmillan. [https://doi.org/10.1057/9780230244276\\_2](https://doi.org/10.1057/9780230244276_2)
- Paauwe, J., & Boselie, P. (2003). Challenging 'strategic HRM' and the relevance of the institutional setting. *Human Resource Management Journal*, 13(3), 56–70. <https://doi.org/10.1111/j.1748-8583.2003.tb00098.x>
- Pilz, M. (2009). Initial Vocational Training from a Company Perspective: a Comparison of British and German In-House Training Cultures. *Vocations and Learning*, 2(1), 57–74. <https://doi.org/10.1007/s12186-008-9018-x>
- Pilz, M. (2012). International comparative research into vocational training: Methods and approaches. In M. Pilz (Ed.), *Research. The future of vocational education and training in a changing world* (1st ed., pp. 561–588). Springer VS.
- Pilz, M. (2016). Typologies in Comparative Vocational Education: Existing Models and a New Approach. *Vocations and Learning*, 9(3), 295–314. <https://doi.org/10.1007/s12186-016-9154-7>
- Pilz, M. (2019). Berufliche Bildung zwischen Imagekampagnen und individueller Attraktivität. *Zeitschrift Für Berufs- Und Wirtschaftspädagogik*, 115(3), 399–419. <https://doi.org/10.25162/zbw-2019-0017>
- Pilz, M., & Alexander, P.-J. (2020). The transition from school to work in times of economic and social instability in Japan. In C. Schmidt & R. Kleinfeld (Eds.), *Crisis of Democracy? Chances, Risks and Challenges in Japan (Asia) and Germany (Europe)* (pp. 291–312). Cambridge Scholars Publishing.
- Pilz, M., & Fürstenau, B. (2019). Duality and Learning Fields in Vocational Education and Training: Pedagogy, Curriculum, and Assessment. In D. Guile & L. Unwin (Eds.), *The*

- Wiley handbooks in education. *The Wiley Handbook of Vocational Education and Training* (pp. 311–327). Wiley Blackwell.
- Pilz, M., & Li, J. (2014). Tracing Teutonic footprints in VET around the world? *European Journal of Training and Development*, 38(8), 745–763. <https://doi.org/10.1108/EJTD-10-2013-0110>
- Pilz, M., & Wiemann, K. (2021). Does Dual Training Make the World Go Round? Training Models in German Companies in China, India and Mexico. *Vocations and Learning*, 14(1), 95–114. <https://doi.org/10.1007/s12186-020-09255-z>
- Ryan, P. (1991). Introduction: comparative research on vocational education and training international. In P. Ryan (Ed.), *International comparisons of vocational education and training for intermediate skills* (pp. 1–22). Falmer Press.
- Scott, W. R. (2003). *Organizations. Rational, Natural, and Open Systems* (5. Auflage). Prentice Hall.
- Scott, W. R. (2014). *Institutions and organizations: Ideas, interests and identities* (4. Auflage). SAGE.
- Stavrou, E., Parry, E., Gooderham, P., Morley, M., & Lazarova, M. (2021). Institutional duality and human resource management practice in foreign subsidiaries of multinationals. *Human Resource Management Journal*. Advance online publication. <https://doi.org/10.1111/1748-8583.12357>
- Vogelsang, B., & Pilz, M. (2020). Conditional factors for training activities in Chinese, Indian and Mexican subsidiaries of German companies. *European Journal of Training and Development*, ahead-of-print(ahead-of-print). <https://doi.org/10.1108/EJTD-04-2020-0066>
- Wiemann, K., & Pilz, M. (2020). Transfer research as an element of comparative vocational education and training: An example of factors influencing the transfer of dual training approaches of German companies in China, India and Mexico. In M. Pilz & J. Li (Eds.), *Internationale Berufsbildungsforschung. Comparative Vocational Education Research: Enduring Challenges and New Ways Forward* (pp. 199–220). Springer VS.
- Zenner-Höffkes, L., Harris, R., Zirkle, C., & Pilz, M. (2021). A comparative study of the expectations of SME employers recruiting young people in Germany, Australia and the United States. *International Journal of Training and Development*, 25(2), 124–143. <https://doi.org/10.1111/ijtd.12214>

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Gessler, M. & Peters, S. (2023). Dual apprenticeship and continuous vocational training of German family businesses in Central and Eastern Europe: Commitment, motives and trends. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 165–172). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7808553>

## Dual Apprenticeship and Continuous Vocational Training of German Family Businesses in Central and Eastern Europe: Commitment, Motives and Trends

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### Abstract

The VET efforts of large family business in Germany on the one hand, and the risk of the shortage of skilled workers for internationally active German businesses on the other, this paper looks at the involvement of German family businesses in vocational education and training in Central and Eastern Europe (CEE). More specifically, it explores the potential and opportunities of initial and continuing vocational education and training in Central and Eastern European countries of major significance to the German economy, sets out the obstacles that exist and examines where action is needed. The study focuses on industrial and technical occupations, since a significant portion of German family businesses in CEE are industrial companies with a particular need for personnel in this field.

The economic importance of Central and Eastern Europe (CEE) to Germany and German businesses can be seen, for example, from figures on trade intensity or the ranking of trading partners in foreign trade. Germany's imports from Poland (ranked 4th), for instance, today exceed those from Italy (5th) or France (6th). Our analysis includes seven countries: Poland, the Czech Republic, Hungary, Romania, Bulgaria, Slovakia and Serbia. Between them, these countries are home to no fewer than 4,442 branches of German businesses, employing over 1.4 million people. This indicates the considerable potential for German businesses in the region.

The potential, opportunities, obstacles and the need for action that we have identified in this study result from the particular local contexts in Central and Eastern European countries – contexts that differ considerably from country to country. While a high degree of similarity between the countries might initially be assumed, a closer examination reveals major national differences in the existing environments for vocational education and training. It was therefore necessary to begin by looking at each country's education and training system.

### Keywords

Central and Eastern Europe, apprenticeships, German companies



## 1 Problem definition and research question

The training and continuing education of their own employees has a long tradition in German family businesses. Today, family businesses provide more than 60 percent of all jobs in Germany, 80 percent of training positions (Langenscheidt & May 2020, p. 12) and more than 70 percent of family businesses are active in the area of continuing education (Stiftung Familienunternehmen, 2022a). The interest in training and continuing education will not weaken in the future, but rather continue to strengthen: For 95 percent of next-generation family entrepreneurs (NextGens), employee training and development is a top priority (PwC, 2020).

Due to the great importance of family businesses for Germany as a business location, we will focus below on this particular form of enterprise. To distinguish between family businesses and non-family businesses, we use the definition of the European Commission (European Commission, 2009). Due to their economic importance, family businesses shape the image of the German economy abroad. By way of illustration, the five largest German family businesses are (1) Volkswagen AG, (2) Robert Bosch GmbH, (3) Schwarz Gruppe (Lidl, Kaufland), (4) Fresenius Gruppe and (5) Continental AG (Die Deutsche Wirtschaft, 2022).

The involvement of German companies abroad has already been the subject of several studies in order to capture the phenomenon of the transfer of vocational training at the meso level in the corporate context. For example, studies are available from the United States (Gessler, 2017), South Africa (Peters, 2019), and China, Mexico, and India (Pilz & Wiemann, 2021). The generally existing training engagement of German companies abroad is furthermore of interest, because although the engagement is local, it can have the potential of a systemic effect at regional and national level (Wiemann & Fuchs, 2018).

It is striking that there are no studies on the training activities of German companies in Central and Eastern Europe, even though these countries are of great economic importance for Germany (DeStatis, 2022): Poland, for example, follows directly behind the USA in terms of imports with rank 4 and exports to the Czech Republic (rank 11) are higher than exports to, for example, Korea (rank 18), Japan (rank 20), Mexico (rank 22), India (rank 23) and South Africa (rank 31).

Our study shows what contribution major German family businesses are already making to dual training and continuing vocational training in selected countries in Central and Eastern Europe (CEE) and what opportunities as well as obstacles and resulting need for action exist to improve training and continuing vocational training locally. The study focuses on countries that are of great importance to the German export industry: Poland, the Czech Republic, Hungary, Romania, Slovakia, Bulgaria and Serbia. A particular focus is on industrial-technical training occupations.

## 2 Method

The study opens with country analyses based on documentary research. Seven countries were selected for the study: Poland, the Czech Republic, Hungary, Romania, Slovakia, Bulgaria and Serbia (the choice of countries is explained in the next sub-chapter). The country studies were conducted using documentary research, interviews and the involvement of national experts.



**Table 1**  
Data sample

Country	Employees	up to 249	250 or more	Total
Bulgaria		9	11	20
Poland		0	45	45
Romania		5	23	28
Serbia		0	23	23
Slovakia		0	19	19
Czech Republic		0	33	33
Hungary		0	25	25
<b>Total</b>		<b>14</b>	<b>179</b>	<b>193</b>

Source: Company survey by the Institute of Technology and Education, University of Bremen.

Next, the report looks at the extent to which German family businesses are involved in vocational education and training in the seven countries. Although companies were widely presumed to have such involvement, there were no pre-existing studies of this for Central and Eastern Europe. This is surprising when we consider that the training efforts of German companies outside Europe have been analysed in depth, for instance in the USA, South Africa, China, Mexico and India (Gessler, 2017b; Peters, 2019; Pilz & Wiemann, 2021). The next step, which forms the second part of this study, was therefore an empirical survey of German family businesses (n=193). The data sample is shown in the table 1.

We used this survey to explore the structures of companies' involvement in vocational education and training. The final part of the picture was an impression of what this looks like on the ground. We therefore prepared case studies examining concrete implementation and the considerable work being done by German family businesses in their branches in Central and Eastern Europe. Though not representative, case studies are the method of choice when it comes to capturing a complex issue in a complex, real-life environment as they enable a qualitative rather than quantitative analysis. We use them here to explore the involvement of branches of various German family businesses in Central and Eastern Europe, looking at their training efforts in Poland (Gühning), the Czech Republic (Mubea) and Hungary (Festo) as well as at a partnership between German companies in Romania (including the family businesses Dräxlmaier and Schaeffler). The case studies are based on eight guided interviews with representatives of schools and companies.

Building on the findings of the country analyses, the empirical survey and the case studies, the final section of the study identifies where action is needed. Where is there room for improvement? What political support should be provided from the EU, from government and administration in the countries themselves and from Germany? What action recommendations can be offered to family businesses?

### 3 Findings

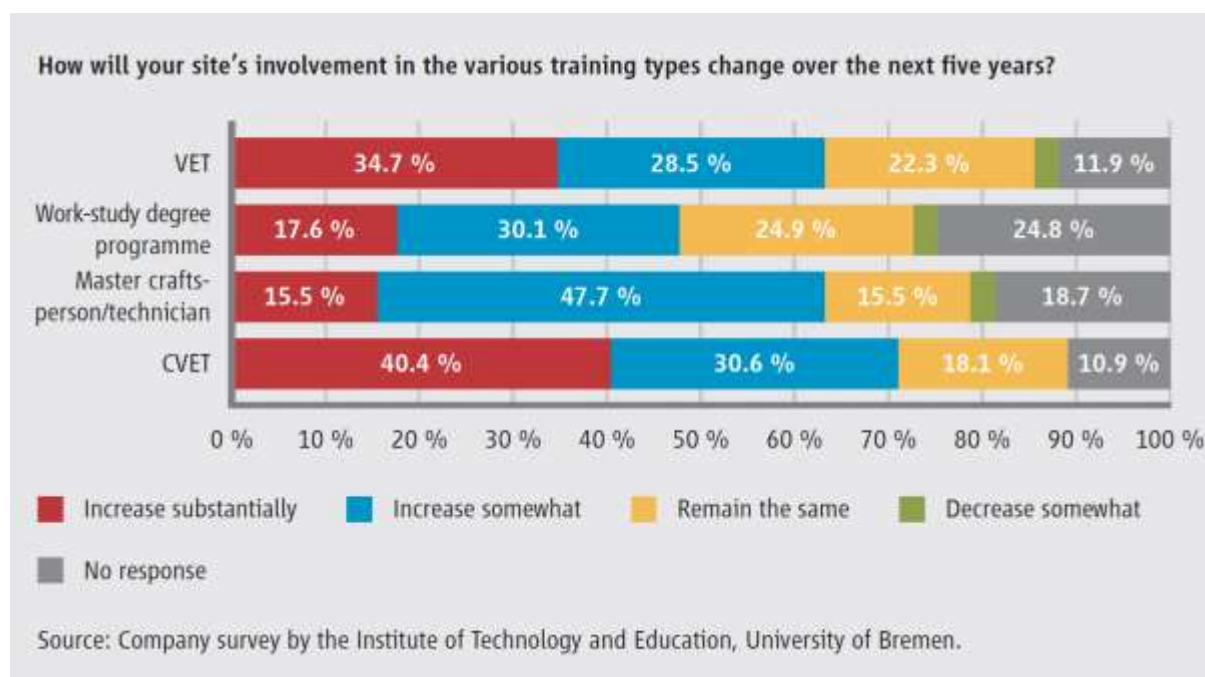
In Germany, German family businesses benefit from the dual training system, which enables companies to align training with operational needs and to qualify skilled workers who fit the company both professionally and socially. Skilled workers form the backbone of the German economy. Today, the growing shortage of skilled workers in Germany (Stiftung Familienunternehmen, 2022a) is jeopardizing the business and operating model based on this and ultimately the future viability of German family businesses.

In Central and Eastern Europe, the situation is even more explosive: On the one hand, there is also a massive shortage of skilled workers. On the other hand, the training of skilled workers does not solve the shortage, but rather exacerbates the problem: Vocational training in Central and Eastern Europe is generally the responsibility of the schools and is detached from the needs of the companies. Practical skills are taught in poorly equipped school workshops. Teachers are generally paid less than people with comparable qualifications on the labor market and, for the most part, do not have the practical work experience, training and equipment to be able to close the gap to the world of work in terms of subject didactics. Against this background, it is not surprising that vocational training in Central and Eastern Europe has a poor image among large sections of the population. The lack of quality and attractiveness, in turn, result in high-achieving students migrating to general education and then to higher education, which further exacerbates the shortage of skilled workers.

This trend is being countered by political reforms: For example, dual apprenticeship options were enshrined in law in six of the seven focused countries: Hungary (2011), Bulgaria (2015), Slovakia (2015), Poland (2016), Romania (2016) and Serbia (2017). These positive developments are supported by a European policy that has been promoting the apprenticeship concept for a decade, by the existing political will for reform on the ground (Tütlys et al., 2022) and by the commitment of the companies providing training, among which the German family businesses occupy a particularly prominent position: 73.6 percent of the family businesses surveyed are currently already providing training in Central and Eastern Europe. According to the companies, this figure is expected to rise to 89 percent in the next two years. Major German family businesses are therefore far more committed to training in Central and Eastern Europe than the national average (around 30 to 40 percent). Another positive aspect is that 74.1 percent of family businesses are promoting local training because they want to assume social responsibility.

Businesses expect a considerable increase in all areas of training over the next five years and see the greatest growth potential in continuing vocational education and training. 40.4 percent of the businesses surveyed expect a considerable increase here, while another 30.6 percent anticipate slight growth. Overall, this means that 71 percent of companies expect to expand their provision of continuing vocational education and training.

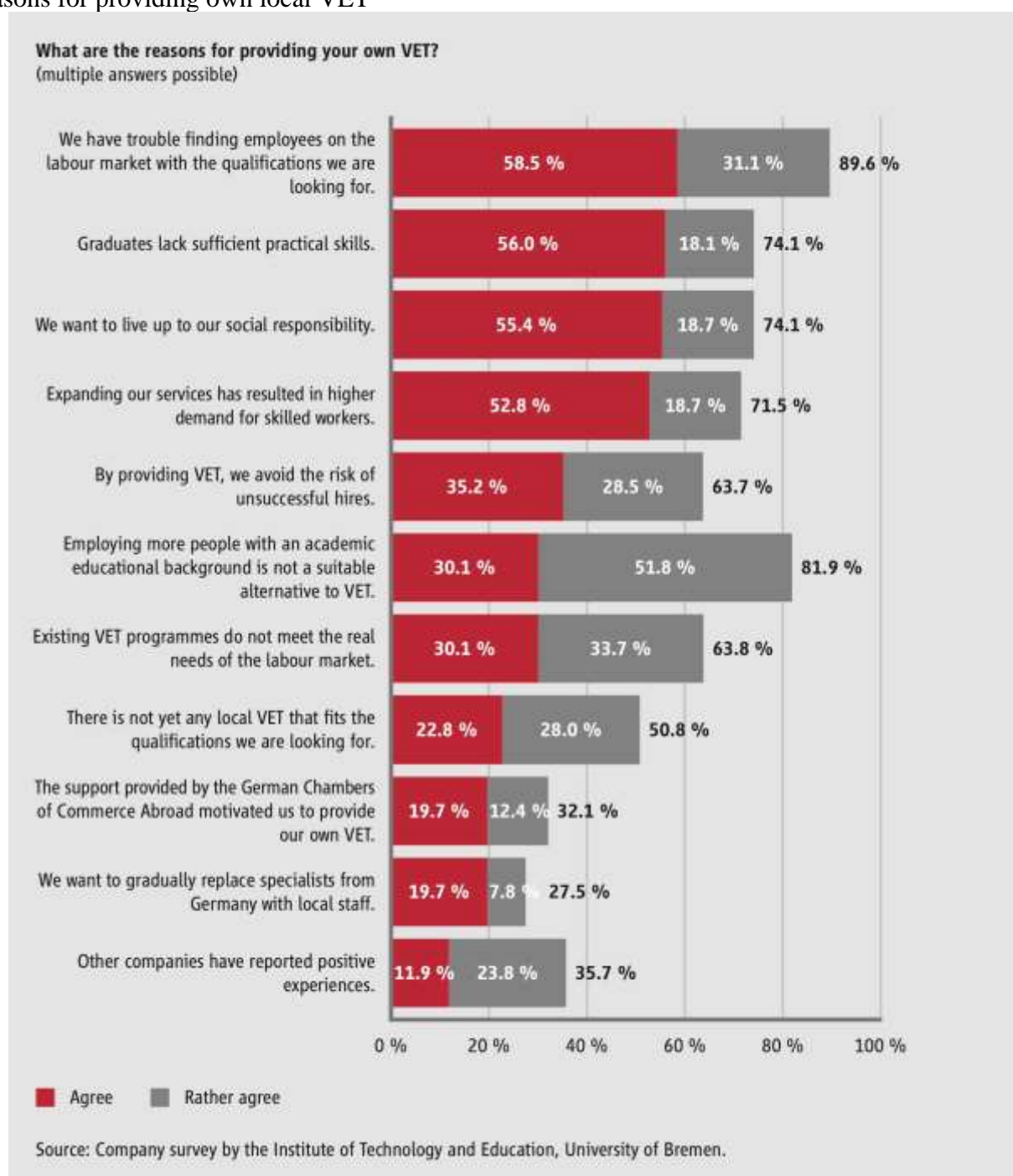
**Figure 1**  
Trends



The reasons cited by companies for providing their own VET are the shortage of skilled workers on the labour market (89.6 percent) and other business reasons (e.g. avoiding unsuccessful hires) on the one hand, and a desire to take on social responsibility (74.1 percent) on the other.

The problem of meeting the existing demand for skilled workers is being further exacerbated by companies' growth and the increasing range of work they are doing in CEE (71.5 percent). Despite companies' urgent need for labour, the vast majority of businesses surveyed (81.9 percent) believe that employing people with an academic educational background is no substitute for vocational education and training. Another reason for training people locally is to reduce the need for specialist staff from Germany (including expats).

**Figure 2**  
Reasons for providing own local VET



In addition to these push factors, one in three of the businesses surveyed cited the positive experience of other companies (35.7 percent) and the support offered by the German Chambers of Commerce Abroad (32.1 percent).

#### 4 Conclusion

Our recommendations based on our analysis touch upon three levels: The micro level, comprising actual teaching and learning processes and interactions between stakeholders (including trainees, teachers and instructors); the meso level, i.e. the level of institutions (companies, schools, school authorities) and institutional actions and collaboration; and the

macro (policy) level, which provides the framework determining the responsibilities, opportunities for collaboration and room for manoeuvre of stakeholders and institutions in the VET system. We provide a total of nine action recommendations: three at the micro level, three at the meso level, two at the macro level and one affecting all levels. All the recommendations are aimed at further improving the environment for vocational education and training in Europe (for further information about the recommendations and the conducted study: Stiftung Familienunternehmen, 2022b).

## References

- DeStatis – Statistisches Bundesamt. (2022). *Rangfolge der Handelspartner im Außenhandel*. URL: <https://www.destatis.de/DE/Themen/Wirtschaft/Aussenhandel/Tabellen/rangfolge-handelspartner.html>, last accessed: November 14, 2022.
- Die Deutsche Wirtschaft (2022). *Die 30 größten Arbeitsgeber der Familienunternehmen*. <https://die-deutsche-wirtschaft.de/die-zehn-groessten-arbeitgeber/>, last accessed: November 14, 2022.
- European Commission. (2009). *Overview of family-business-relevant issues: Research, networks, policy measures and recent studies*. URL: <https://ec.europa.eu/docsroom/documents/10388/>, last accessed: November 14, 2022.
- Gessler, M. (2017). Educational transfer as transformation: A case study about the emergence and implementation of dual apprenticeship structures in a German automotive transplant in the United States. *Vocations and Learning*, 10(1), 71–99. URL: <https://doi.org/10.1007/s12186-016-9161-8>, last accessed: November 14, 2022.
- Langenscheidt, F., & May, P. (2020). Vorwort der Herausgeber. In F. Langenscheidt & P. May (Hrsg.), *Lexikon der Deutschen Familienunternehmen* (pp. 12–15). Springer. URL: <https://doi.org/10.1007/978-3-658-31847-5>, last accessed: November 14, 2022.
- Peters, S. (2019). Betrieblicher Transfer beruflicher Bildung: Fallbeispiel Südafrika. In M. Gessler, M. Fuchs, & M. Pilz (Eds.), *Konzepte und Wirkungen des Transfers Dualer Berufsausbildung* (pp. 321–357). Springer. URL: <https://doi.org/10.1007/978-3-658-23185-9>, last accessed: November 14, 2022.
- Pilz, M., & Wiemann, K. (2021). Does dual training make the world go round? Training models in German companies in China, India and Mexico. *Vocations and Learning*, 14(1), 95–114. URL: <https://doi.org/10.1007/s12186-020-09255-z>, last accessed: November 14, 2022.
- PwC PricewaterhouseCoopers. (2020). *NextGens in Familienunternehmen: Ambitioniert, motiviert und qualifiziert*. URL: <https://www.pwc.de/de/mittelstand/nextgen-survey-2019-executive-summary.pdf>, last accessed: November 14, 2022.
- Stiftung Familienunternehmen (eds.). (2022a). *Fachkräftemangel aus Unternehmenssicht: Auswirkungen und Lösungsansätze*. Jahresmonitor der Stiftung Familienunternehmen – erstellt vom ifo Institut – Leibniz Institut für Wirtschaftsforschung an der Universität München e.V., München 2022
- Stiftung Familienunternehmen (eds.). (2022b). *Dual Apprenticeship and Continuous Vocational Education and Training in Central and Eastern Europe – Opportunities and Obstacles for German Family Businesses*. Prepared by Professor Dr Dr h.c. Michael Gessler and Dr Susanne Peters. Munich 2022.
- The World Bank (2022). *Enterprise surveys: What business experience*. <https://www.enterprisesurveys.org/en/enterprisesurveys>, last accessed: November 14, 2022.

- Tütlys, V., Markowitsch, J., Winterton, J., & Pavlin, S. (Eds.). (2022). *Skill formation in Central and Eastern Europe: A search for patterns and directions of development*. Peter Lang.
- Wiemann, J., & Fuchs, M. (2018). The export of Germany's "secret of success" dual technical VET: MNCs and multiscalar stakeholders changing the skill formation system in Mexico. *Cambridge Journal of Regions, Economy and Society*, 11(2), 373–386. <https://doi.org/10.1093/cjres/rsy008>, last accessed: November 14, 2022.

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Gregson, D. (2023). Arts-based educational research in action in vocational education. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 173–178). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7808569>

## Arts-Based Educational Research in Action in Vocational Education

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### Abstract

This paper argues that there are different ways of understanding and representing the human condition and that all forms of understanding have a frame of reference that enables or constrains the way we think, how we express what we think and what we have learned from experience. Arts Based Educational Research (ABER) is rooted in the potential of the evocative power of aesthetic experience to heighten human vitality (Dewey, 1934, 2005) in ways which have the capacity to enhance not only the practice of education but also the conduct and representation of educational research. This paper presents findings from a qualitative, empirical study which explores teachers' experiences of engaging in University-supported, practitioner-research programme of continuous professional development for teachers of vocational education, informed by key ideas and concepts in the theoretical framework underpinning ABER. Barone and Eisner (2012) draw attention to how ABER is essentially evocative. They argue that utilising the evocative expressive properties of an artistic, aesthetic medium is one of the primary ways in which arts-based research contributes to human understanding. Through the presentation of extracts from a series of 10 case studies accompanied by evaluative commentaries and critical discussion, this paper offers an thematic analysis of teachers' accounts as they attempt to improve their practice in vocational education contexts through direct engagement in ABER. Emerging evidence from a preliminary analysis of the narrative accounts of the experiences of teachers of vocational education as they learn how to be (*savoir être*), systematic, credible and trustworthy practitioner-researchers, suggests that, using the expressive properties of an artistic medium is one of the primary ways in which ABER can contribute to the improvement of educational practice including the conduct and representation of educational research.

### Keywords

arts-based educational research, practitioner-research, aesthetic experience, academic writing and scholarship

## 1 Art as experience

Dewey (2005, p. 19) points out that all human ‘experience is art in germ’, immediate before it is mediated, presentational before it is representational, sensuous before it is symbolic. Eisner (1993) draws attention to how experience is the bedrock upon which meaning is constructed, therefore he argues, the meanings we construct to a large extent depend upon our ability to get in touch with the qualitative world we inhabit. According to Eisner, the arts contribute to the growth of mind in a mind-making process and this involves connecting with the qualitative world of human experience. To create a form of experience that can be regarded as aesthetic, he contends, requires a mind that animates our imaginative capacities and evokes our ability, ‘to undergo emotionally pervaded experience forms of experience that are at once moving and touching, experiences of a consummatory nature, experiences that are treasured for their intrinsic value’ (Eisner 2002, p. xii). He notes how these are experiences which we can access when we attend to the world with an aesthetic frame of reference that interacts with forms of art that make such experience possible. He invites us to consider how the arts can serve as models of what educational aspiration and practice might be at their very best. According to Eisner, when we are able to think about teaching as an artful undertaking and to conceive of learning as having aesthetic features, we can envision the design of an educational environment and the educational experiences which are encountered within that environment, as an artistic task. Works of art call attention to ontological and epistemological aspects of human experience that we sometimes cannot or would prefer not to see or are too great to bear, or too extreme or too complex to be put easily into words. From this standpoint, different forms of understanding are promoted by different forms of representation which may or may not be related to reason and argument rather than intuition and experience. Beliefs about what constitutes legitimate research in education therefore, have enormous ramifications for the understanding, or misunderstanding, of human behaviour, social interaction and educational practice. When the tools we use to represent educational phenomena limit what is expressible or representational, a certain price is paid for the neglect of what has been omitted. This is one of the reasons why the tools we use to represent the world and the human condition (including the world of educational research) need to be capable of making lived experience palpable. ‘We need to touch the souls of students as well as to be able to measure their sleeve length or hat size’ (Barone and Eisner, 2012, p.4).

This paper presents findings from a small-scale, qualitative, empirical study which reports teachers’ experiences of a programme of continuing professional learning and development, including intensive training in educational research, for teachers of vocational education through their engagement in the national Practitioner Research Programme (PRP), funded by the Education and Training Foundation (ETF) and delivered by the University of Sunderland. The PRP has been nationally funded by the Education and Training Foundation (ETF) in England for over 8 years. The purpose of the PRP is to open up collaborative, cooperative research and pedagogic spaces, informed by key ideas and concepts from the theoretical framework underpinning arts-based educational research (ABER) in which teachers of vocational education are encouraged and enabled to improve their practice through systematic, University-supported practitioner research.

Barone and Eisner (2012) note how the power of ABER is that it is essentially evocative. Harnessing the expressive properties of an artistic medium through aesthetic experience, they argue, is one of the most potent ways in which ABER contributes to the development and advancement of human understanding. Extracts from a series of 10 case studies, supported by evaluative commentaries, are analysed, critically discussed and presented in this paper. They offer insights into the experiences of a group of teachers of vocational education as they work together to improve educational practice as part of the PRP. These case study extracts provide practical examples of the power of social, collaborative, cooperative and aesthetic experience



in igniting teacher-imagination, enhancing and increasing human learning, heightening human vitality (Dewey, 1934; 2005) and improving educational practice through University-supported, practitioner-research, in ways which are capable of evoking learning and deepening understanding of complex and enduring educational issues, concepts, theories, in education and educational research conducted in vocational contexts.

In ABER research, the author (in relation to this research study, the teacher-educator) creates and calls upon experiences that would otherwise not be directly available to practitioner-researchers working in the sector. In ABER various perspectives on the meaning of activities are not merely stated and explained but, as is the case of good art, expressed, lived, experienced, and enhanced. Within the literal and visual arts physical realities are recast into a “composed apparition” (Langer, 1957), a virtual whole ... moving away from an everyday world and temporarily entering a new and less familiar one. The apparition of the storied world itself. Engagement in a world beyond the range of our everyday experience becomes a heuristic device (a mental/affective shortcut) that speaks directly to familiar nearby concerns even as it raises questions about them. ABER employs vivid images, stories and descriptions of other perspectives of the real-world to encourage and support the development of teachers’ capacities and confidence in engaging in educational research, their development of scholarship and the improvement of educational practice. Barone and Eisner (2012) point to how ABER has the capacity to trigger empathy and bring us closer together in ways which, in the context of this research, enable practitioner-researchers in vocational education to rethink entrenched pedagogic practice including competing ideas about educational research and the implementation of educational policy by challenging taken-for-granted assumptions (their own and those of others) in the light of experience.

ABER plays by rules that differ from those applied to more conventional educational research. For example, ABER may be judged, firstly by its illuminating effects including its ability to reveal what had not been noticed previously. Secondly ABER has the ability to make vivid subtle but significant aspects of the educational world that the research in question addresses, encouraging and enabling the reader/viewer/listener to notice or become more aware of what they had not been aware of or noticed before. In other words ABER invites reader/viewer/listener into the research experience,

When I disclose what I have seen, my results invite other researchers to look where I did and see what I saw. My ideas are candidates for others to entertain, not necessarily as truth, let alone Truth, but as positions about the nature and meaning of a phenomenon that may fit their sensibility and shape their thinking about their own inquiries’

Peshkin 1985, p. 8

Following Peshkin, ABER invites the reader/viewer/listener to look where the researcher looked and to see what they saw, through a constellation of evocative factors expressed and represented in an artistic image. In addition, ABER has the capacity to generate questions which have not yet been asked. ABER also provides opportunities to focus incisively upon educationally salient issues and enduring questions where the material helps us to get to the heart of the matter, persuading readers of the educational importance of events portrayed. Finally, ABER’s has the ability to make reference to phenomena outside of the research text which enables the reader/viewer/listener to make connections that had not been made previously. ABER puts literary language to work by employing language designed to stimulate imaginative faculties which bring the reader/viewer/listener into presence, inviting them into the direct experience of another person/world of ideas. ABER does not tend to use direct and denotative language. Instead, it employs the language of the:

- Evocative
- Expressive
- Contextual
- Connotative
- Vernacular

## 2 Research methodology

The methodology employed in this research is inductive beginning with individual cases in order to tentatively and incrementally move toward what may be more general. Thematic analysis is used to identify recurring themes in data from 10 case studies and narrative accounts of practitioners engaged in the national PRP.

The PRP purposefully employs ABER in bringing complex ideas and concepts in education and educational research to life. The lived experiences of teachers conducting research in the PRP are used to illustrate the impact of ABER upon education practice. The research problem which provides the impetus for this study aims to address a number of research questions. How best to support teachers in helping them to research and improve their practice through systematic, supported practitioner-research? How aesthetic experience and the arts can contribute to making complex ideas and concepts in educational research accessible and useful to teachers and education leaders working in vocational contexts? It also attempts to address the research question of, how intensive University-supported intensive research training can contribute to increasing the vocational education sector's capacity for self-improvement through systematic practitioner-research conducted and reported in ways which also meet the standards necessary to rise to the requirements of successful peer-review and publication? Finally, the question of, if/how the use of visual and other forms of art, can mediate the acquisition and development of teachers' understanding of ideas, theories, concepts in educational research and practice in vocational education is also explored.

Rethinking the relationship between teachers, researchers, students, education leaders and others and building their capacities to conduct research together for mutual benefit in the interests of the common good will be pivotal in the development of new pedagogical principles and practices and the opening up of places and spaces in which we can imagine new and inclusive educational futures for all learners. Our purpose in calling for a shift in existing educational research practices and horizons which frame the present differently, is to enable teachers to help their learners to encounter existing social, intellectual and economic boundaries and obstacles to their engagement in education and educational research not as prisons or shackles to past exclusion and inequities but as tension points condensing the past in order to imagine and open up new possibilities and relationships in education and educational research for teachers and learners alike.

This brings us to the question of what educational futures are desirable and for whom and sets us on a quest not so much for "what works" as to the question of "education for what?". In systems of education preoccupied with quick-fix responses to hyperactive policy processes conducted at social media speed, measures of educational quality based upon performance outputs have become conflated with educational standards. Questions of educational values and purpose are now being displaced and reduced to blunt and crude measures of outputs which then masquerade as what counts as quality in education. In this context, it is wise to remember that a public that is inured to these fixed ways of seeing and thinking about what we mean by good education, may find it difficult to imagine how educational research and the improvement of educational practice might be done differently. If we accept that education should be respected and concerned with the protection and pursuit of the common good and that the right to quality education which fosters the intellectual, moral and social capacities of all learners

including their abilities to work together and transform the world with empathy, compassion, imagination and care, then we need to create conditions in which their teachers can do the same. This will involve building the capacities of teachers to lay the foundations for flourishing, divergent futures of education as well as finding new approaches to teachers' professional learning and the improvement of research and practice informed by ABER. and aesthetic experience.

A central aim of ABER is to enhance perspectives related to human activities which are educational in character. ABER involves the presence of certain aesthetic qualities or design elements of education which infuse both the process of educational inquiry and the research "text". To date Most existing ABER has employed forms of art that are primarily of a literary nature rather than fine art, music, visual, or performing arts. ABER frames a research field that exists across and beyond disciplines and can also take the form of non-linguistic arts including visual and performing arts. The legitimacy of ABER has been questioned by those who have misunderstood this unique approach to educational enquiry. Much research in vocational education therefore has tended to be framed by an epistemology that seeks certainty and aims to produce findings that are meant to predict and control educational outcomes and in ways which enable consumers of educational research to formulate, prescribe, predict, inspect and control educational practice, research in vocational education. To date, this has tended to encourage many researchers in education to only pursue knowledge that is considered to be objective, valid and reliable by following the conventions and protocols of the natural sciences rather than research grounded in human experience.

The research reported here takes the above published works as starting points. It draws attention to how until relatively recently, the initial and continuing professional development of teachers of vocational education has rarely involved purposive engagement with the arts and humanities. Within the past few decades however, growing numbers of educational scholars and researchers involved in the initial and continuing professional development of teachers of vocational education have begun to explore the possibilities of artistic forms of understanding in the development of the professional learning of teachers of vocational education.

### 3 Emerging Evidence

While it is too early to draw conclusions from this research, as it is still work-in-progress, emerging evidence from a preliminary thematic analysis of the narrative accounts of the experiences of 10 teachers of vocational education as they learn how to be (*savoir être*) teachers and practitioners researchers through the PRP, suggest that, using the expressive properties of an artistic medium is one of the primary ways in which ABER can contribute to the teaching and conduct of research and practice in vocational education by making theories, concepts, ideas and arguments surrounding methodology, methods, academic writing and scholarship in educational research more accessible and meaningful to sector practitioners. This study is purposefully putting ABER to work through a spectrum of factors expressed and represented in artistic artefacts and aesthetic phenomena to explore if/how the use of visual and other forms of art, can mediate the acquisition and development of teachers' understanding of ideas, theories, concepts in educational research in order to improve educational practice across a range of vocational contexts.

## References

- Dewey, J. (1934, 2005). *Art as Experience*, London: Penguin Books.
- Eisner, E., W. (1993). *Forms of Understanding and the Future of Educational Research. Presidential Address at the American Educational Research Association Annual Meeting*. April 1993.
- Barone, T., and Eisner, E., W. (2006). Arts Based Educational Research. In, *A Handbook of Complementary Methods in Educational Research*, London: Routledge.
- Barone, T., and Eisner, E., W. (2012). *Arts Based Educational Research*. London: Sage.
- Langer, S., K. (1957). *Problems of art*. New York: Scribner's.
- Peshkin, A. (1985). Virtuous subjectivity: in the participant-observer's eyes. In D. Berg & K. Smith (Eds.), *Exploring clinical methods for social research* (pp. 267-281). Beverly Hills: Sage.

## Biographical Note

I joined the University of Sunderland in 2015, first as an Academic Tutor and then as a Research Assistant for the University of Sunderland's Centre for Excellence in Teacher Training (SUNCETT). My work involves supporting teaching and research as part of a National Practitioner Research Programme (PRP) for teachers and education leaders from the Further, Adult and Vocational Education (FAVE) sector across England. This programme of research support is sponsored by the Education and Training Foundation (ETF). I work in close collaboration with the Foundation in supporting the delivery of the ETF-SUNCETT PRP which leads to the award of a Master of Arts Module or a Master of Philosophy Research Degree. Each year, I support the organisation and management of the Foundation's Annual Research Conference in London.

Gregson, M. (2023). If it was going to work it would have worked by now. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 179–185). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7808579>

## If it was Going to Work it Would Have Worked by Now

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### Abstract

A top-down model of educational change and improvement has dominated the landscape of vocational education in England for over 30 years. However, as yet, as Coffield (2017) notes, this model has done little to improve the quality of education or increase learners' achievement across the sector. A reason for this, he argues, is that policy professionals, education leaders and teachers in England have become caught in the grip of a top-down model of educational change and improvement which is proving difficult to loosen. Carr (2005) and Kemmis (2005) contend that a consequence of this is that educational change and improvement in England are now locked in a system which is preoccupied with technique and caught up in a clockwork universe where strategies for the implementation and evaluation of educational policy are coupled with the instrumental language of “recipes” and “blueprints” for “excellent” teaching to command, inhibit and distort the discourse. This paper lends support to the work of the above authors where they argue that these factors make it difficult to see how the education system in England and the model of educational change and improvement which underpins it, could operate in any way other than it currently does. A further consequence of the grip of current model is that quality (what we take to mean by good vocational education) is being reduced to blunt measures of performance outputs imposed from the top-down and measured from the outside-in, which are subsequently presented to the public in the form of competitive league tables (Sennett, 2009). If we accept that we need to rethink existing models of educational change and improvement in vocational education in England, then we need to begin the question of ...where do we start? Drawing attention to the deficiencies of the current model of educational change and improvement is simply not enough. Instead, this paper attempts to make a persuasive case for the need to move towards a new model by providing practical examples which offer glimpses (albeit in microcosm) of how we might go about educational change and improvement differently in the future.

### Keywords

models of educational change and improvement, education policy, practitioner-research, vocational education

### 1 Why vocational education needs a new model of change and improvement

The research problem which provides the central focus of this paper, is that, top-down, models of educational change and improvement in Vocational Education in England which have dominated the landscape for over 30 years, have done little to improve the quality of education across the sector (Coffield, 2017). A reason for this, Coffield argues, is that policy professionals, education leaders and teachers in England have become caught in the grip of a



top-down model of educational change and improvement which is proving difficult to loosen. Carr (2005) and Kemmis (2005) contend that a consequence of this is that educational change and improvement in England are now locked in a system which is preoccupied with technique, where clockwork strategies for the implementation and evaluation of educational policy coupled with the instrumental language of “recipes” and “blueprints” for “excellent” teaching, command and distort the discourse. The above authors argue, these factors make it difficult to see how the education system in England and the model of educational change and improvement which underpins it, could operate in any way other than it currently does. A further consequence of the current model is that quality (what we take to mean by good vocational education) is being reduced to blunt measures of performance outputs imposed from the top-down and measured from the outside-in, which are subsequently presented to the public in the form of competitive league tables (Sennett, 2009). If we accept that we need to rethink existing models of educational change and improvement in vocational education in England, then we need to begin the question of ...where do we start?

Both Carr (2005) and Kemmis (2005) make the point that imposing educational change and improvement from the top-down does not and cannot work because the model itself is founded upon an incoherent, epistemic misconception, premised on a profound misunderstanding of the nature of educational practice (or indeed any practice) and how practice improves. In this paper, we draw upon contributions from the disciplines of philosophy, sociology and psychology through the works of, Sarason (1993), Elliott (2001) Carr (2005), Kemmis (2005), Sennett (2009) and Coffield (2017) among others, to suggest that a first step in this process of moving toward a more pragmatic, inclusive and democratic model of educational change, is to build it upon what we already know about how we as human beings (students, educators, educational researchers, inspectors, policy professionals, as well as whole systems) learn best, namely in mutual collaboration and cooperation. Coffield (2017) draws attention to the paradoxical expectation that a ‘top-down’ model of educational change and improvement that, creates a climate of fear, relies upon fabrications of reality and truth and assumes that teachers and educational leaders will somehow be inspired to improve what they do in the face of the threat of public humiliation, will “work” in practice is quite absurd. Such categorial flaws and misconceptions, based upon the relatively recent and arbitrary separation of concepts of, theory, practice and research, as well as binary framings of vocational and academic education, when combined with assumptions about the temporal relationship between theory and practice, have also led to impractical divisions of labour and unhelpful demarcations of practice in educational research. These are regularly framed in highly questionable and demeaning hierarchical terms, which elevate ‘academic’ education above ‘vocational’ education. Such dislocations and false, hierarchical, epistemic constructions have not only come to frame how we think and talk about systematic and impactful educational research, but also who is best placed to legitimately conduct it. The same exclusionary forces have also served to relegate and reduce technological and vocational education to simple matters of technique, rote learning and mindless rule-following. This has culminated in a diminished understanding of what constitutes the genuine development and improvement of different forms of knowledge, skill and craft in the world. At the same time, this discourse has also served to obscure what it means to lead a fulfilled life and be a well-educated human being today.

On the other side of the Atlantic, but from a similar perspective, Sarason (1998) invites us to consider,

*Why ...have our efforts – and they were many and expensive – met with intractability? Why should we expect that what we will now recommend will be any more effective than our past efforts?*

Sarason, 1998, p.3.

This paper aims to address the research question of what an alternative, more democratic and inclusive model of educational change and improvement might look like in practice in vocational education contexts? The parameters of this research are set in the context of the Practitioner Research Programme (PRP), a national programme of intensive educational research training, internship and mentoring for teachers working the Further Adult Vocational and Technological Education (FAVTE) sector in England. Funded by the Education and Training Foundation (ETF) for over 7 years, the PRP, provides intensive research training, support and internship for teachers and education leaders working in the FAVTE sector.

To date, over 350 sector practitioners across England have successfully engaged and subsequently graduated from the PRP at either, Master of Arts (MA), Master of Philosophy (MPhil) or Doctor of Philosophy (PhD) degree level. The methodological position or logic framing the research is inductive, beginning with particular cases, we illustrate the lived experiences of PRP participants working across a range of different vocational subjects and disciplines as they learn how to be (*savoir être*), credible, respected peer-reviewed, educational researchers in their own right, conducting research into an aspect of their own practice and how it might be improved. From the PRP research population of 350, extracts from a small sample of cases and evaluative commentaries from PRP participants working in 2 colleges of Further Education (FE) and one Industry Training Provider are employed for illustrative purposes. Thematic analysis of these cases (Nowell et al 2017) is then put to work to offer some practical examples of and insights into what an alternative model of educational change and improvement might look like in action.

The theoretical framework employed in this study draws upon Dewey's (1910, 1933) pragmatic epistemology and works of Dunne (1997, 2005) among others, to draw attention to the importance of context in educational change and improvement. The same framework also foregrounds the role of Aristotle's (384-322 BC) different forms of knowledge in the development and improvement of practice in vocational education contexts. Our aim is to bring the reasons why teachers often encounter problems in putting theories and ideas from research conducted by others into practice into view. We employ Dunne's (2005) definition of practice research to explain why an appreciation of the different forms of knowledge embedded and embodied in experience and practice are pivotal in the success of models of educational change and improvement in Vocational Education. Dunne defines, a practice as,

*“ ... a coherent and invariably quite complex set of activities and tasks that has evolved cooperatively and cumulatively over time. It is alive in the community who are its insiders (i.e. its genuine practitioners) and it stays alive only so long as they sustain a commitment to creatively develop and extend it – sometimes by shifts which may at the time seem dramatic or even subversive. Central to any such practice are standards of excellence, themselves subject to development and redefinition, which demand responsiveness from those who are, or are trying to become practitioners”*

Dunne 2005, pp. 152-153.

Note how Dunne draws our attention to historical, incremental, social and cultural dimensions of a practice and the processes through which practice is evolved by its insiders, in the contexts

and sites in which their practice is conducted. From here we can see that research in Further, Adult, Vocational and Technological Education (FAVTE) contexts is neither a new, nor an inferior way of thinking about educational change and improvement. We extend Dunne's (1995) definition of a practice into the work of Sennett (2009), where he argues that all skills, even the most abstract, begin as bodily practices and that technical understanding develops, not in a mechanical or mindless way but through the acquisition and development of different forms of knowledge including problem-finding, problem-solving and critique, as well through the powers of imagination and aesthetic experience (Sennett, 2009). From this perspective, ideas about what makes a practice good in any form of life, originate in our experiences of trying to do something well in the world, making critical judgements regarding the consequences of our actions in practice and deciding how we might do better in the future. Reaching back into the history of human experience of thinking through making, practice research focuses on the importance of dialogue between concrete practices, thinking, problem-finding, problem-solving and critique (Sennett, 2009).

Embodied in the world, practice research conducted in the PRP has real and direct consequences for learners, teachers, communities, the economy and society. Practice research in the PRP admits and values different forms of knowledge and understanding in ways which include, practical and material experience (thinking through making); the exercise of practical wisdom in context; the development of theory alongside the development of qualities of mind and character. Such qualities include, an ability for independent thought and reflection; a care for clarity and expressiveness in writing and speech; a habit of truthfulness; a commitment to open mindedness; a disposition towards cooperation and collaboration; a sense of justice; the courage to move beyond the narrow pursuit of self-interest and a genuine commitment to act publicly in the pursuit of the common good (Dunne 1997, p.6). These distinctive human qualities operate to signal what we mean when we talk about good education in FAVTE contexts as preparation and support for, the development and nurturing of good practice and human flourishing in any form of life. Such qualities of mind and character resonate closely with VETNET ambitions to educate and prepare learners in FAVTE to the highest level, to enable them to be work-ready, lifelong learners with an international outlook and the knowledge and skills necessary to navigate the global workplace as well as making a contribution to global citizenship and the common good.

This paper, the problems which it addresses and the themes and findings drawn from PRP data are reported here to illuminate the need to move away from current preoccupations with technique and mechanical and arbitrary separations of theory, practice and research in programmes for the initial and continuing professional development of teachers in FAVTE. We argue that a move toward approaches to curriculum design and pedagogic practices, informed by social, collaborative, cooperative and aesthetic experiences which evoke the development of the person within the teacher is long overdue. Data from the PRP reported below indicate how practice research together with the expressive qualities of the arts can be put to work in developing the minds, imagination and character of vocational teachers and learners alike. It is hoped that the findings described in this paper may be of interest and use to teachers and teacher-educators in vocational, further and higher education, policy professionals, curriculum developers and those with responsibility for educational evaluation and improvement in the FAVTE sector and in other sectors of education.

## 2 Findings

1. Prior to the PRP practitioners in the FAVTE sector were routinely assumed to be poorly informed about practice even though they know it 'from the inside'. On the other hand, university researchers, academics and theorists were regarded as being well informed about practice even though they are largely removed from it by the day-to-day division of labour



(Kemmis, 2005). These issues are particularly important in relation to the impact (or otherwise) of educational research upon educational practice in vocational education in the real world. The PRP is helping teachers to make informed judgements based on an appropriate balance of evidence framed by a new infrastructure or “information architecture” (Goldacre 2010) capable of supporting the more democratic, inclusive and realistic approaches to the improvement of educational practice.

2. The PRP provides examples of how practitioner-research can go beyond ‘big research’ to bring to life the people behind the numbers by offering insights into *how* and *why* an idea or theory from educational research which claims *that* something has ‘worked’ (in an experiment, randomised control or other research trial) actually ‘works’ or ‘fails’ to work in practice. The PRP begins with questions of practice that matter to practitioners, the real world concerns of teachers regarding problems they encounter in educational practice. This means that at least some of the evidence generated in the PRP research process is derived from the first-hand experiences of sector practitioners. This makes PRP research of relevance, interest and most importantly of use to practitioners. In turn, this makes its impact upon educational practice, direct, context-attuned and more immediate in ways which other forms of research can find problematic. Research conducted in and through the PRP, employs a blend of research evidence generated by sector practitioners and by others in the educational research community. This blend of research evidence contributes to the accessibility and credibility of PRP research as it connects and resonates with the lived experiences of teachers and is used by and is useful to them and their colleagues in ways which both challenge, support and extend educational research conducted by others.

3. The PRP is contributing to making the critical and thoughtful use of evidence from research a part of the everyday practice of teachers by providing intensive research training and internship for teachers as an integral part of their continuing professional development (CPD) equipping “the researched” with the knowledge and skills they need to become respected, credible and in some cases published researchers. In the PRP practitioners develop an understanding of what is meant by ‘good research’ in education and how good research is and is not done. This is enabling teachers across the sector to become not only critical readers, writers and ‘testers’ of the findings of research conducted by others but also enabling them to become developers and critics of their own research. The PRP is building the self-improving capacity of the sector by providing intensive research training which supports the development of highly skilled, practice-focused, systematic, rigorous and impactful practitioner-research. The PRP is driving sector-wide improvement in context through a pioneering model of educational change which enables practitioners in the FE sector to test out and adapt ideas from educational theory and research in the arena of practice.

4. By providing detailed ‘on the ground’ descriptions of what goes on in practice through direct accounts of the lived experiences of teachers, education leaders and learners, the PRP provides cumulative, real-world and real-time insights into the *processes* through which a policy or idea from research is being implemented in practice *as* it is being implemented. This offers policy professionals a ‘history of the present’, intelligence in the ‘here and now’, insights into what is really happening to an idea from research/policy in practice. This presents opportunities to adapt, modify and improve policy in practice in real-time in the light of incrementally accrued evidence, derived from the direct experiences of sector practitioners, including more subtle and less easily measured aspects of the (lived) impact of an idea from research or a policy in practice. Research conducted in the PRP is distinct from much ‘rear view mirror’ sector intelligence generated by RCTs, meta-analyses and other forms of ‘big research’ which present retrospective perspectives of the large-scale outcomes and more easily measured aspects of the impact of a policy, after the event and from the outside. This is not to say that the PRP and ‘big research’ conducted through RCTs should be viewed in binary or oppositional

terms or that one should be elevated or valued above the other. The PRP offers a new model of partnership in which practitioner research can contribute to/supplement ‘big’ research in the form of RCTs in a complementary and mutually enriching relationship capable of improving and informing both forms of research in education. In this way, the PRP offers opportunities to develop a new, more inclusive and democratic architecture for a hybrid model of policy-research-practice relations, a new policy science capable of harnessing synergies derived from both forms of educational research opening up opportunities for hypothesis-testing on a smaller scale *before/after* hypothesis-testing on a larger scale though RCTs etc. An aim of the PRP is to challenge ideas about what counts as systematic research in education in the FAVTE sector, regarding how research is conducted, who gets to conduct it and who can legitimately talk about the experiences of ‘the researched’. A central question here is what happens to educational research when ‘the researched’ become the researchers? The PRP takes research to be an educative process, where the first objective is to illuminate and explore educational problems and enduring educational issues encountered by teachers in their everyday practice and to pursue potential solutions through practitioner-research.

5. In the top-down model practitioner research and the people who conduct it are subordinated, undervalued, overlooked and largely excluded from the educational research community. The PRP is challenging unhelpful binary debates and discourses surrounding the importance and value of practitioner-research *versus* ‘big research’ increasing knowledge and improving educational policy-research-practice relations in education in the process. A further objective of the PRP is to contest previously uncritically accepted relays of power and dominant relations of authority which elevate ‘big’ research (RCTs, meta analyses and other forms of research) which conduct research *on* education from the top-down and from the outside-in), and elevate its worth to be above that of practitioner-research, considering it to be superior to and more useful.

6. Through the PRP, highly experienced and more mature teachers and education leaders across the FAVTE sector in England now have access to intensive training and internship in educational research, scholarship and academic writing. This is beginning to contribute to greater inclusion and to use a phrase currently in vogue a “levelling up” of the current demography of the educational research community in which more mature teacher-researchers from lower socio-economic groups who were previously excluded and under-represented in the educational research community and in the academy, can now participate in and contribute to research, theory and knowledge development, the improvement of educational practice in education and in doing so strengthen social justice in the academic and research community.

### 3 Conclusion

Data from the PRP suggest that if the top-down model of educational change and improvement was going to work it would have worked by now. Data also indicate that HE-supported practitioner-research in vocational education contexts such as that embodied in the PRP offer an important ,powerful and useful engine for the refinement of international models of educational change and the improvement in FAVTE contexts, from the ground-up.

### References

- Carr, W. (2005). *For Education: towards critical educational inquiry*. Buckingham: Open University Press.
- Coffield, F. (2017). An Open Letter to the New Chief Inspector: Let’s Make Ofsted a Force for Good. *Times Educational Supplement* , 21<sup>st</sup> January 2017.
- Dewey, J. (1910, 1933). *How We Think*. Boston: Heath.
- Dewey, J. (1916). *Democracy and Education*. New York: Macmillan.
- Dewey, J. (2009). *Art as Experience*. London: Perigree Books.

- Dunne, J. (1997). *Back to the Rough Ground*. Indiana: University of Notre Dame Press.
- Dunne, J. 2005. What's the good of education. In W. Carr (Ed.) *The Routledge Falmer reader in philosophy of education*, (pp. 145-160). London: Routledge.
- Elliott, J. (2001). Making Evidence-based Practice Educational. *British Educational Research Journal*, 27(5), 555-574.
- Goldacre, B.(2010). *Bad Science*. Farrar, New York: Faber and Faber.
- Gregson, D., Gregson, M. and Spedding, T. (2019). Top-down and outside-in: Breaking boundaries between research, theory and practice in education, *Journal of Management Policy and Practice*, 20(3), 36-52.
- Gregson, M., and Spedding, T., (Eds). (2020). *Practice Focused Research in Further, Adult and Vocational Education: Shifting horizons of educational practice, theory and research*. London: Palgrave-Macmillan
- Gregson, M. (2020). In Practice, *Journal of Education Sciences*, 10 (4), 93.
- Kemmis, S. (2005). Prologue: Theorizing educational practice. In W. Carr (Ed.) *For Education: towards critical educational inquiry*, Buckingham: Open University Press.
- Sarason, S. (1998). *The Predictable Failure of Education Reform*. San Francisco: Jossey-Bass.
- Sennett, R. (2009). *The Craftsman*. London: Penguin.

### Biographical note

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## Online and Soft Skills Trainings in Vocational Education in International Context: Reflections about the State-of-the-Art and Future Potential on the Example of China

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### Abstract

Additional to ongoing digital transformation COVID-19 pushed forward the need to integrate online trainings in Vocational Education Training Systems as one element of digital educational offerings. However, in many industries there is still limited acceptance for online trainings among trainers and learners due to the long-standing habits and influence of traditional training models with proportionally large face-to-face parts. Even in China with its digital pioneering role, only reserved interest in online trainings could be observed during the pandemic as a result in the BMBF-funded project INWICA (Innovative further education for workers in China). For the future, it will be necessary to exploit the still highly unused potential of live e-learning in means of a well thought-out didactic and culture-sensitive design. Additional to new online training formats, soft skills as a training content, summarised as the 4Cs rule - critical thinking, communication, collaboration and creativity - play an increasingly vital role in new world economics requirements (Ungureanu, 2020; Yan & Kongjit, 2020). Both, the design of trainings in an adequate online format and the growing importance of soft skills as an increasingly meaningful content in Industry 4.0-context, are important sub-topics when it comes to educational reforms on national as well as on international level. Both topics are closely linked to questions about new competencies and how to meet the changing demands of new teaching and learning formats in the ongoing digitization in Vocational Education Training. The concept of soft skills still lacks a clear definition (Matteson, 2016), in the INWICA project this term is referring to skills, needed for effective interpersonal interaction in socially diverse environment, such as (intercultural) communication and leadership. This paper summarizes insights about technical, organizational and didactical challenges for designing online trainings in a hybrid setting on basis of three exemplarily pilot trainings in China. Furthermore, it describes the findings from ten half-structured interviews with training experts about culture-sensitive design and demanded topics in China when offering soft skills trainings in an online format.



## Keywords

vocational education and training, digitalization, hybrid training settings, soft skills for teamleaders, intercultural competences, culture-sensitive online-moderation

## 1 Problem definition and research questions

The research project INWICA, within the funding line “internationalisation of vocational education”, originally aims to culturally adapt parts of existing certified qualification programs for subsequently transferring them to German companies located in China. Part of the learning content should be delivered via culture-sensitive adapted interactive live e-learning format. Live e-learning in the project means synchronous trainings in the virtual classroom vitero, a software that was provided from the project partner vitero GmbH. The addressed target group are workers in production and middle management.

The learning content was planned to be based on the curricula of the “Industriefachkraft 4.0” and the “Industriemeister”. In discussion with corporate partners in INWICA, such as Kern-Liebers, Heidelberger or Mubea, it quickly became clear that the main interest of Human Resources and Management lies on company-specific practice-orientated and modular training offers to gain specific technical know-how (e.g., operation of machines of certain manufacturers) or on specific soft skills acquisition to bridge intercultural communication gaps (e.g., competences in giving critical feedback). A clear wish was expressed that only time-limited and modular training offers would be of interest. This experience is in line with findings from other research activities that, also from the perspective of vocational training providers, curricula play an increasingly minor role and that the teaching of selected skills is of interest instead (Peters & Meyne, 2021). As early as 2009, education experts pointed out the increasing importance of blended learning and competence-oriented modular learning, also in view of Europe's demographic development and the need for lifelong learning (Baumgartner, 2009).

Against this background the original project goal was changed into creating a time-limited modular 40-hour ‘INWICA learning offer’, including on-site exercises on an industrial road at the project partner GAMI combined with soft skills trainings in the format of live e-learning. Due to external conditions (reduced availability of rooms and computers) the intended setting of ‘classic live e-learning’ was changed into a ‘hybrid setting’. Hybrid setting means here that a group logs in to the virtual room as a whole while the trainers log-in from another place as individual users.

In this paper we refer to experiences from conducting three piloting sessions for soft skills trainings in an online hybrid format. In addition, we expand the experience horizon from the piloting with analyzing statements of ten semi-standardized interviews with training experts in China.

We address the following research question:

- *Which technical, didactical and organizational conditions are important to consider for designing successful online trainings?*
- *How is the acceptance of (online) soft skills trainings in China? What are training topics needed in the context of Industry 4.0?*
- *What is important to consider when adapting training content and formats in a culturally sensitive way?*

## 2 Theoretical framework

### 2.1 State of the art – online trainings

While blended learning scenarios – the combination of online and offline learning sessions in a longer training measure – are well established for many years, the so-called hybrid learning

setting has developed to a more and more common meeting and learning format during the pandemic. In a hybrid training (or meeting), a subset of the people is located together in the same place. Other participants join the meeting individually logged in to virtual classroom (or web conference system).

This format means a combination of physical presence of parts of a group with remote individually logged in participants during one and the same educational session. This setting requires new competencies for all roles, involved in producing and conducting trainings, such as (1) organizers, (2) facilitators & teachers and (3) training participants.

Considering the multitude of new requirements and the relatively short time since online training formats have been developing so rapidly since Covid-19, it is not surprising that many traditional educational services are only at the beginning of the transition towards digitized offerings.

## **2.2 State-of-the-art: Soft skills trainings**

In a recent study on "Future Skills 2021" (Stifterverband für Deutsche Wissenschaft e.V., 2021), in a survey of 500 German companies, the importance of dialog and conflict skills in particular, as well as the ability to make judgments as cross-sector skills in professional life, are named as some of "21 competencies for a changing world". These competencies are assigned to the "transformative competencies" as a new field for educational research. According to Massaro et al. (2016) there seemed to be a tendency towards over-emphasizing hardcore business techniques and neglecting soft skills. Soft skills more and more are considered as needed by the industrial world to be able to help develop companies well and significantly. Many industries choose workers with good soft skills compared to other abilities due to current weaknesses in human resources in soft skills (Apriyani et al., 2022).

Regarding soft skills requested by Industry 4.0, a constellation map of soft skills was designed and validated based on feedback of university students (Cotet et al., 2017; Cotet et al., 2020). The evaluation of key skills supporting Industry 4.0 has been conducted. In particular, the top skills have been highlighted such as decision-making, leadership, team thinking (Kaur et al., 2020). The conceptual map – transformations for Industry 4.0 described the important topics of soft skills including give and receive feedback, problem solving in interdisciplinarity (Kipper et al., 2021). By considering a human-centered Industry 4.0, a maturity model has been developed to assess the important skills for future production workers such as personal skills and interpersonal skills (Bretz et al., 2022).

Nevertheless, there is still a lack of sufficient insights how to set a holistic training program including soft skills and hard skills in a proper way. An online survey with a PEST analysis (abbreviation for Political, Economic, Social and Technological analysis) from the project partner KIT/wbk at the beginning of the project showed that, concerning future demand for Industry 4.0 training content, a growth for soft skills and social skills is estimated while for technical skills, methodological and media competences a reduction is predicted.

## **2.3 State-of-the-art: Intercultural competencies**

At the latest since the research of Geert Hofstede in the 1980ies it is considered proven that human values and behavior is highly imprinted by the culture in which we rise. The (formerly) five cultural dimensions Hofstede declared (which are the degree of masculinity, of uncertainty avoidance, of collectivism, of power distance and of long-term orientation) have been used – not without criticism – a long time as a helpful first orientation when approaching to a foreign culture. Other scientists as Eduard Hall said that "culture is all about communication" and developed the model of high and low context cultures. We refer to the newest cultural science approaches by Erin Meyer (2014) and the GLOBE-study by Robert House et al. (since 1991), which both build on the earlier findings of Hofstede and others.

Very useful for the description and evaluation of learning settings are the following four of the eight dimensions of Erin Meyer's Culture Map: the degree in which a culture (generally speaking) communicates (high or low context), judges (giving directly or indirectly negative feedback), builds trust (based on tasks or on relationship) and argues (confrontational or avoiding conflicts) has high impact on the learning and teaching behavior.

### 3 Empirical approach / methodology

Insights and results from the project INWICA are gained by using the following methods:

#### (1) Piloting of online soft skills-trainings

The piloting for online soft skills-trainings were conducted in three different organisations with different target groups and in different settings. The key data are shown in the following table:

**Table 1**

Three piloting trainings in the project INWICA

	<b>Pilot 1</b>	<b>Pilot 2</b>	<b>Pilot 3</b>
<b>Organisation</b>	Suzhou Industrial Park Institute of Services Outsourcing (SISO)	Kern-Liebers Pieron Autoparts (Taicang) Co.	Heidelberger Druck
<b>Branch</b>	College	Automotive supplier	Printing
<b>Date of training</b>	July 2021	July 2021	November 2022
<b>Participants</b>	20 Students (age 20-22), specializing in "Artificial Intelligence and Innovation"	10 Shopfloor employees in supervisor position	22 Supervisors from the production line
<b>Training topics</b>	moderation skills, intercultural communication, leadership	moderation skills, intercultural communication, leadership	Leadership, communication, time management
<b>Trainer</b>	Project partner, located in Germany	Project partner, located in Germany	Commissioned training agency in Shanghai
<b>Extension of the trainings</b>	Four training units à 1,5 hours	Four training units à 90 minutes	2 half-day trainings on site, 1 training in hybrid setting (1,5 h), 1 follow-up training in classic e-learning setting (1,5 h)
<b>Training language</b>	English	English (translation of the lecture parallel by using the software MS translator and displaying the translation on the screen)	Chinese
<b>Training setting</b>	Hybrid setting using MS Teams (1 training) and Zoom (3 trainings)	Hybrid setting using virtual classroom vitero	On-site combined with subsequent online training in hybrid and classic setting (using vitero)

In the settings of Pilot 1 and 2 the Chinese participants were sitting together as a group of about 20 persons in a conference room and were accompanied by a Chinese teacher (not involved in the training).

## (2) Ten interviews with training experts

For a better understanding of challenges related to the topic of (online) soft skills training in China, Fraunhofer Institute for Industrial Engineering conducted ten interviews with training experts between January and May 2022. The epistemological interest of the interviews focused on the role and the design of online and soft skills trainings in China and the mutual learning potential for China and for Germany. The results will be published in a separate document.

## (3) Development of a guideline about how to design interactive online trainings in a culture-sensitive way

The creation of a guideline on how to design and conduct culture-sensitive trainings aims to support trainers of another culture in adapting their learning content, exercises and didactical methods to different cultures, in this case to the Chinese culture. The procedure included three steps. The first step is to get an impression and orientation regarding the target country (here: China) by studying the findings of cultural science approaches (see above 2.3). The second is to derivate assumptions on how to best address and moderate groups of Chinese learners according to their ‘high-context’ culture. These assumptions and derivations for trainers were checked from Chinese native education experts from the project network and German intercultural expert trainers. The third ongoing step is to explore the helpfulness of the guideline in daily work-life with e-learning designers and online trainers specialized on China. Medium-term it is planned to transfer the procedure to other countries respectively cultural spaces.

## 4 Findings/Insights

Experiences of the piloting and results of the interviews reveal some success factors to consider for the design of online or hybrid soft skills trainings. Referring to our research question ‘*Which technical, didactical and organizational conditions are important to consider for designing successful online trainings?*’ we would like to summarize our insights as following:

1. In China the spatial infrastructure and the technical communication habits brought up specific conditions such as (1) for employees in companies it is less common to use single offices, (2) it is much more common to only own a mobile device as a smart phone but not a laptop. Due to these given conditions, we changed the intended setting of ‘classic live e-learning’ (each learner sits in front of his/her own laptop) to a ‘hybrid setting’. The following table summarizes the insights about pros and cons of each format, summarised in the table below.

**Table 2**

Pros and Cons of classic live e-learning and hybrid training settings

	<b>Classic live e-learning setting</b> Single users log in individually on their own computers	<b>Hybrid training setting</b> Groups as a whole + individuals log in from one or several locations to the virtual room
<b>Pros</b>	<ul style="list-style-type: none"> <li>• Trainings can be designed in a very interactive format</li> <li>• Combination of theory input and exchange with activation exercises can be implemented easily</li> <li>• Visibility of each participant optionally as avatar or via webcam in the virtual classroom vitero</li> </ul>	<ul style="list-style-type: none"> <li>• Direct communication between participants and (co)trainers on site can contribute to a stimulating group effect.</li> <li>• Good option to introduce a new format of online training adapted to spatial &amp; cultural conditions (in China)</li> </ul>
<b>Cons</b>	<ul style="list-style-type: none"> <li>• Technical requirements must be double-checked by each participants at the own location</li> <li>• Teachers should be didactically well trained in the design of interactive</li> </ul>	<ul style="list-style-type: none"> <li>• Advantages of live e-learning as digital interaction (e.g. active contributions or anonymous feedback from individual perspective) and collaboration</li> </ul>



	<p>training, otherwise sustainable learning effects will be rather small</p> <ul style="list-style-type: none"> <li>• Live e-learning in groups by using virtual classrooms is uncommon in China (preference of WeChat or other tools)</li> </ul>	<p>possibilities (e.g. small-group work) cannot be used</p> <ul style="list-style-type: none"> <li>• Visibility only of the group: Challenge for trainers to capture the mood in the group on site from remote position.</li> <li>• Individual learner barely visible and addressable by trainer (much more impersonal training)</li> <li>• High risk that training takes on a purely lecture character</li> </ul>
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2. With the hybrid setting we experienced the following challenges, requiring new competencies especially for organisers and moderators:

1. In high-context cultures – as in China – learners like to sit together as a group in a physical room. The non-verbal and verbal interactions of the physical group are hard to capture for the (remote) trainer and the virtual group. The moderator, respectively lecturer, needs to split his attention between the physical and the virtual group. Especially for interactive training parts there is a high risk to lose contact with the remote group participants. To balance the difference of presence and visibility between the physical and the remote participants, there is a higher need to establish rules of communication, collaboration and feedback. This has to be considered in e-learning conception and is highly challenging for the trainer – especially if he/she comes from another culture – and requires high-level culture-sensitive online moderation skills.
2. Additionally, the hybrid setting requires a high degree of coordination between moderators in the virtual room and moderators of face-to-face groups in a physical room. Furthermore, organizational tasks need to be coped, such as double-checking the technical devices in the physical room (e.g. screens, whiteboards, cameras, loudspeakers) and arranging them in a communication-friendly way, supporting interactive exercises up to planning short-term coordination across different time zones.

Referring to the research question about ‘*What the acceptance of (online) soft skills trainings in China*’ the statements brought up a range of topics. The following selection of statements about the acceptance of ‘Online Trainings’ are similar to the experiences in the piloting trainings.

**Table 3**

Statements about the acceptance of online trainings in China.

- “People want to experience to do something together face to face - that is something Chinese.” (I\_06\_D)
- “The ideal way of working is in presence, because in the online format again it is more cognitive. Some things can certainly be done online, but it's difficult with exercises, especially cooperation exercise.” (I\_03\_C)
- „Since the pandemic, there has been a significant increase in online training, which used to be almost non-existent. Corona has caused it to be accepted and also to go beyond the national borders to Asia Pacific. This is increasing very strongly. There are various formats. Some trainers are on site, others online with break-out groups, different formats are being tried out.” (I\_01\_D)
- „Due to the large number of students in China, it would be advantageous if the hybrid format remained and learning videos, links, etc. could be sent in advance. The hybrid format will increase.” (I\_02\_D)

- „I can say that the online world is an alternative, especially in the soft skills area, but in some areas coaching presence is required and still the more ideal option. We are not in an ideal world, it works, but it does not replace a physical presence. Just if we look at the work behavior in China [...], they are more human or more focused on that interpersonal contact than we are.” (I\_05\_D)

#### Explanations to the table:

- The interviews were held in German language and thus the listed statements were translated.
- The codes in brackets are using the ‘C’ for interviews with training experts with Chinese as mother tongue and the ‘G’ for interviews with training experts with German as mother tongue.

Concerning the research question ‘*What are topics needed for soft skills training in Industry 4.0 context*’ the following statements show a tendency focusing on communication, leadership and intercultural competence.

**Table 4**

Statements about topics for soft skills trainings in China

- |   |
|---|
| • “Intercultural communication and cooperation, including conflict management. These topics are particularly important for China.” (I_03_C)   |
| • “Many companies have also recognized the importance of intercultural competence.” (I_08_C)  |
| • “All about communication, staff meetings.... Leadership and feedback are also an important topic in production”. (I_09_C)   |
| • “The focus is on creativity. This does not mean that the Chinese are not creative, but it is not encouraged there... Collaboration etc. will remain an issue in all companies and cultures.” (I_01_D)                           |
| • “Vocational action competence is the current term. There is still a gap between German skilled worker training and the level of college education in China. Communication and collaboration are needed to solve this.” (I_02_D) |
| • “In the business world, there is a huge need to catch up, for example on the topic of “How does leadership and cooperation work?” (I_06_D).   |

During the piloting trainings, it also became clear that only modular and company-specific topics as well as training in the Chinese mother tongue have a chance of being commissioned.

## 5 Discussion and conclusion

Based on experiences in the project as well as on a review of the literature we derive the following theses.

**Thesis 1:** The potential of online training in vocational education is far from exhausted. National and international training providers and companies should open up more for experimentation and systematic testing of new online formats such as ‘hybrid formats’.

In addition to the practical insights about organising and conducting a hybrid training, one of the most obvious insights was the need for flexibility in organising online trainings in different conglomerations – offering a virtual training session in which individuals as well as one or several groups in physical rooms meet in the virtual classroom. This setting goes along with the demanding challenge to involve all participants in interactive communication ‘at eye level’, independent if he/she is a member of a physical group or joins remotely as a single user.

Facilitation in such distributed settings requires high competencies on coordination between (co)moderators, setting up clear communication rules, operating technical functionalities in the virtual room, culture-sensitive competencies to address a mostly wide range of nationalities in global teams in an adequate way and finally a great attention span to keep an eye on what is happening in all rooms.

Further research is necessary on how to bring the single remote participants nearer to the on site groups, bridging the natural group cohesion triggered by physical closeness. Furthermore, train-the-trainer programs could help to build competences in (culture-sensitive) online moderation to spread such challenging settings more easily. Training providers and well trained online trainers could so become multipliers of new formats for online training.

**Thesis 2:** Soft Skills become more and more important as part of Industry 4.0 knowledge – independent of country and culture.

The significant asset of the Industry 4.0 framework are people. In fact, the workforce represents a critical element for implementation of Industry 4.0 technologies. Besides of hard skills, soft skills become more and more important. First of all, there are dramatically increased needs to create a broader structured knowledge of the basic concepts related to soft skills for the Industry 4.0. The workforce needs to understand and internalise soft skills to fit the new organization of factory, which is characterized agile, robust and resilient. This requires a workforce that is able to create cross functional synergy with each other and find the proper way to solve the organisation challenge (decision making in decentralized function).

Furthermore, soft skills should be improved and integrated, considering the practical requirements revising the training contents, especially with regards to technical topics, specific application fields. One interesting possibility is creating customized case studies as a training and learning method. It could improve the soft skills of workforce by encouraging their digitization and smart interaction between the various actors involved. Good examples of applications carried out in this direction are represented by Pilot 3 at Heidelberger Druck.

Contrary to the trends in Industry 4.0 toward technological advancement and innovation best practices, next generation of industry will bend back toward serving humanity. At workplaces, this industrial revolution will shed greater light on the human intelligence than ever. Soft skills will influence and enhance the workforce to harmonize more through variant soft intelligence such as emotional intelligence, emotional recognition and expression to perform better according to the survey (Chin, 2021).

From the view of global production, soft skills are main factors to keep workforce healthy and inspired to transfer the smart and sustainable industry in the future. In this context, it is obviously important to pay more attention on soft skills for promoting awareness of collaboration and communication in the broader scope, no matter in which country or under which culture.

**Thesis 3:** Intercultural competences become more important the less face-to-face contact is possible and the more unpredictable external framework conditions arise

The impact of culture on our learning behavior is essential to look at when designing e-learning and vocational (online) training. Trainers who come from a different culture must be sensitized to the cultural values of their participants. The way of teaching (didactical approach), moderating, giving feedback and interacting with the group has to be adapted to offer an effective and high-quality online training. It can be summarized that culturally sensitive design of trainings should basically refer to all three dimensions: Training content, didactical design and training format (including training technology).

Looking back at the pandemic time period and considering the current world situation it seems growingly important to foster competencies in understanding diversity of people, in the own as well as in different cultures.

Even though insights as described in this paper are related to experiences with China, we are convinced that the challenges about how to design interactive online trainings for soft skills (and for other topics) and methods about how to adapt those trainings in a culture-sensitive way can be transferred to other countries and will gain in importance for international vocational and educational training providers. Further research on both topics will contribute to exploit unused potential of trainings in national and international settings and to foster transcultural communication.

## References

- Apriyani, D., Sudana, I. M., Wahyuningsih, S., & Ismail, E. (2021). Strengthening Soft Skills in Online Learning. In M. Kesiman, I. M. Maysanjaya, & I. M. Sunarya (Eds.), *IConVET 2021: Proceedings of the 4th International Conference on Vocational Education and Technology* (pp. 152–159). EAI. <https://doi.org/10.4108/eai.27-11-2021.2315539>
- Baumgartner, P. (2009). Die zukünftige Bedeutung von Online-Lernen für lebenslanges Lernen. In L. J. Issing & P. Klimsa (Eds.), *Online-Lernen: Handbuch für Wissenschaft und Praxis* (pp. 505–513). Oldenbourg.
- Bretz, L., Klinkner, F., Kandler, M., Shun, Y., & Lanza, G. (2022). The eco maturity model—a human-centered industry 4.0 maturity model. *Procedia CIRP*, 106, 90-95.
- Hall, E.T. (1976). *Beyond Culture*. New York. Anchor Books.
- Hofstede, G. (2010). *Cultures and Organizations – Software of the Mind: Intercultural Cooperation and its importance for Survival*. McGraw-Hill Education Ltd.
- House R.J., Chhokar J. S., Brodbeck F.C. (2007). *Culture and Leadership Across the World: The GLOBE Book of In-Depth Studies of 25 Societies*. Lawrence Erlbaum Assoc Inc.
- Chin, S. T. S. (2021). Influence of emotional intelligence on the workforce for industry 5.0. *Journal of Human Resources Management Research*, 2021(2021), 882278.
- Cotet, G. B., Balgiu, B. A., & Zaleschi, V. C. (2017). Assessment procedure for the soft skills requested by Industry 4.0. In *MATEC web of conferences* (Vol. 121, p. 07005). EDP Sciences.
- Cotet, G. B., Carutasu, N. L., & Chiscop, F. (2020). Industry 4.0 diagnosis from an imillennial educational perspective. *Education Sciences*, 10(1), 21.
- Kaur, R., Awasthi, A., & Grzybowska, K. (2020). Evaluation of key skills supporting industry 4.0—a review of literature and practice. *Sustainable Logistics and Production in Industry 4.0: New Opportunities and Challenges*, 19-29.
- Kipper, L. M., Iepsen, S., Dal Forno, A. J., Frozza, R., Furstenau, L., Agnes, J., & Cossul, D. (2021). Scientific mapping to identify competencies required by industry 4.0. *Technology in Society*, 64, 1014-54.
- Massaro, M., Bardy, R., & Garlatti, A. (2016). A Soft Skills Training Model for Executive Education. In M.-T. Lepeley, E. von Kimakowitz, & R. Bardy (Eds.), *Human centered management in executive education: Global imperatives, innovation and new directions* (pp. 222–241). Palgrave Macmillan. [https://doi.org/10.1057/9781137555410\\_14](https://doi.org/10.1057/9781137555410_14)
- Matteson, M. L., Anderson, L., & Boyden, C. (2016). “Soft Skills”: A Phrase in Search of Meaning. *Portal: Libraries and the Academy*, 16(1), 71–88. <https://doi.org/10.1353/pla.2016.0009>
- Meyer, E. (2014). *The Culture Map. Breaking through the invisible boundaries of Global Business. How people think, lead and get things done*. Public Affairs.

- Möhlmann, S. (2012). *Das Kulturstandardmodell von Alexander Thomas – notwendige Grundlage für eine gelingende interkulturelle Kommunikation*. GRIN.
- Moser, M. (2018). Soft Skills als überfachliche Managementkompetenzen. *Bedeutung von Soft Skills in einer sich wandelnden Unternehmenswelt* (pp. 3–16). Springer Fachmedien Wiesbaden. [https://doi.org/10.1007/978-3-658-22273-4\\_2](https://doi.org/10.1007/978-3-658-22273-4_2)
- Peters, S. & Meyne, L. (2021). Market Conditions of International VET Providers: German Providers in Comparison to Market Leaders. In C. Nägele, B.E. Stalder, & M. Weich (Eds.), *Pathways in Vocational Education and Training and Lifelong Learning. Proceedings of the 4th Crossing Boundaries Conference in Vocational Education and Training, Muttentz and Bern online, 8. – 9. April* (pp. 281–285). European Research Network on Vocational Education and Training, VETNET, University of Applied Sciences and Arts Northwestern Switzerland and Bern University of Teacher Education. <https://doi.org/10.5281/zenodo.4593161>
- Stek, K. (2022). Personality Development in Higher Education in the Era of Industry 4.0: Comparing educational practices and philosophies in Industry 1.0 and Industry 4.0. In M. Olivas-Lujan & T. Bondarouk (Eds.), *Smart Industry–Better Management*, Vol. 28, (pp. 35-50). Emerald Publishing. <https://doi.org/10.1108/S1877-636120220000028005>
- Stifterverband für die Deutsche Wissenschaft e.V. (2021). *Future Skills 2021: 21 Kompetenzen für eine Welt im Wandel*, Discussion Paper No. 3. <https://www.stifterverband.org/medien/future-skills-2021>
- Ungureanu, A. V. (2020, May 7-8). The Transition from Industry 4.0 to Industry 5.0. The 4Cs of the Global Economic Change. In C. Nastase (Eds.), *16th Economic International Conference NCOE 4.0 2020* (pp. 70-81). Iasi; Romania: LUMEN Publishing House. <https://doi.org/10.18662/lumproc/ncoe4.0.2020/07>
- Yan, Y., & Kongjit, C. (2020, March). An Exploratory Analysis of Required Soft Skills Towards Chinese Workplace Today. In *2020 Joint International Conference on Digital Arts, Media and Technology with ECTI Northern Section Conference on Electrical, Electronics, Computer and Telecommunications Engineering (ECTI DAMT & NCON)* (pp. 276-281). Pattaya, Thailand. IEEE. doi: 10.1109/ECTIDAMTNCNCON48261.2020.9090756

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Herrera, L., Broberg, Å. & Osman, A. (2023). From work force immigration to inclusion: A study of vocational education & training development in relation to society changes and immigration in a historical perspective. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 196–206). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7821763>

## **From Work Force Immigration to inclusion: A study of Vocational Education & Training Development in Relation to Society Changes and Immigration in a Historical Perspective**

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### **Abstract**

The presentation in this paper is based on a research project funded by the Swedish Research Council. The focus of this study is to examine the role that vocational education and training (VET) played and still plays in relation to the challenges that stem/ed from structural changes and immigration that Sweden has experienced from the 1950s to today. From the mid-1800s to the 1990s, Sweden experienced major structural changes: a shift from an agrarian economy, to and industrial based economy and labour market and finally to a post-Fordist knowledge intensive economy and labour market. In this study, we investigate how VET responded to labour market needs that resulted in the shift from industrial economy and labour market to a post- industrial labour market. In addition, the focus is on the role that VET play/ed in the inclusion of immigrants/refugees from the 1950s to today.

The project is grounded on frame factor theory as presented by Lundgren (1989). The project consists of two interrelated studies: a historical study of VET and the changes in the VET system from the 1950s to today and two interview studies. The historical study will examine how the delivery and provision of VET has changed over time because of structural changes and immigration, and the role VET has played in the inclusion of immigrants to the labour market from the 1950s to today. In this study we will also look at changes in the organization and curriculum of the car mechanic vocational training from the 1950s to 2020. The historical study will not only shed light on how VET respond(ed) to structural changes and inclusion of immigrants in the Swedish work life from the 1950s to today but will also help to contextualize the interview studies and enrich our analysis of the interviews.

### **Key words**

immigration, integration, work force, vocational education and training



## 1 Introduction

The focus of this study is to examine the role that vocational education and training (VET) played and still plays in relation to the challenges that stem/ed from structural changes and immigration that Sweden has experienced from the 1950s to today. From the mid-1800s to the 1990s, Sweden experienced major structural changes: a shift from an agrarian economy, to an industrial based economy and labour market and finally to a post-Fordist knowledge intensive economy and labour market. In this study, we investigate how VET responded to labour market needs that resulted in the shift from industrial economy and labour market to a post-industrial labour market. In addition, the focus is on the role that VET played in the inclusion of immigrants/refugees from the 1950s to today.

The so-called golden years of the Swedish model were characterized as the peak of the industrial economy; the labour market was characterized by relatively stable employment conditions: labour market regulations, employment protection, collective bargaining and the like. It was also a watershed period for the VET system. In 1971 VET was integrated into the upper secondary school (gymnasium). At this time, immigration was characterized by labour market immigration. The 1980s were similarly characterized by low unemployment and economic growth. In contrast, an economic crisis, a high rate of unemployment, and the advent of globalization characterized the 1990s economy and the labour market (the third revolution) (see Magnusson, 1999). This coincides with a decision to decentralize education, and at the beginning of the 1990s upper secondary education went through a reform which expanded VET into a three-year program, qualifying students for higher education. This period of the 1980s and 1990s was characterized by ebbs and flows of refugee immigration.

The shift from an industrial economy to a post-Fordian economy and labour market in Sweden meant that a large number of industrial jobs disappeared (Magnusson, 1999; Björklund, 1999). This shift in the labour market created a dilemma for industrial countries. How should they deal with the miss-match between supply and demand? Suddenly a substantial number of industrial workers were unqualified to participate in the post-Fordian labour market, and a large number of them had an immigrant background. In other words, the deindustrialization of the Swedish labour market in the 1990s created a large number of unemployed workers whose skills were irrelevant in the post-Fordian economy and labour market (Björklund, 1999; Magnusson, 1999). Thus, to deal with the structural miss-match between supply and demand in the 1990s, Sweden, unlike Denmark or the Netherlands, chose a strategy of massive investment in education (kunskapslyftet) to upgrade the skills of the marginalized groups. Denmark and the Netherlands opted instead to reform their unemployment insurance and expanded the service sector, thus creating a large number of jobs for the less well-educated workers (Björklund, 1999). From 2000 until today we have been in the grip of a globalised economy and labour market, intense technical and digital advances, and a labour market that demands different skills from the labour market of the 1960s and the 1980s. At the same time there was a substantial increase in the number of asylum seekers and labour immigrants from EU countries. In 2011 VET was again reformed, and in this reform the influence of trade unions and industry was strengthened.

The post-Fordian labour market of today is characterized by a high and low-paying service sector, and a decline in the demand for low-skilled labour in advanced economies. In the UK and the United States this structural change has led to a decline in long-term employment relations, or the emergence of what is called the 'gig economy' (Friedman, 2014). However, this change is not yet as dramatic in Sweden as it is in the USA and the UK. In other words, Sweden, like all advanced democracies, is experiencing profound economic restructuring, which has created new social problems and challenges for the Northern European welfare state model (Silver, 1994). In addition to the above-mentioned structural changes, Sweden has experienced and is still experiencing substantial spikes of immigration from the beginning of

the industrialization right up to today. For instance, in the 1950s and 1960s immigration to Sweden was dominated by organized labour forces (Silver, 1994). From the 1960s to today, immigration to Sweden has been diverse, consisting of asylum seekers and labour immigration from outside and inside the EU. Structural changes, technological development and immigration, and more importantly, the interplay of these aspects, have had and are currently having an impact on the strategies for competence development and skill requirements in the labour market (Nilsson, 2010).

## **2 Background**

At the peak of the industrial economy, the labour market was characterized by relatively stable employment conditions; labour market regulation, employment protection, collective bargaining or what is referred to as the “golden years” of the Swedish model. The shift from industrial economy to post-Fordist economy and labour market Sweden, like most of the European countries, a large number of industrial jobs disappeared (Magnusson, 1999; Björklund, 1999). The shift from industrial to post-Fordist labour market created a dilemma for industrial countries on how to deal with the miss-match between supply and demand. Suddenly a substantial number of industrial workers were unqualified to participate in the post-Fordist labour market and a large number of these workers were of immigrant background, which in accordance with the acknowledged influence of migrants works in the car industry internationally (c.f. ILO, 2020). In other words, the deindustrialization of the Swedish labour market in the 1990s created a large number of unemployed workforces whose skills were irrelevant in the post-Fordist economy and labour market (Björklund, 1999; Magnusson, 1999). Thus, to deal with the structural miss-match between the supply and demand in the 1990s, Sweden, unlike Denmark or the Netherlands, chose a strategy of massive investment in education (kunskapslyftet) to upgrade the skills of the marginalized groups. Denmark and the Netherlands opted instead to reform their unemployment insurance and expanded the service sector, thus creating a large number of jobs for the less well-educated workers (Björklund, 1999).

## **3 Present context, aims and research questions**

The post-Fordist labour market of today is characterized by a high and low paying service sector, and a decline in the demand for low skilled labour in advanced economies. In the UK and the United States this structural change has led to a decline of long-term employment relations, or the emergence of what is referred to as the ‘gig economy’ (Friedman, 2014). However, this change is not yet as dramatic in Sweden as it is in the USA and the UK. In other words, Sweden like all advanced democracies, is experiencing a profound economic restructuring which has created new social problems and challenges for the Northern European welfare state model (Silver, 1994). In addition to the above-mentioned structural changes, Sweden has experienced and still experiences substantial spikes of immigration from the beginning of the industrialization to today. For instance, from the 1950s and 1960s immigration to Sweden was dominated by organized labour force (Silver, 1994). From the 1970s to today, immigration to Sweden has become much more diverse and consists of asylum seekers and labour immigration from outside and inside the EU. The dynamics of structural changes, technological development and immigration and more importantly the interplay of these factors, had and currently has an impact in the strategies for competence development and skill requirements in the labour market (Nilsson, 2010).

The aim of this research project is to examine how VET responded to the structural changes in the labour market and immigration and particularly what role VET played in the inclusion of immigrants in Sweden from the 1950s to today. Research questions are:



- How the organization and the practice of vocational training changed in the different periods to meet the needs of the labour market?
- How VET as institution played a role in the inclusion of immigrants in the labour market from the 1950s to today?
- How is vocational education experienced by immigrants as a mechanism for participation in the Swedish car industry in the past and today?
- What can be learned from the responses of VET from the 1950s to today?

#### 4 State of the art

The relationship between VET provisions and the inclusion of immigrants in the labour market and society has received little research attention, both in Sweden and also internationally. This agrees with the conclusion drawn by an in-depth literature review by a group of Swedish researchers (Rosvall, Ledman, Nylund & Rönnlund, 2019). Rosvall and his colleagues (2019) concluded in their review that there are very few studies that have investigated how VET pedagogical practices deal (or fail to deal) with the challenges of immigration and ethnicity in Sweden and other countries. While stressing these limitations in Swedish research, their findings also show that most empirical studies on race and ethnicity published in international journals that cover VET have had an Anglophone focus and setting. Even in the Anglophone context, a historical analysis of the impact of VET provisions on the inclusion of immigrants in the labour market and society seems non-existent, a limitation that we could also verify in the literature review produced for this application. Research in the field of VET has generally focused on vocations at the meso and micro level from a variety of perspectives and vantage points, for instance, the social and economic return, productivity effect at the company level, promotion of social cohesion (focused usually on class), and as a remedy for youth unemployment (Rauner & Maclean, 2008; Richardson & Van den Berg, 2002; Silver, 1994). In industrialized societies the educational system, and specifically VET, is perceived as a critical institution in supplying a qualified and skilled work force for the labour market, irrespective of time and space, particularly in a knowledge-intensive economy and labour market. There are, however, some studies from a historical perspective that have looked at the development of the vocational education sector at different times (e.g., Broberg 2014; Olofsson, 2005; Olofsson & Panican, 2019).

The role of vocational education in this regard has been the subject of various European council declarations, such as the Lisbon European council meeting and declaration, the Copenhagen declaration, and the Stockholm European council meeting. The Stockholm meeting, for instance, emphasized the important role of education as an integral part of economic and social policies, and as an instrument for strengthening Europe's competitive power worldwide, to ensure the cohesion of the European societies and the advancement of its citizens. The European Council set the strategic objective for the European competitive in the global economy requires not only state-of-the-art vocational education but also the power to attract skilled migrants. This role and function of vocational education is stressed in the Declaration of the European Ministers of Vocational Education and Training, and the European Commission, convened in Copenhagen in 2002, and in "Enhanced European Cooperation in Vocational Education and Training", a document from the Lisbon European council in 2000. In addition, in Sweden VET is and has been given an important role to counteract the effect of structural changes and facilitate the transition between education and the labour market for individuals at risk (Lindell & Johansson, 2003; Kuczerai & Jeoni, 2019).

As we noted above, while there is some research about structural changes and its relation to the development of the labour market in Sweden (e.g., Nilsson, 2010; Olofsson & Panican, 2019), there is still a scarcity of research that examines the role played by VET in relation to changes in the labour market and the inclusion of migrants in the work force and society. A

historical analysis of the response of VET to the inclusion of migrants, as well as their experiences at different times, as intended in our study, has not been made before. In this research project we intend to analyze and understand the changes in VET as a response to the challenges which stem(ed) from the different structural changes particularly related to immigration, which Sweden has experienced and is still experiencing (cf. Waara, 2012).

## **5 Significance and scientific novelty**

A study of this kind in Sweden, where models have changed over time, will generate valuable results for both national and international contexts concerning the relationship between structural changes, the provision of VET and its inclusive role. This will be accomplished by revealing how different models have functioned as a response to different challenges in different times. The results of the study will contribute to our knowledge of the importance of the social context for the functioning of VET and its potential as a tool for inclusion, regardless of the governance model. The study is particularly valuable as it will investigate how similar conditions from a governance perspective give different consequences depending on the current social context. Likewise, the study will generate knowledge of the way VET has historically contributed to including immigrants in the labour market and Swedish society, knowledge that will be very valuable when dealing with current challenges. The study is also important for international comparative policy research, which, in relation to VET provisions, rarely has a historical perspective. In general, policy analysis of integration focuses on current policy(ies) and integration measures. However, we believe that in order to understand today's problems and challenges, we need to look at and learn from past developments.

## **6 Theory**

To analyse the data in this study we adopt theoretical approaches that pay attention to context and make sense of immigrants' experiences. Thus, in this study, we will combine curriculum theory, in specific frame factor theory by Dahllöf (1999) and developed by Lundgren (1979) and Goffman's frame theory (1974). Curriculum theory will be used to examine how VET responded to the structural changes in the labour market and immigration.

Goffman's frame theory will be used to examine the experiences of immigrants that work(ed) in the industry in the two qualitative studies. We will focus on how they (the migrants) framed their participation in the car industry in general and in becoming car mechanics. In addition, how they framed the role VET played at different times in the inclusion of migrants in the car industry. According to Goffman (1974) 'frame' is a 'schemata of interpretation' to define situations, experience, meaning and the like. According to Persson (2014) frame refers to: (1) an actor's knowledge and experience, (2) the individual's social interaction, focusing on shared definition of situations and (3) the dynamic which shapes social interaction in a specific context. Hence, frame theory can be used to examine how individuals perceive, communicate and mentally organize their reality and experiences; this can be understood as "underlying structures of belief, perception, and appreciation" (Martin & Schön, 1996, p. 23).

Goffman's frame analysis (1974) will be used to make sense of the experiences of migrants in the car industry in the past and today. In other words, Goffman's theory of frames will be used to examine: (a) the experiences of immigrants who worked in the car industry from the 1960's up to 2020, and (b) immigrants currently working in the industry as car mechanics in this sector. In the interview studies we are interested in their experiences of how structural changes and immigration "impacted" on the inclusion of immigrants in the labour market and Swedish society, and how they experienced working in the industry, particularly how structural and technological changes shaped their experience in the field. In the two qualitative studies we will also focus on the way their prior competence and knowledge was perceived, what challenges they encountered and how they coped with these challenges, and if and how VET

played any role in their inclusion in the labour market, particularly in the car industry (production and service sectors of the industry). Hence, framing Goffman's perspective is about the way individuals define a common situation that they share(d); that is, what it meant to learn, and the experience of working in the car industry at different times. However, even if individuals share a common situation, they can define this differently. This analytical focus is in line with our interest to delineate and understand the experience of immigrants who worked in the car industry from the 1950s up to 2020.

Curriculum theory will be used in the historical study of how structural changes and immigration shaped the way in which VET responded not only to immigration at different times but also to the needs of the labour market as consequence of the various structural changes. To capture the changing structural condition(s) structural, immigration, and VET's response in the historical study, we will examine documents produced at different levels. These levels are the formulation, transformation and realization arena; frame factors are produced at the formulation level. These are political formulations that "affect" the everyday operation of VET schools, but which teachers and head teachers have no control over, for instance the allocation of resources or the financing of the system, curriculum, directives, targeted measures for different types of VET, and related activities and VET political goals at the national and local levels (Lindensjö & Lundgren, 2014; Persson, 2015). It is at the macro/national level that ideas, arguments for change are formulated (the formulation arena). Arguments are often presented in documents such as white papers and evaluations of the status of the system. This includes a formulation of what needs to be changed in order to meet the past and present needs of the labour market, and how VET can be organized to facilitate the inclusion of immigrants. On the second level (the arena of transformation) the investigations, governing bills and parliamentary decisions are medially interpreted and transformed into solutions to be implemented as organization and practice at the micro level. Then and content. The relationship between macro and micro is mediated through the transformation arena (Lundgren, 1989). The realization arena is where the changes formulated in the formulation and transformation arenas are put into operation. It is the 'free space' (Berg, 1995) that the school staff have for making their own decisions. Some researchers argue that the coupling between the arena for formulation and the arena for realization is a loose one (Weick, 1976; Ball, 1994; Tyson, 2017).

Curriculum theory, as noted above, is used to examine factors that are determined outside the school as a system but which shape the everyday running of VET as an institution, for instance teacher competence, space, organization, rules, curricula, and various steering documents (Persson, 2014).

## 7 Method

The aim of this research project is to examine how VET for the car industry responded to the structural changes/challenges and the role it played and is playing in the inclusion of immigrants in the sector from the 1950s up to today. The project consists of three interrelated studies: a historical study of VET and the changes in the VET system from the 1960s up to today and two qualitative case studies. The historical study will examine how the delivery and provision of VET has changed over time due to structural changes and immigration, and the role VET has played in the inclusion of immigrants in the labour market from the 1960s up to today. In this study we will also look at changes in the organization and curriculum of the vocational training for car mechanics from the 1950s to 2020. The historical study will not only shed light on how VET responded to structural changes and inclusion of immigrants in the Swedish work life from the 1950s to today; it will also help to contextualize the study.

The study consists of three interrelated empirical studies: the first is a historical study, examining how the structural changes affected the organization, the contents of VET and how VET has played and is playing a role in the inclusion of immigrants in general and in particular

in the car industry from the 1950s up to today. This historical study will examine how structural changes and immigration affected the VET system at macro, meso and micro levels. Furthermore, how the inclusion of immigrants was conceptualized during the various structural changes in the Swedish labour market from 1950 up to 2020. This study will not only form the backdrop of the qualitative studies; it will also contribute to a more nuanced analysis of the interview studies to make sense of the experiences of immigrants who work and worked in the industry during the different structural changes identified earlier. In other words, how the structural changes and migration created new conditions in the labour market, which in turn called for a change in VET.

The qualitative study consists of two studies. The first will examine the experiences of migrants in the car industry (the production side) from the 50s up to today (the golden years of the Swedish model). The second qualitative study will examine immigrants who work as mechanics in the industry today. There are a number of studies that have examined the production side of the industry. However, few studies have examined the experience of immigrants from the 50s up to today in the car industry. How the structural changes affected VET in relation to the industry, the role VET played in the inclusion of immigrant in the industry, and the role the industry played in the integration of immigrants into the labour market. Moreover, there are no studies that have examined the service dimension of the industry. The combinations of these studies will allow us delineate the relation between migration and VET on both a structural and an individual level across the period in order to understand the role the industry and VET played in the inclusion of migrants. In addition, we will examine the role the car industry played and plays in the integration of immigrants in the labour market. A core interest is to identify if and what we can learn from the past to manage the challenges we currently face in the inclusion of immigrants.

## **8 Data collection strategy**

Data collection in this study will be conducted in three stages. The first stage is the collection of data for the historical study aimed to identify and collect relevant documents. Primarily we will study, at the macro level (formulation arena), the documents which formed the basis of the reforms of VET from the 1950s to 2020, such as SOU, propositions, governmental reports and a sample of comments (remiss) from critical actors such as political organizations, trade unions, the employers' unions, the trade organization and universities. This will be followed by collecting steering documents at the transformation level, such as directives, curricula, courses and the like.

Our objective is to identify how the proposed changes are framed and legitimized and to identify the set of arguments that are used to frame the purposes of VET at different times. The analysis of the system is expected to meet the changing conditions in the labour market. To complement the data collected at the two levels described above, we will collect a sample of work descriptions and

qualification requirements, job announcements and advertisements in the vocations for the 30 years, 1960- 1990 and 1990-2020, representing Fordian and post-Fordian periods. In this context, it is important to point out that the 1960-1970 is a transition period from an old VET system to reformed VET, which was a profound reorganization of the VET system in Sweden.

The first step of the process data collection for the qualitative studies is to identify the informants. To identify the informants we have contacted Scania/ Volvo in Södertälje and Torslanda Motorbranschens riksförbund (MRF) (a trade organization with 1500 members in various areas of the car industry, including authorized car workshops). To complement the list of workshops that we have got from MRF, we will identify through Eniro car workshops in the Stockholm area that are not members of MRF. We will create a complete list of car workshops in the Stockholm region. We will then contact these workshops and present the study to a

minimum of 24 companies: 6 brand- owned workshops, 6 workshops owned by first generation immigrants, 6 car workshops owned by second generation immigrants and 6 car inspection companies, and ask them to participate in the study.

We have already established contact with Scania/Volvo and associations of national groups like Finns, Yugoslavians, Turks, and Greeks to help us identify potential informants. These national groups were the major labour force migrants in Sweden from the 1950s to the 1970s in the Swedish car industry. It will be difficult to get informants that were employed in the car industry in 50 and early 60s. Some have moved back to their country of origin, many be in their late 90s, and have died etc. To make sense of the experience this group we rely on different types of empirical materials such as: archives materials on car industry and migration, film and TV documentaries, different types of literature such as: official reports, and news articles etc. We will complete the data with interview migrant who are in the late early 70s and early 80s that have worked in the industry of what it meant to work in the car industry (production side).

Once we have identified potential informants, we will send a short questionnaire to 150 individuals.

This questionnaire will focus on the following data: age when they came to Sweden, educational background prior to coming to Sweden, vocational training in their country of origin, vocational training or education acquired in Sweden and Swedish language education. For the interview 30 will be selected to be interviewed in qualitative study 1. In qualitative study 2 we will send out a relatively similar questionnaire. The interview selection will be based on a number of criteria:

- Age of arrival, young adult (18-25), adults 26 upwards, gender. The latter group/category depends on how many are still alive, and if they are still living in Sweden.
- Vocational background - those who trained in their vocation in Sweden, those who worked in Volvo/Scania, and those who started their own car workshop after working in Volvo/Scania or in some other vocation.
- Those who worked in workshops for different makes of car, such as Toyota, Volvo and Mercedes.

For both the first and the second qualitative study we will strive to identify a wide variety of individuals who worked for different makes of cars. We will look for a pool of informants that have different backgrounds in terms of nationality, vocational training in and outside Sweden, gender (although men dominate in the car industry, particularly in the workshops).

## 9 Concluding remarks

We intend to present in the context of the paper the framework and some of the preliminary outcomes of the project. Much research is work is still to be done in the frame of this project, we hope that this first presentation will first stimulate appreciated feedback from the academic community in the field. Secondly, an equally relevant, the authors would like to stimulate debate about the convenience of similar studies in national VET contexts others that the Swedish

As indicated in the state of the art, there are no preliminary or previous results directly linked to the aim and research questions in focus in this study. Earlier studies, as highlighted in the introduction, provide knowledge of context-related aspects that is relevant to the implementation of this study. Furthermore, it is worth noting that findings from earlier research argue that Sweden, contrary to many other countries, shows less path-dependency through time and has implemented different models of VET during the 20 st and 21 centuries (Nilsson, 2010). In addition, Sweden, like many advanced economies, has experienced the challenges of structural changes in the past but is also in the midst of a post-Fordian economy that is creating challenges for the Swedish/Nordic model. To address the challenges of structural changes and

immigration, Sweden is also notable for its “flexible” approach to structural reforms of its VET organisation. In short, Sweden has transformed its VET from a non-integrated, semi-dual model to a largely school-based system. This change is of particular interest for this project specifically because of initiatives and responsibilities concerning VET for marginal groups. In the early 20 century industrial companies had the means (juridical, financial and ideological) to create their own VETs. From 1970 to the early 1990s these possibilities were taken away in the reform that integrated VET into a centralized, state- controlled upper secondary education. In the decentralization and marketization of the early 1990s the opportunity returned and industries like Volvo and Scania are again organizing VET, sometimes in cooperation with municipalities but with the financial and juridical support of the government (Rojas, 1991).

## References

- Bacchi, C. L. (2009). *Analysing policy: what's the problem represented to be?* Frenchs Forest, N.S.W.: Pearson.
- Ball, S. J. (1994). *Education reform –a critical and post-structural approach*. Buckingham: Open University Press.
- Broberg, Å. (2014). *Utbildning på gränsen mellan skola och arbete. Pedagogisk förändring i svensk yrkesutbildning 1918-1971*. Doktorsavhandlingar från Institutionen för pedagogik och didaktik 31.
- Broberg, Å. (2016a). Negotiating the value of school and work – a historical perspective on pedagogical development in VET. In Gonon, P. & Berner E. (red.) *History of VET: Concepts, Cases, Challenges*. (pp. 165-184). Bern: Peter Lang
- Broberg, Å. (2016b). Verkstaden som skola eller skolan som verkstad: Om produktion som pedagogisk praktik i svensk yrkesutbildning. *Nordic Journal of Vocational Education and Training* 6(2), 46-65.
- Björklund, A. (1999), Utbildningspolitik och utbildningens lönsamhet. I Calmfors, L. & Persson, M. (red.), *Tillväxt och ekonomisk politik*. Studentlitteratur, Lund.
- Dahllöf, U. (1999). Det tidiga ramfaktorteoretiska tänkandet [Early thinking inside frame factor theory]. *Pedagogisk forskning i Sverige*, 4(1), 5–29.
- Friedman, G. (2014). Workers without employers: shadow corporations and the rise of the gig economy. *Review of Keynesian Economics*, Vol. 2 No. 2, Summer 2014, (pp. 171–188).
- Good research practice (2017). Stockholm: Swedish Research Council.
- Goffman, E. (1974). *Frame analysis: an essay on the organization of experience*. Cambridge, MA: Harvard.
- Helms Jörgense, C., Olsen, O.J & Persson Thunqvist, D. (2020). *Vocational Education in the Nordic Countries - Learning from diversity*. London:Routledge.
- ILO (2020). *The future of work in the automotive industry: The need to invest in people's capabilities and decent and sustainable work*, Issues paper for the Technical Meeting on the Future of Work in the Automotive Industry (Geneva, 15–19 February 2021), International Labour Office, Sectoral Policies Department, Geneva.
- Krauss, E.S. (2005). Research Paradigms and Meaning Making: A Primer. *The Qualitative Report*, 10(4), 758-770.
- Kuczera, M. & Jeoni, S. (2019). *Vocational Education and Training in Sweden*, OECD Reviews of Vocational Education and Training, OECD Publishing, Paris, <https://doi.org/10.1787/g2g9fac5-en>.
- Lindensjö, B. & Lundgren, U.P. (2014). *Utbildningsreformer och politisk styrning*. Stockholm: Liber.

- Lindell, M. & Johansson, J. (2003). Meeting the Demand? Students within Swedish Advanced Vocational Education Entering the Labour Market: Reflections from an Ongoing Research Project. *European Educational Research Journal*, 2(1), 107-125.
- Lundgren, U.P. (1972). *Frame Factors and the Teaching Process. A contribution to curriculum theory and theory on teaching*. Stockholm: Almqvist & Wiksell.
- Lundgren, U.P. (1989). *Att organisera omvärlden. En introduktion till läroplansteori*. Stockholm: Liber förlag.
- Magnusson, L. (1999). *Den tredje industriella revolutionen – och den svenska arbetsmarknaden*. Stockholm: Norstedts.
- Moreno Herrera, L. (2000). *Worldwide Sloyd. Curriculum Development in Sloyd and Technology Education as an Expression of Social Demands. A Comparative Study. Report I. Publications from the Faculty of Education, No. 5/2000*. Vasa: Åbo Akademi University, Department of Teacher Education.
- Moreno Herrera, L. (2015). Vocational education and training in Sweden: from work-based-learning to school-based-learning – and back again? *Paideia* N° 57 julio-diciembre, 119-137.
- Moreno Herrera, L. (2017) Yrkesutbildningsutmaningar i nya tider – vilken väg ska vi ta? *Nordic Journal of Vocational Education and Training*, 6(2), 66-83.
- Nilsson, A. (2010). Vocational education and training – an engine for economic growth and a vehicle for social inclusion? *International Journal of Training and Development*, 14(4), 251-272.
- Olofsson, J. (Ed.) (2005). *Den tredje arbetslinjen*. Lund: Agora.
- Olofsson, J. and Panican, A. (2019). Labour market regulations, changes in working life and the importance of apprenticeship training: A long-term and comparative view on youth transition from school to work. *Policy Futures in Education* 17(8), 945-965.
- Osman, A. (2013a). Popular education in the service of “integration”: empowerment or internalization of dominant cultural ethos. In Laginder, Nordvall, & Crowther (Ed.), *Popular education, power and democracy* (pp. 263-268). Leicester, UK: NIACE Renaissance House.
- Osman, A. (2013b). Popular education in the service of “integration”: empowerment or internalization of dominant cultural ethos. In Laginder, Nordvall, & Crowther (Eds.), *Popular education, power and democracy* (pp. 263-268). Leicester, UK: NIACE Renaissance House.
- Persson, (2015). Framed School – Frame Factors, Frames and the Dynamics of Social Interaction in School. *Scandinavian Journal of Educational Research*, 59(5), 499–514, <http://dx.doi.org/10.1080/00313831.2014.932305>
- Rauner, F. and Maclean, R. (2008). *Handbook of Technical and Vocational Education and Training Research*. London: Springer.
- Rein, M. and Schon, D. T. (1996). Frame-critical policy analysis and frame-reflective policy practice. *Knowledge and Policy*, 9, 85–104.
- Richardson, K. & Van den Berg, G. (2002). The effect of vocational employment training on the individual transition rate from unemployment to work, No 2002:8, *Working Paper Series*, IFAU Institute for Evaluation of Labour Market and Education Policy, [https://EconPapers.repec.org/RePEc:hhs:ifauwp:2002\\_00](https://EconPapers.repec.org/RePEc:hhs:ifauwp:2002_00).
- Rojas, M. (1991). The Swedish model” in historical perspective. *Scandinavian Economic History Review*, 39(2), 64-74, DOI: 10.1080/03585522.1991.10408217
- Rosvall, P-Å, Ledman, K., Nylund, M. & Rönnlund, M. (2018) Construction of ethnicity, immigration and associated concepts in Swedish vocational education and training, *Journal of Education and Work*, 31(7-8), 645-659,

- Silver, H. (1994). *Social exclusion and social solidarity: Three paradigms. International Labour Review*, 133(5-6), 531-578.
- Tyson, R. (2017). *The Rough Ground: Narrative explorations of vocational Bildung and wisdom in practice*. Stockholm: Stockholm University Press.
- Waara, J. (2012). *Svenska Arbetsgivareföreningen och arbetskraftsinvandringen 1945-1972*. Akademisk avhandling. Gothenburg studies in economic history 7.
- Weick, K. E. (1976). Educational organizations as loosely coupled systems. *Administrative Science Quarterly*, 21, 1-19.

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## The Apprentice Perspective: A Blind Spot in the Governance of VET Systems? A German-Danish-Swiss Comparison

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### Abstract

The apprentice's perspective is of central importance for the educational policy design and further development of VET systems. The success of all education policy measures that keep VET attractive or make it more attractive ultimately depends on the educational decisions of learners. It is therefore crucial for a potentially successful VET policy to know the perspective of those who have decided to enter VET. Their assessments and experiences must be systematically incorporated into education policy decisions at the governance level. The paper presents and discusses whether, how and with what content-related focus this takes place. The focus is on the approaches in Germany, Switzerland and Denmark.

### Keywords

governance, apprentices, stakeholders, international governance of VET

### 1 Introduction

The quality and efficiency of VET systems are analysed in numerous data collections and studies. These studies are of particular importance in times of seriously changing framework conditions such as digitalisation or the COVID-19 pandemic. The results of the analyses can trigger or help to underpin VET policy decisions. In the best-case scenario, they flow into government initiatives as an evidence base, the aim of which is to adapt and strengthen vocational education and training.

Within the framework of a project of the BIBB (Federal Institute for Vocational Education and Training), the extent to which the perspective of vocational learners is taken into account was investigated. Which instruments are used to systematically capture the perspective of vocational learners and thus make it visible for the steering of VET systems?

Apprentices in particular are affected by the impact of digitalisation in their everyday training and work. Strengthened and accelerated by the COVID-19 pandemic, they are confronted with new forms of learning in which the focus is on self-organised learning. Technical tools and digital platforms are changing communication in the training company and in the vocational school, as well as didactics and ultimately the role of teaching staff.

Taking their level of satisfaction, their points of criticism and suggestions for change into account in VET policy decisions is crucial for the future attractiveness of VET, especially in



view of the high competitive pressure from the higher education sector. Furthermore, it is also a signal of the extent to which learners are perceived as a group of actors in a VET system and thus indirectly have the possibility of social participation in shaping it.

## **2 Theoretical and methodological approach**

The project underlying this article is based on the theoretical background of actor-centred institutionalism (Scharpf, 2000) and actor-network theory (Latour, 2007). The group of learners, here especially the apprentices, have so far not or hardly been perceived as actors in the design of educational systems (Hippach-Schneider & Rieder, 2021, 2022). However, since education policy measures also represent socio-political decisions, it would be obvious to provide the group of learners with an indirect form of participation.

Through a literature and document analysis, a comparative overview of different forms and approaches of apprentice surveys has been developed. The results are indicative of the extent to which their perspective is relevant for policy-making in the field of VET. One of the decisive factors in the selection of the countries for comparison was that they are characterised by a strong in-company training component with regard to the design of their VET systems.

The constellation of actors in education policy governance shows similarities but also clear differences. In all three countries, the social partners are important actors, albeit in different ways. Educational federalism in Germany, where responsibility for schools lies with the federal states, has its counterpart to a certain extent in the cantonal responsibility for the school side in Switzerland, whereas in Denmark there is no such regional division of responsibility. At the same time, all three countries have been experiencing a decline in apprenticeship numbers for years, albeit to varying degrees.

## **3 Research results**

In the course of the research, a total of five types of surveys could be distinguished:

- Nationwide, regularly conducted, government-funded surveys (1)
- Nationwide, regularly conducted, non-government financed surveys (2)
- Regional and sectoral surveys (3)
- Youth surveys (4)
- Research projects and singular studies (period 2014-2022) (5)

The differentiation between government-funded surveys and non-government-funded surveys is relevant because it can be assumed that government-funded activities are more likely to be systematically included in education policy decisions. The fact that government funding is used for a survey is an indication of the relevance attributed to these questions and the likelihood that the results will be noticed at the education policy level. The project also provided an overview of research projects and individual studies in which apprentice surveys were conducted. The overview covers a period from 2014 to 2022, but is only very briefly discussed in this publication.

**Table 1**

Overview of apprentice/vocational learner surveys

	D	CH	DK
1	National Education Panel (NEPS) BA/BIBB-Applicant Survey	Standardised Final Year Survey (SAB) The Transition Barometer [Das Nahtstellenbarometer] Multi-Cohort-Study TREE	Annual survey on "Strengthening confidence and well-being in vocational schools".
2	DGB-Survey of Apprentices	Learner Survey	
3	Studies in particular by chambers and trade unions; hotel/gastronomy, IT	Studies and evaluations, especially by cantons and professional organisations (OdA); IT, hotel/gastronomy, commercial occupations	Trade unions, e.g. Dansk Metal; Surveys conducted by the Danish Interest Group of Vocational Learners (EEO)
4	Growing up in Germany [Aufwachsen in Deutschland] (AID:A) Shell Youth Studies The School Survey [Das Schulbarometer] (D, CH, AT)	Young Adult Survey Switzerland (YASS); JAMES-Studie	Research by the Centre for Youth Research (CeFU); Democracy Day survey; Danish National Youth Study 2019/2014; Surveys by the Danish Youth Council.
5	Focus areas: Digitalisation, quality/competence acquisition, COVID-19 pandemic, less on satisfaction in general (2 studies from 2016).	Focus areas: Quality, learning site cooperation/border-crossing, digitalisation, willingness to make an effort/motivation; life-worlds of apprentices, COVID-19 pandemic.	Focus areas: Border-crossing; Well-being; dropout/retention/pride in VET, VET preparation; COVID-19 pandemic.

Source: own compilation

Both in Switzerland and in Germany, surveys are conducted at the transition to VET. However, the methodological approaches differ significantly. The transition barometer in Switzerland starts with pupils at the transition to secondary level 2, i.e. with 14-16 year-olds. The survey is carried out at two points in the year in order to be able to determine developments, before and after the transition to upper secondary level. At the same time, the companies are also surveyed, which provides a data basis for assessing the fit between supply and demand.

In Germany, applicants who have registered with the Federal Employment Agency (Bundesagentur für Arbeit, BA) in their search for a training place are surveyed, i.e. the survey does not include interested parties who have found a training company themselves, but does include interested parties who have not come directly from school (BA/BIBB applicant survey).

In Switzerland, a nationwide survey is also conducted at VET schools before the completion of training, i.e. before the transition to the labour market or a higher qualification (Standardised Final Class Survey, SAB). This is possible because the cantons, which are responsible for the quality of the schools, have committed themselves to this. This has the advantage that the transition data obtained can be evaluated individually per school or canton. The focus here is on the question of the quality of VET schools from the perspective of VET students.

The TREE multi-cohort study also starts at this so-called 2nd threshold. It is a longitudinal study that observes educational and employment histories after leaving compulsory school. This data is the basis for numerous evaluations in the field of VET research. A longitudinal study is also being conducted in Germany. Within the framework of the National Educational

Panel (NEPS), data is collected on both transitions, among others. However, an intensive and targeted survey of the concrete situation during training is not associated with this.

However, this is the case with the annual survey of apprentices by the DGB trade union. This is an important contribution by a non-governmental body or a non-governmentally financed survey. It specifically sheds light on the training situation from the perspective of apprentices in the dual system. Usually, the results are linked to education policy assessments by the trade union and corresponding proposals for action or demands.

In summary, it is clear that in Germany detailed information on satisfaction with training from the learner's point of view can primarily be obtained from the trade union's training report. Although the NEPS and the BA/BIBB Applicant Survey also collect questions on satisfaction, they refer to assessments that remain quite general and focus on the choice or decision to undergo training. In contrast, the available data sets from SAB and TREE in Switzerland enable a continuous detailed satisfaction analysis of vocational learners.

The group of regional and sectoral surveys make an important contribution by differentiating more between different groups of apprentices and complementing the nationwide view. Such studies are conducted in both countries. In Germany, the chambers in particular conduct surveys of apprentices in their region. The focus is on aspects such as satisfaction and quality assessment. Sector-specific surveys are carried out by trade unions, for example. In Switzerland, the labour organisations play an important role in the field of sector-specific surveys, the cantons focus on the respective cantonal situation.

In addition, there are different youth studies in both countries, which focus more broadly on social aspects, attitudes and assessments of young people as a whole. The specific aspect of vocational education and training plays a rather subordinate role.

Research projects and individual studies in both countries also deal with questions that apprentices are asked to answer. Thematically, there are similarities, such as digitalisation or the consequences of the COVID-19 pandemic, but different emphases are recognisable. While in Switzerland the quality issues are more in the foreground in connection with the challenges posed by the different places of learning, and the associated role of the apprentice as a "border-crosser", in Germany quality is primarily examined in the context of competence acquisition. The topics of willingness to make an effort/motivation and the living environments of apprentices are also the subject of research projects in Switzerland with direct apprentice surveys.

In this context, the different organisation of the VET research landscape in the two countries must also be briefly mentioned. In Germany it is very heterogeneous. The Federal Institute for Vocational Education and Training has the statutory mandate to conduct VET research, while numerous universities also deal with issues in the context of VET, e.g. with labour market-oriented, economic, educational-economic, educational science, sociological or psychological focal points. In the loose association of the *Arbeitsgemeinschaft Berufsbildungsforschungsnetz* (AGBFN), interested actors in VET research can exchange information. In Switzerland, research activities are thematically bundled through the funding concept of the so-called *Leading Houses*. Each *Leading House* is a competence network with one or more chairs at Swiss universities and a specific research field in the area of VET. The Swiss Federal Institute for Vocational Education and Training (SFIVET) can also be part of a *Leading House*. This enables coordinated, concerted and targeted VET research involving all research stakeholders.

Compared to the other two countries, Denmark has an explicit education policy approach in which learner well-being plays an important role. The corresponding strategy is embedded in the reform of VET from 2015. The reform was intended to increase the number of apprentices, reduce drop-out rates and improve the overall well-being of apprentices.

As a result, vocational schools in Denmark have been conducting annual surveys on the satisfaction and well-being of VET learners since 2015. This measurement of well-being has been laid down in law (cf. § 6 para. 4) (RETSINFORMATION 2019). The results of the surveys are to be used both for the local quality work of the school and for the follow-up of the reform by the Ministry of Children and Education. Teaching companies are also obliged to conduct satisfaction surveys among their apprentices who are in an active training contract at the measurement period set by the Ministry. The data makes it possible to obtain information at national, regional or school level, as well as broken down by type of training, occupation or age group of learners.

In the aftermath of the COVID 19 pandemic, the government, with the support of the political parties, provided targeted funding for professional development and community well-being for local learners. Since 2017, the Danish Youth Council and the Confederation of Trade Unions have asked learners at vocational schools about their relationship with representative democracy and politicians, but also about their perception of their own abilities on Democracy Day. The trade union Dansk Metal as well conducts surveys among apprentices, so does the Danish representation of the interests of vocational learners (ElevOrganisation, EEO). The EEO, among other student organisations, is furthermore represented on the Regulatory Council of the National Evaluation Institute for Education (EVA), which is a strong indication of the relevance of the learner voice in government administration. The EVA is responsible, among other things, for the analyses of the annual surveys of vocational learners.

Research projects with apprentice surveys cover a wide range of topics, including the challenges of apprentices in the face of two places of learning, key words: border-crossing; well-being; drop-out/retention; VET preparation, transitions, impact of the COVID-19 pandemic etc. Several state or university institutes deal with research questions in the context of VET, as does a private sector think tank. The questions often consider VET learners as young people in society and not only in their role as VET learners.

#### **4 Discussion and conclusion**

In Germany, the annual representative survey of apprentices is carried out by a trade union. The well-being or satisfaction of apprentices or students is not an explicit educational policy objective. This is also not the case in Switzerland. However, within the framework of the SAB, surveys are systematically conducted annually at vocational schools, similar to Denmark. In addition, numerous projects are financed by the departmental research, which aim at the learning situation and the satisfaction of the apprentices. The organisation and funding of VET research through the system of "Leading Houses" also suggest a high degree of reception of the research results by education policy decision-makers. This may not be expected to the same extent due to the very heterogeneous research landscape in Germany. The research focus in Germany, at least of the projects that include a trainee survey and thus survey the people involved themselves, is also aimed more at quality in the context of skills acquisition, dealing with digitalisation, and less specifically at satisfaction and well-being. In Denmark, there is an explicit educational policy goal to improve the well-being of apprentices and forms the basis for annual surveys of vocational learners at vocational schools. The relevance of this aspect is reflected in numerous thematic designs of research questions. It is very clear that VET policy in Denmark places a high value on learner well-being.

The results of the paper provide an insight into how and to what intensity systematic monitoring of the apprentices' perspective takes place in the three comparison systems and thus the possibility of participation and indirect design options for vocational learners. Remarkable differences between the countries can be seen here.

It is worthwhile to systematically make the apprentice's voice heard. They are the key multipliers for VET. Seeing them as an important actor in shaping the VET system can only

have positive effects. It can strengthen their identity, the awareness of relevance and brings an additional and different perspective into educational policy decisions. Both is necessary for a sustainable attractiveness of the VET system.

## References

- Hippach-Schneider, U. & Rieder, E. (2021). The roles of stakeholders in the vocational education and training systems in times of digitalisation – a German-Swiss comparison (RADigital) (Academic Discussion Papers). Bonn. Bundesinstitut für Berufsbildung (BIBB).
- Hippach-Schneider, U. & Rieder, E. (2022). Between pressure to act and framework for action – the actors in the German and Swiss vocational education and training systems in the face of digitalisation - Ute Hippach-Schneider, Elena Rieder, 2022. Research in Comparative and International Education. <https://journals.sagepub.com/doi/10.1177/17454999221118741>
- Latour, B. (2007). *Eine neue Soziologie für eine neue Gesellschaft : Einführung in die Akteur-Netzwerk-Theorie*. Suhrkamp.
- Retsinformation (2019). Bekendtgørelse om erhvervsuddannelser. BEK nr 1619 af 27/12/2019, Børne- og Undervisningsministeriet 2019. URL: <https://www.retsinformation.dk/eli/lta/2019/1619#id26f5546d-4488-4e6f-820b-999acb28019e> (Stand: 13.01.2023)
- Scharpf, F. W. (2000). *Interaktionsformen; Akteurszentrierter Institutionalismus in der Politikforschung*. VS Verlag für Sozialwissenschaften.

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## How an Apprenticeship Can Direct Learners Beyond the Local Context of Teaching and Learning: Transferable Skills in Germany's Dual System of Vocational Education

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### Abstract

Prior research showed that trainees/apprentices in the German dual system (DS) acquire what can be termed transferable skills, such as being able to assess when more information is needed and how to get it. This paper draws on the British educational sociologist Basil Bernstein and his code theory to approach the question of how these learners acquire such skills. Embedded in Bernstein's code is an orientation to meanings, which in formal education is elaborated, that is, it takes learners beyond a narrowly localised orientation. The paper argues that an elaborated orientation, first indications for which in the DS were found in prior research, is a necessary precondition also for skills transfer. A *Beruf*, a Germanic conceptualisation of occupation and one of the DS's organisational principles, can be regarded as a discourse in Bernstein's sense. With Bernstein, the paper argues that a boundary principle within *Beruf* education, which is established by the social partners, concerns not only sites, but also knowledge, agents and discourse, and can be encountered also at the micro-level of transmission. The paper's empirical part draws on retrospective problem-centred interviews with graduates to illustrate learners' experiences of boundaries in the DS. Respondents spoke of medium strong boundaries (school and company knowledge complementing each other) or even very strong boundaries (no relation or even contradiction between *Beruf*-school knowledge and company knowledge). However, respondents used the different knowledges productively, to the effect that they acquired the transferable skill of being able to assess when more information is needed and how to get it. Moreover, respondents were able to see the different knowledges as socially created and positioned and to relate them to the overarching *Beruf* discourse. In conclusion, the paper points to the relevance of the discursive regulation of company learning by *Beruf* for the development of elaborated orientations and a disposition for skills transfer.

### Keywords

skills transfer, social structuring of VET, Basil Bernstein, dual system of VET, Germany





## 1 Introduction

This paper investigates the conditions for the acquisition of transferable skills in Germany's dual system (DS) of vocational education and training (VET), a form of education which enjoys high reputation among employers, learners and researchers alike. Nägele and Stalder (2017; henceforth: N+S) explain that transferable skills, technical and non-technical, are "much sought after by employers" and "can be used to act efficiently in different real-life situations" (op. cit., p.739). Yet in the DS, the first transmission site is the training company, and "Critical voices have sometimes argued that the skills acquired through vocational and professional education and training are too narrow and only related to very specific tasks and situations, resulting in skills which are not transferable" (op.cit., p.746). Some authors (e.g., Wheelahan, 2010) pointed to the obligatory VET-school complementing workplace learning, where trainees/apprentices would learn necessary abstract (and, therefore, transferable) theoretical knowledge. N+S (2017, p. 747) concur: "When theory and practice fall together, a learner gets captured by the task, and an orientation towards understanding the learning content, as opposed to simply reproducing the material, occurs".

A corollary to this assumption would be to advance the collaboration of learning venues (VET-school and company). However, Gessler (2017) noted a decreasing interest in the cooperation between schools and companies over the past 20 years. Zlatkin-Troitschanskaia (2005, [24], author's translation) showed that collaboration occurs "only in individual cases, without generalisable character", as "voluntary acts within the professional activities of agents". Gessler (2017, p. 189f; author's translation) found that the German DS "shows a high degree of institutionalised collaboration on the macro-level and on the exo-level. The in-company training and the school-based learning on the meso-level however, are, in contrast, loosely coupled", so that the DS "is working also without collaboration between companies and vocational schools". Yet there is evidence that young people do acquire transferable skills in the DS (cf. Dorau et al., 2009), such as: assessing when further information is needed and how to get it, assessing how long it takes to do a job, making decisions under conditions of uncertainty, self-confidence, and others. To approach Gessler's puzzle, and to relate Dorau's findings to the social structuring of Germany's DS, concepts are required that are able to translate macro into micro and micro into macro – as does the conceptual language developed by the British educational sociologist Basil Bernstein. Drawing on these concepts, this paper suggests that the very boundary between VET school and company in the DS fosters the practicing of boundary crossing and, thereby, a disposition for skills transfer.

For trainees/apprentices, skills transfer implies mental boundary crossing. Bernstein's code theory conceptualises boundaries as classifications. His famous code is a function of classifications and framings (interaction within these boundaries). Embedded into Bernstein's code is an orientation to meanings, which ranges between restricted (implicit, localised, context-dependent) and elaborated (explicit, abstract, context-independent). Elaborated orientations (EOs) make learners see that things can be thought of or done in different ways, depending, for instance, on contextual factors. EOs index learners' disposition for boundary crossing and skills transfer.

Whatever skills are to be transferred, and there is no definite list of transferable skills (N+S, 2017, p. 746), Nägele and Stalder (ibid.) state that pre-conditions for skills transfer are the safety that may arise from an occupational identity, self-confidence and a feeling of being competent. Bernstein (1990, p. 62) concurs with N+S when he postulates a feeling of safety as a necessary precondition for the acquisition of elaborated orientations. He also concurs with N+S about the absence of a list of transferable skills: "Bernstein is very definite that code-regulated consciousness cannot be investigated piecemeal, concept by concept, word by word, fragment by fragment of activity" (Hasan, 2004, p. 40) nor, one may add, skill by skill. Bernstein's elaborated orientation, an orientation beyond the local context, links with the concept of



disposition for skills transfer. But instead of seeking a definite list of transferable skills to be included in curricula, Bernstein's theory widens the perspective to the structural conditions of teaching and learning, which can or cannot become a practice field for learners' skills transfer.

After an introduction to theoretical concepts, this paper investigates, on the basis of problem-centred interviews with DS graduates, classifications (boundaries) within the dual system. Exemplary interview quotations reveal that these boundaries challenged respondents to navigate between contexts and to make meaning of different knowledges and skills they were expected to acquire, of different texts they were expected to produce. The paper shows that trainees/apprentices were able to bring together what they learnt at the VET-school and at the company, that they were able to see knowledge as socially created and positioned, which indexes an elaborated orientation. Successful dealing with boundaries within education should foster feelings of safety, self-confidence and competence that are necessary also to cross boundaries and to transfer knowledge and skills to new contexts later in life.

## 2 Bernstein's theory

Embedded into Bernstein's famous "code", which is defined as a function of classification (boundaries) and framing (interaction within these boundaries), is an orientation to meanings, which can be restricted (localised, intimate) or elaborated (abstract, context-independent). The elaborated orientation (henceforth briefly: EO) takes learners beyond themselves and beyond a narrow orientation they may bring with them. Institutionalised education is always predicated on the transmission of EOs (Bernstein 1990, p. 40). EOs are the "media for thinking the 'unthinkable', the 'impossible'"; they "go beyond local space, time, context and embed and relate the latter to a transcendental space, time, context" (Bernstein, 1990, p. 182). Bernstein's definition of EOs is based on the assumption that, in realist and Bernsteinian terms, knowledge is socially produced and "has as its object the independently existing generative structures of the natural and social realms" (Moore, 1984, p. 185). An understanding of the practices of knowledge production as "practices positioned within the social relations of generative structures" (Moore, 1984, p. 185), "is a necessary (though by no means sufficient) condition for the intentional transformation of social relations" (ibid.). "The development of elaborated orientations through education invariably occurs where individuals are directed towards new sets of unfamiliar positioned-practices so that it is the practices not the positions which become the object" (Moore, 1984, p. 412; emphases original). Potentially such an understanding of knowledge and the practices of its production can even transform learners from mechanical reproducers of knowledge to producers of new (not only for themselves) knowledge. Presumably, it can also predispose learners towards the application of old (for them) knowledge to new contexts, that is, towards knowledge and skills transfer.

Realisations of the (elaborated) meanings in education, how they are legitimately to be made public, are "a function of the specific form taken by the interactional practices of education" (Bernstein, 1990, p. 32). Central features for the analysis of interactional practices are a category relation and its message (ibid.). The relation between categories is a "classificatory principle, which, in turn, is regulated by the social division of labour constituted by a given distribution of power" (ibid.). Put differently, the macro-social distribution of power establishes a classificatory principle which learners (and also transmitters) experience as the boundaries of the pedagogic communicative practice at the transmission level (classroom or equivalent, such as a workplace in a training company), boundaries of what may legitimately be put together and how that is to be made public. In Bernstein's words: "The principle of the internal and external classification of the pedagogic context is invisibly present in any communicative realization of the context" (Bernstein, 1990, p. 37). The principle of classification, thus, provides an answer to Gessler's (2017) puzzle that the dual system implies

coordination of learning sites at the macro-level, but apparent loose coupling at the micro-level of transmission – the classificatory principle should be present at all levels.

So far, nothing has been said about the categories to be classified. Gessler (2017) pointed to sites and categories of transmitters (*Beruf* school teacher and company trainer) as indexing a boundary (classification). Bernstein widens this perspective theoretically. “Classification refers to the degree of insulations between categories of discourse, agents, practices, contexts” (Bernstein, 1990, p. 214). In other words, Bernstein makes researchers aware that boundaries within education, which may become a practice field for learners’ boundary crossing and skills transfer, concern not only agents, but also contexts, knowledge, discourse. “In the analysis of relations between categories (subjects, spaces, discourses), classification refers to the degree of maintenance of boundaries between those categories; it is strong when there is a marked boundary between categories and it is weak when there is a blurring of boundaries between categories” (Morais and Neves, 2018). Moreover, classifications can have internal and external values, depending on whether the boundary is maintained from outside or from within. Strong internal classifications foster a strong feeling of identity (which, according to N+S (p. 746), is supportive for skills transfer). To state in a non-circular way, whether a boundary between particular categories is strong or weak, indicators are required by which the boundary strength comes to show. These have to be developed from the data.

Framing, the other element of Bernstein’s code, is about the locus of control over the interaction within the boundaries and can likewise have stronger or weaker values, depending on the degree of participation that the dominant interaction partner grants the weaker partner. Prior research about the framing relations in Germany’s Dual system (DS) showed that these can be very weak, to the extent that trainees/apprentices can and do take control over the what and how of pedagogic communication, and also over the hierarchy in the transmitter-acquirer-relationship (Höhns, 2018, 2022). In schools, this would be termed illegitimate. Yet these empirical findings, which are based on systematic and rule-related Bernsteinian analyses, made sense when the DS was seen as a real-life example for Moore’s (1984) Bernstein-based oppositional (to schooling) model of an elaborated form of education (cf. Höhns, 2022). These findings make the DS’s underlying classificatory principle an all the more interesting object of investigation.

Höhns (2016, p. 208) argued that a *Beruf* is a discourse in Bernstein’s sense, “insofar as the bundling of texts or work activities produced in a primary context is the product of the social division of labour of certain agents/agencies and of their corresponding social relations”. The social partners create the *Beruf* discourse, and concurrently they create the curriculum for company transmission (the training regulations). They also support the *Beruf*-schools to adapt their curricula when a *Beruf* changes (cf., e.g., Kuppe et al., 2014). The *Beruf*-schools in Germany, like the training companies, are subjected to the same *Beruf* discourse. For the trainee/apprentice, the school is a context beyond the training company, yet equally related to *Beruf* learning, just as are optional other transmission contexts, such as inter-company training sites. It follows that the DS’s intra-discourse relations, which learners experience in their traineeship/apprenticeship, imply a classification (insulation) of sites or transmission contexts, and consequently of categories of agents (e.g., VET school teachers and company trainers). Yet the overarching discourse is the *Beruf*.

Trainees/apprentices are left to their own devices to bring together their experiences at different sites and with different agents within *Beruf*-education. The following section shows that trainees/apprentices are able to make sense of these experiences, even contradictory ones, and to recognise and realise different context-specific productions. In Bernstein’s terms, they learn to see knowledges and practices as differentially positioned and, thereby, develop an elaborated orientation, beyond the context of the training company.

### 3 Empirical part: The German dual system of VET – boundaries

Knowledgeable informants on transferable skills are persons whose labour market entry trajectory could be termed ‘non-linear’ (e.g., frequent changes of employment, disappearance from the labour market statistics, employment in positions not related to the acquired *Beruf* (occupation)). By this criterion DS graduates were selected from a 2% random sample of all employed persons in Germany to narrate about their vocational education and life before and after in problem-centred interviews (cf. Witzel and Reiter, 2012). Problem-centred means open interviews with some guidance to keep narrations focussed on a socially structured problem, such as, here, vocational learning. From a first set (10 interviews), a content analysis uncovered what remained of the vocational training after such significant career changes and what can be termed transferable skills (cf. Dorau et al., 2009): assessing when further information is needed and how to get it, assessing how long it takes to do a job, making decisions under conditions of uncertainty, self-confidence, and others. Respondents claimed to have acquired these skills (in a very broad sense of the word) during their vocational training and found them useful even when not working in the acquired *Beruf*. This paper analyses a second set of 30 respondents drawn by the same criteria from an improved data base that also included unemployed persons. The interviews were recorded, transcribed, anonymised and fed into a text analysis programme. They were coded with theoretical codes, drawn from Bernstein’s theory, such as: Agents, Sites, Discourse. The code “Agents” received subcodes: Trainers, Colleagues, VET school teachers, Other trainees/apprentices. The code “Sites” received subcodes: Company, VET school, Inter-company training. The code “Discourse” received subcodes: Knowledge, Relation between VET-school and company, Relation between theory and practice. Multiple codings are possible. Quotations are recognisable unambiguously by the interview ID and transcript line number. The interviews were carried out in German and excerpts translated by this paper’s author. The paper draws mainly on the codes: discourse, and sites.

Theoretically, an index for a weak boundary between VET school and company practice is when, as N+S (2017, p. 747) propose, theory and practice fall together. No examples for this were found in the data. When theory and practice have got nothing in common, this indexes a strong boundary. Knowledges complementing each other, indexes a medium strong (permeable) boundary.

Examples for the school (or other sites) complementing company learning:

“Sometimes they [the journeymen] asked whether we had done that in school already... And then one said either yes or no, and then, sometimes, when one did not know, he showed, and sometimes he said: ‘Oh, then I rather do it myself’” (7467405 roofer (m), line 88).

“We had inter-company training at the guild... In the first two courses you learn safety training, that was key... And then we learnt how the training course is structured... How the training plan comes about, and so on. Nothing that would get us anywhere. But the information was necessary to understand why, for instance, the superior reacts the way he does” (8300807 electronics engineer (m), lines 65 and 438).

“In the second year, we had a course on machines... organised by the guild, I think... There they show you, during one week, the functioning of machines. How to operate them, how to set up what, and so on. And then one did that in the carpentry on one’s own. You got a task, ‘There, this piece of wood has to be processed like - such and such. Do that.’ And then you stood at the machines and processed the wood” (ID 8306158 carpenter (f), line 126).

A lawyer’s assistant (8304481 (f), line 191), who had a training place not in a lawyer’s office, but in the legal department of a big company, needed the *Beruf*-school to learn *beruf*-related knowledges that did not occur in the company: “... for instance the calculation of lawyer’s fees. We did not have that in the company...”.

On the other hand, the company complemented the school. The lawyer's assistant (8304481, line 193) continued: "Then, questions arose, and he [the company trainer, a lawyer; author's addition] always gave examples and helped me, explained things."

Specialist (f) in the hotel business (8304172, line 235): "We could go [to the head of the banquet section; author's addition] and say, 'here, we are having wine at school, and I have no idea. We do wine testing at school, and somehow, I have no idea'. Then she said: 'Well, come on, then we shall do something like that here'".

Carpenter (8306158, (f), lines 178-184): "Starting from the first week, the relation to my journeyman was very good. When I had problems at school, or questions, when I had not understood something at school, I went up to him, and he explained it. That was no problem at all... Without him, surely, I would not have passed the examination..." Interviewer: "Did you prepare for the examination together with him?" Respondent: "That would be an exaggeration to say. I am a person who likes to learn on her own. But when there are questions, and they can explain only poorly at school, then you go to him, and he explains it better. Because in the school, they have only their standard shibboleths, and that's it. Because they are all only theoreticians. But he is a practician, he knows what I am talking about. Therefore, he can explain differently, and you understand it" (8306158 carpenter (f), lines 178-184).

In sum, medium-strong classification means that the school, to some extent, compensates deficiencies in training companies concerning the complete *Beruf*-knowledge, and company trainers compensate the school's deficiencies concerning, for instance, practice/rehearsing and explanations. In order to receive these explanations from their trainers, trainees/apprentices have to be able to ask for them in a contextually adequate way. To know how to get information, when needed, is one of the transferable skills identified in prior research (Dorau et al., 2009). Obviously, trainees/apprentices are able to use the divergences between company and *Beruf*-school productively – as a practice field for the acquisition of an important transferable skill.

Respondents also spoke about contradictions between VET school and company (very strong classification). The shortest, but telling response on a question about the interplay between school and hotel, theory and practice, was a laugh (25087338 specialist (f) in the hotel business, lines 327ff). Interviewer: "You laugh..." Respondent: "Yes, because, theory is theory and practice is practice, you cannot implement that. The teachers teach us things that don't exist any more... I remember a special glass for *Knickebein* [a liqueur cocktail; author's addition]..., it is not produced any more. But we nevertheless had to learn, what it is for. Or certain things that are not realisable in practice... Certain points, how one should theoretically proceed, are impossible in practice, because there is not the time to think three times in advance and make a plan how to organise an event... I think it [the curriculum] should generally be overhauled, particularly nowadays..." Interviewer: "That is, you did not find anything in common, but everything very different?" Respondent: "Well, in parts yes, but in parts not at all. Actually, there is opposition. But the teachers said that, too, like: 'Theoretically you have to learn it like that and be able to do like that, but in practice that's not possible'" (25087338 specialist (f) in the hotel business).

Another specialist (f) in the hotel business (8304172, line 351) explained: "I can understand that there are guidelines, how to do things. But I can also understand that in practice, in this day-to-day business, you cannot do it like that, because it takes too much. Sometimes that was a problem. For instance, in a practice lesson at school, we had... to lay a table, and then one trainee did it like this and another one like that. There was a big discussion about where the glasses should stand. In the beginning, before we really knew where things really go... Some trainees, indeed, did not put red wine and white wine glasses on the table at all, but just water glasses. Or they put things in other places... At some point one had to clarify for oneself: OK, here I have to draw a line. Where does this belong for the examination, how do I have to do this for the examination. And THAT is how the company wants it, because it is easier or, maybe,

not every hotel in Germany has got special cutlery for dessert or for fish. After all, in one school class, people come from different companies... And then one had to say OK, the school wants it like this, and this is right for the examination. One could try at a quiet moment in the company to do it like this [like the school suggests; author's addition], but what, if it did not fit, when so and so many people had to be seated on the bench, and one could not put the second glass on the table.... Well, that's how it really was (laughing).... Yes, there are differences between what you learn and what you do in the company. But I think, that's the case in every *Beruf*, no matter which one, it will always be different (laughing)".

A dental technician (8200101 (m), lines 140ff) also spoke about the fundamental difference between *Beruf*-school knowledge and labour practice. Interviewer: "You just mentioned the *Beruf*-school, and you remarked straight away that you saw theory and practice diverging... Could you elaborate that a little further...?" Respondent: "Well, cost accounts, costings which are not realisable, ideas about labour time, labour protection, if you stick to what you learn at school, the job is not doable. That's not just a little bit you have to give up, but it is impossible to work the way you learn it at school. Well, but I think, that's the same in most occupations. At least, sure, you talk with your mates, who work in other jobs, and - I think it's the same everywhere, that one does not stick so much to this theory, as it is taught ideally".

In sum, contradictions between school knowledge and practice knowledge make learners recognise the context-boundedness (and time-boundedness; cf. the out-dated *Knickebein* glass) of knowledge. Things can be done and thought of in different ways. The respondents also gave reasons, why they considered school knowledge as not applicable in practice: time restrictions, different spatial and material conditions, too costly.

Respondents were also able to see the overarching *Beruf* discourse, as the following narration of a Bank clerk (f) (8306138, line 367ff) illustrates. Interviewer: "Was there coordination between what you learnt in the *Beruf*-school and what you learn in the company?" Respondent: "There was no temporal connexion. Actually, there was complete separation... One thing was school, the other thing was company." Interviewer: "But you did not mind much." Respondent: "No..., no...At some stage it all comes together. No later than at the end of the traineeship. (laughs)". In other words, the respondent unproblematically accepted the school knowledge and the company knowledge as both belonging to *Beruf* knowledge. Against researchers such as N+S (2017, p. 747), who propose that theory and practice should fall together, respondents did not worry about a mismatch between theory and practice, but were able to see and accept knowledge as socially created and positioned. This ability, which is also a necessary precondition for, in Bernstein's terms, an elaborated orientation, is certainly helpful also for later skills transfer.

#### 4 Conclusions

The paper argued that an elaborated orientation in Bernstein's sense is an important precondition for skills transfer, and that this orientation implies the ability to see knowledge as socially created and positioned. An elaborated orientation is embedded into Bernstein's code, which is a function of classification (boundaries) and framing (interaction). The paper investigated boundaries (classifications) in the dual system's intra-discourse relations concerning different learning spaces: the training company, the *Beruf*-school and the inter-company training sites. Learners who are able to deal productively with such boundaries within *Beruf*-education, should possess a disposition also for later skills transfer.

Narrations from interviews with DS graduates showed that respondents perceived the knowledge transmitted at each of the sites as context-related and discourse-related. Respondents were also able to see that *Beruf*-school knowledge (and knowledge obtained in other transmission sites such as inter-company training sites) complements learning in the company, and vice versa, to make the complete *Beruf*-knowledge. In the *Beruf*-school, the

respondents also saw the advantages and limitations of their company as a learning place for the whole of the *Beruf*. Narrations revealed the respondents' ability, in a contextually adequate way, to make trainers explain what reached beyond the everyday practice in the company but what they needed to know in the *Beruf*-school and for the complete *Beruf*. That is, trainees/apprentices took responsibility for their *Beruf*-learning and concurrently acquired a transferable skill (assessing when further information is needed and how to get it). They also saw the limitations of *Beruf*-school knowledge and were able to reason why the theoretical knowledge is not really applicable: time restrictions, different spatial and material conditions, costs. Respondents who saw knowledge in the company and in the school as socially created and positioned, developed, in Bernstein's terms, an elaborated orientation, which directed them beyond a narrow, localised orientation of learning to work in a particular company.

Bernstein's conceptual language permitted this paper to relate individual narrations to underlying structures, and the organisational form of transmission/acquisition to the acquisition of a transferable skill. Bernstein's theory widens the perspective of transferable skills to the structural conditions of teaching and learning, which can become a practice field for learners' skills transfer. The overarching discursive construct *Beruf*, which comprises more than what is required to work in the training company, seems to play a crucial role here.

## References

- Bernstein, B. (1990). *Class, Codes and Control, Vol. IV - The structuring of pedagogic discourse*. Routledge.
- Dorau, R., Feller, G., & Höhns, G. (2009). *Berufliche Entwicklungen junger Fachkräfte nach Abschluss der Ausbildung –Final report*. Accessable under [https://www.bibb.de/tools/dapro/data/documents/pdf/eb\\_21201.pdf](https://www.bibb.de/tools/dapro/data/documents/pdf/eb_21201.pdf)
- Gessler, M. (2017). The lack of collaboration between companies and schools in the German dual apprenticeship system: Historical background and recent data. *International Journal for Research in Vocational Education and Training*, 4(2), 164-195. <https://doi.org/10.13152/IJRVET.4.2.4>
- Höhns, G. (2016). Recontextualisation in In-company Vocational Education in the Dual System in Germany. In P. Vitale & B. Exley (Eds.), *Pedagogic Rights and Democratic Education: Bernsteinian Explorations of Curriculum, Pedagogy and Assessment* (pp. 206-219). Routledge.
- Höhns, G. (2018). Pedagogic practice in company learning: the relevance of discourse. *Journal of Vocational Education & Training*, 70(2), 313-333. <https://doi.org/10.1080/13636820.2017.1411390>
- Höhns, G. (2022). The social construction of vocational education - possibilities for change towards status improvement *Journal of Vocational Education & Training*. <https://doi.org/10.1080/13636820.2022.2138956>.
- Kuppe, A. M., Lorig, B., Stöhr, A., & Schwarz, H. (Eds.). (2014). *Training regulations and how they come about* (4th revised edition ed.). Bundesinstitut für Berufsbildung [http://www.bibb.de/dokumente/pdf/a45\\_entstehung-von-ausbildungsordnungen\\_en.pdf](http://www.bibb.de/dokumente/pdf/a45_entstehung-von-ausbildungsordnungen_en.pdf).
- Morais, A., & Neves, I. (2018). The quest for high-level knowledge in schools: Revisiting the concepts of classification and framing. *British Journal of Sociology of Education*, 39(3), 261-282.
- Nägele, C., & Stalder, B. (2017). Competence and the need for transferable skills. In M. Mulder (Ed.), *Competence-based vocational and professional education, technical and vocational education and training: Issues, concerns and prospects* (Vol. 23, pp. 739-753). Springer. [https://doi.org/10.1007/978-3-319-41713-4\\_34](https://doi.org/10.1007/978-3-319-41713-4_34)

- Vocational Training Act from 23.03.2005, 931 ff  
[http://www2.bgb1.de/Xaver/start.xav?startbk=Bundesanzeiger\\_BGBI](http://www2.bgb1.de/Xaver/start.xav?startbk=Bundesanzeiger_BGBI) English version:  
[http://www.bmbf.de/pub/BBiG\\_englisch\\_050805.pdf](http://www.bmbf.de/pub/BBiG_englisch_050805.pdf)
- Wheelahan, L. (2010). *Why knowledge matters in curriculum*. Routledge.
- Witzel, A., & Reiter, H. (2012). *The problem-centred interview*. Sage.
- Zlatkin-Troitschanskaia, O. (2005). Kooperation zwischen Ausbildungsinstitutionen und Lernorten in der beruflichen Bildung - eine multidisziplinäre Betrachtung. *Bildungsforschung*, 2(1), 26.  
<https://bildungsforschung.org/ojs/index.php/bildungsforschung/article/view/10/8>

### Biographical note

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## **"Making a Virtue of Necessity": Substitution Potentials in the Face of the Shortage of Skilled Workers - Ways to a Sustainable Future Using the Example of the German Vocational Training System**

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### **Abstract**

Context: Germany is particularly affected by an increasing shortage of skilled workers. At the same time, there is a so-called "hidden reserve" of workers whose activation could be very helpful for the German labor market.

Approach: The article shows whether and to what extent reforms of the German vocational training system can contribute to the activation of this "hidden reserve".

Findings: To this end, the article estimates the size of the heterogeneous, untapped workforce potential and brings the different stakeholder groups in connection with concrete vocational training needs and reform proposals.

Key message: To activate the "hidden reserve" for the labour market, a trend reversal of the state further training strategies pursued in the vocational training system in Germany seems urgently necessary. One possible solution would be to offer effective qualification measures that are as targeted and tailor-made as possible for the extremely difficult and heterogeneous target groups considered here.

### **Keywords**

vocational education and training, skilled worker, education and training need, hidden reserve, education and training reform

### **1 Introduction**

*"The lack of staff is a challenge for Europe's companies. We must invest much more in training and further education."* Ursula von der Leyen, Address before the Members of the European Parliament (September 14, 2022).

Vocational training systems are of central importance for securing skilled workers in Europe and also offer opportunities for participation. Skilled workers not only guarantee the economic performance of companies but are also important for the implementation of overall social





change processes (digitalization/ green transition) (EC 2022; Peichl et al., 2022: 70). Functioning vocational training systems as a source of skilled workers are the basis for technical and socio-cultural development and for a fair and sustainable future. Nevertheless, Germany is particularly affected by an increasing shortage of skilled workers. At the same time, there is a so-called "hidden reserve" of workers whose activation could be very helpful for the German labor market. However, this requires fundamental structural adjustments in the German vocational training system. The article shows whether and to what extent reforms of the German vocational training system can contribute to the activation of this "hidden reserve" for the German labor market to reduce the shortage of skilled workers. To this end, the article estimates the size of the heterogeneous, untapped workforce potential and brings the different stakeholder groups in connection with concrete vocational training needs and reform proposals.

## **2 Shortage of skilled workers in Europe: Top position Germany**

Current survey data point to an increasing need for skilled workers in Europe's central economic sectors – meanwhile around every third EU company complains this mischief. Germany holds the "sad European record": The need for skilled workers is particularly high here: Across all sectors, around half of all companies surveyed report that their business activities are being impaired by a lack of skilled workers. This peak has been generated by a continuous increase since 2009 – started at 10% (DIHK, 2022: 13; Peichl et al., 2022, p. 71ff.).

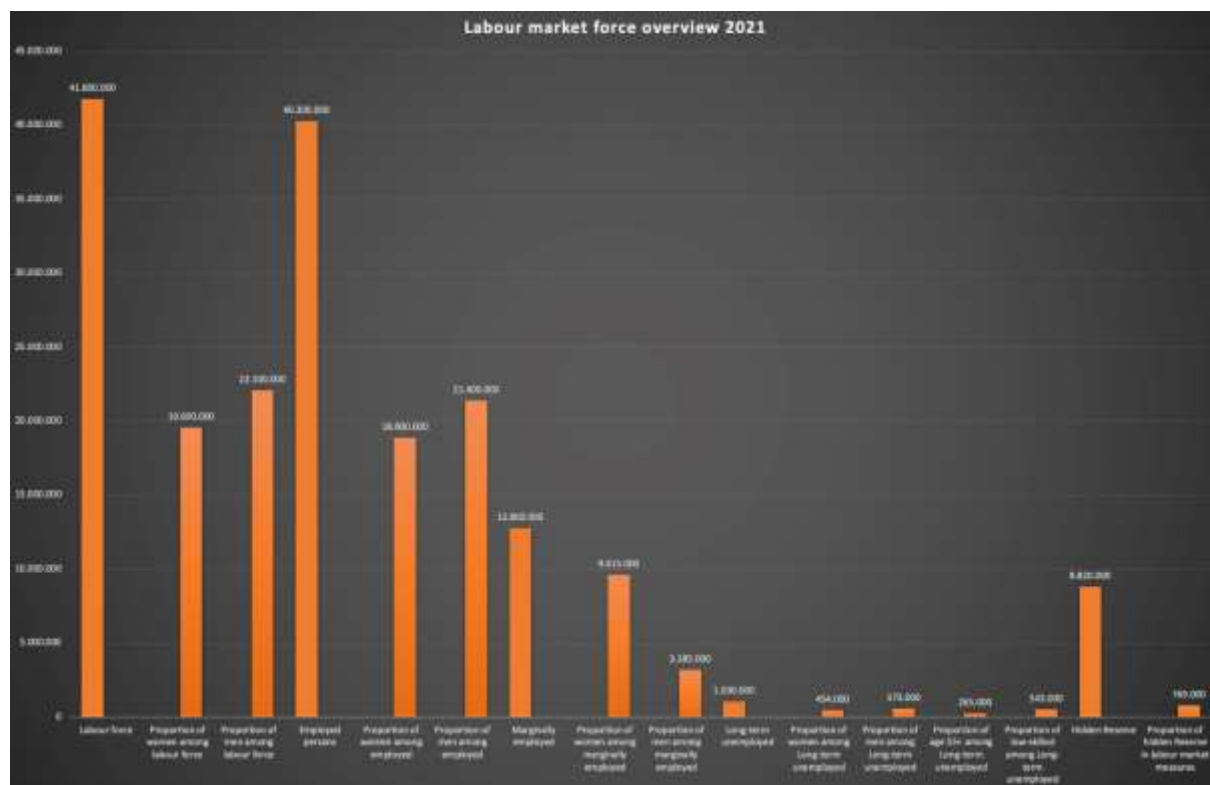
There are many reasons for the increased need for skilled workers in Germany, but the main cause is the demographic change: the workforce (aged 20-65) will decrease by around four million by 2030 (BMWK, 2022). In return person-related services are becoming increasingly important in an ageing working society (Menge et al., 2017). At the same time, the digital and ecological structural change producing an increased need for qualified specialists (Maier et al., 2022: 17; Peichl et al., 2022: 73). Despite the increasing demand on the labour market, fewer and fewer young people are opting for vocational training (BMBF, 2022: 24-28). The situation has become particularly aggravated due the corona crisis. The pandemic situation has not only been responsible for the decline in the number of company training places, but the shortage was exacerbated by a massive change of skilled workers in the hospitality or tourism industry to other sectors of the economy (BMBF, 2022: 31-32; Dohmen 2020; Jansen & Risius, 2022). Since with the retirement of the so-called baby boomer generation many skilled workers with dual vocational training are leaving the labour market (Maier et al., 2022: 16), an increasing need for skilled workers can also be expected for traditional training occupations (Maier et al., 2022).

## **3 "Reserve army" as substitution potential**

Declining absorption rates in the vocational training system, stagnating development in career orientation, high long-term unemployment rates: are these "reserve" groups in the labor market suitable for making use of the unused labor force potential by "activating" it? This group includes the following (see Fig. 1; overlaps are possible):

**Figure 1**

Labour market force overview 2021



Source: Own representation

- **Marginally employed** (part-time employees and so-called mini-jobbers): There is a significantly higher proportion of women here: in 2021, 10 million women worked in marginal jobs (men: 3 million) (Bundesagentur für Arbeit, 2022a: 6-7).
- The so called "**hidden reserve**" ("stille Reserve") includes people in labor market policy measures (2021: 780,000) as well as people who would only take on paid work when the economic situation improves or if funding conditions were to change. Due to this pro-cyclical behavior, the hidden reserve can be classified as dependent on the economy (Böhm, 2011: 8-9). In 2021, this was 25.4% of women registered in Germany and 17.3% of men between the ages of 15 and 65 (Bundesagentur für Arbeit, 2022b: 5-6). The IAB (Institut für Arbeitsmarkt- und Berufsforschung), the Research Institute of the Federal Employment Agency in Germany, divides this group into "within measures" (people in qualification measures and in early retirement) and "in the narrow sense" (so-called discouraged workers and people in holding patterns of the education system). The latter group is not officially recorded and the number of people within this group must be estimated (Böhm, 2011: 8).
- Internationally, this group is defined in a much narrower sense as so-called "discouraged workers" or under the term "hidden unemployment", but there is no standard definition for the latter. In general, the group of the so-called "discouraged workers" can be described as people who are not actively seeking employment but would become available for employment under certain conditions. During unfavorable economic situations, they withdraw from seeking employment because they do not think they have a chance of getting a job due to the unfavorable economic situation or their own low qualifications. They return when there is an economic upswing and thus offer an explanation for the pro-cyclical behavior of the hidden reserves (ILO, 2010: 14).

- **Migrants:** In 2016, the labor force participation rate of EU foreigners was 80.1%, higher than that of Germans (79.4%). The reason for this is the recently sharp increase in labor immigration from the EU. For non-EU foreigners, the employment rate (15-64 years) was 58.5%, well below the average (Brenke & Clemens, 2017). In addition, the employment rate within this group fell sharply between 2011 and 2016, with the exception of older people. The reason for this is the influx of asylum seekers, since they only receive a work permit after they have been granted a residence permit. A comparison of labor force participation by gender shows that the labor force participation rate (men, 15-64 years) is 68.1%; Women reach only 48.0% (Buslei et al., 2018: 18).
- **The low-skilled without formal qualifications as well as unskilled and semi-skilled workers:** Overall, the low-skilled rate (transition system, career orientation) is declining. For women there is an increase in qualifications, which in 2014 led to the equality of the gender-specific proportion of low-skilled workers. In the age cohort of 25 to 29-year-old women with a university degree, the employment rate (30%) is higher than that of men (25%) (Statistisches Bundesamt, 2016).

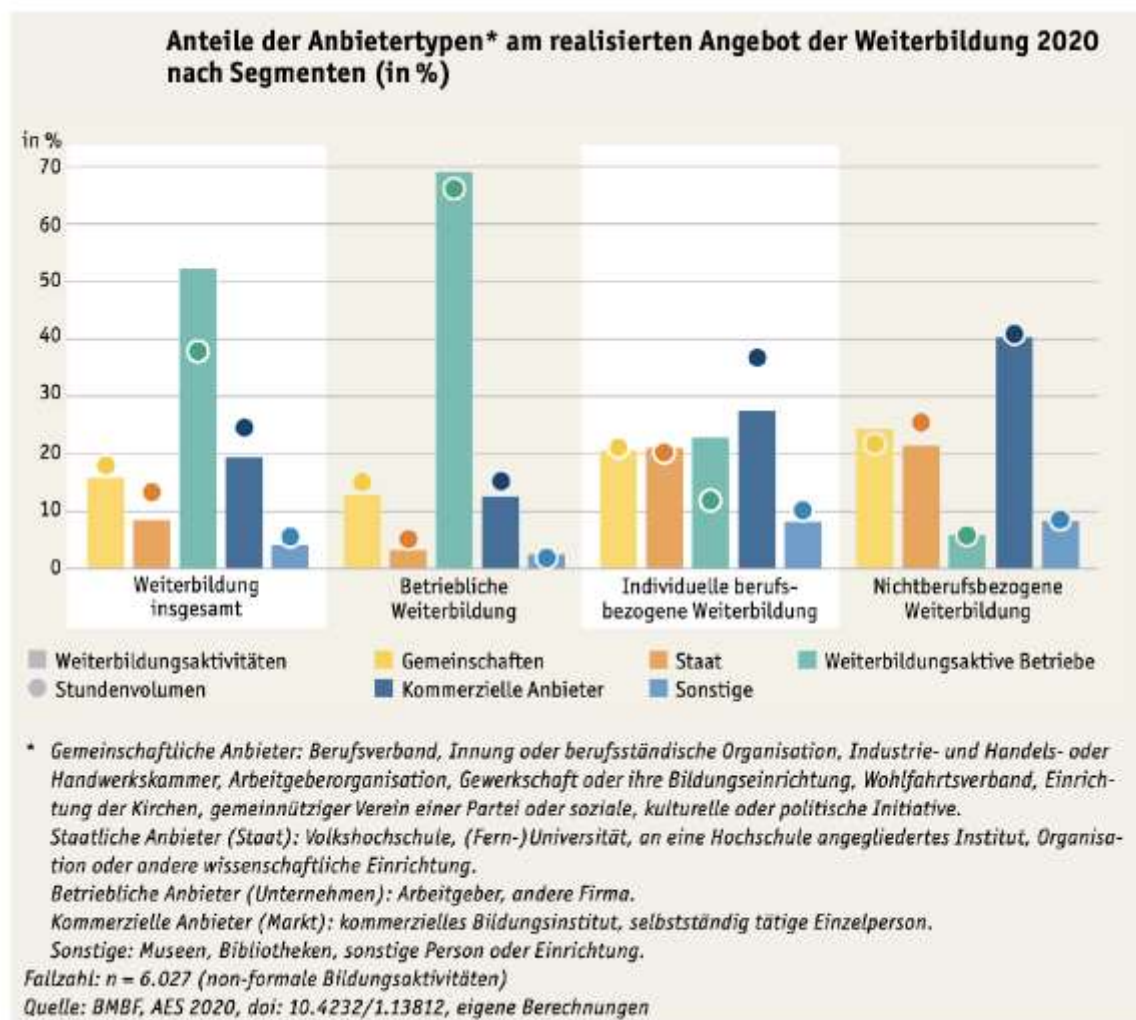
#### 4 Focus and strengthen vocational education and training

For all of the target groups listed above belonging to the “hidden reserve” of the German job market, the integration into the job market can only work if they undergo a more or less lengthy (re)qualification process. In the vocational training system of the Federal Republic of Germany, this can be achieved either through (renewed) initial vocational training, retraining based on previous qualifications (according to BBiG §46) or through further vocational training measures.

While the first two options (initial vocational training and retraining) are subject to clear legal regulations (BBiG), the area of further vocational training in Germany is of a very diverse nature and is much less regulated overall. The sponsorship is plural, the nature and supply of the further training measures is market-oriented and the financing can be provided either by individuals, the state or by private companies (Lipsmeier & Münk, 1997).

A very important problem is that in-company training (and thus the companies as the financing institutions) by far accounts for the largest part of further vocational training in Germany (Authors' Group on Educational Reporting, 2022; see Fig. 2).

**Figure 2**  
Continuing education providers in Germany by share



Autor:innengruppe Bildungsberichterstattung Deutschland 2022, Bielefeld, S. 228

Source: Autor\_innengruppe Bildungsberichterstattung Deutschland (2022)

However, most of the above-mentioned target groups of the "reserve army" or the "hidden reserve" are characterized by the fact that they are by definition not integrated into company structures because they do not have an employment relationship. This means that the financing of a cost-intensive further training process - and even more so initial vocational training or retraining - can either be carried out individually, which can largely be ruled out in view of the unemployed status of those affected; the second possibility remains the full state financing of such measures in the sense of a state curative further training strategy.

To make matters worse – based on research (e.g. Gösch, 2023) – this very heterogeneous clientele, who for various reasons is very difficult to integrate into the job market, only has a good chance of integration if intensive case management including coaching activities is carried out. In any case, such measures are clearly too expensive to leave the financing to the individuals. In this respect, the only remaining option is exclusively, or at least predominantly, state funding, which appears illusory in view of the large numbers and the high heterogeneity of the entry requirements under the current conditions of state funding for vocational/in-company further training. A look at the state of research clearly shows that in the case of the target groups focused here, lengthy, time-consuming and therefore, of course, cost-intensive

measures of psychological-medical and social support (case management) must be carried out before any attempt at professional support can be made and (Re-)integration can begin (Ixmeier, 2022).

Another option which quickly comes to mind is the integration of difficult target groups into the labor market through (renewed or initial) vocational training. A quick look at this option however shows that it can only be expedient under very clearly defined preconditions because the initial vocational training in the dual system is only 25% state-financed, which means that the companies are clearly mainly responsible for financing in these cases. Empirical evidence for the unwillingness of companies to finance such integrative measures is available, for example, for the question of the integration of young refugees into the dual system. The admission and thus the success rate of realized training contracts for this target group is negligible, even seven years after the first large wave of migration into the Federal Republic of Germany (Scheiermann, 2022).

## 5 Conclusions

All in all, this diagnosis gives little reason for optimism, since the cost for the qualification of such heterogeneous target groups with such different entry requirements are immense and would have to be financed mostly by the state. The funding of continuing vocational training over the last two decades shows, however, that the share of government funding in the field of continuing vocational training (in contrast to company and individually financed further training measures in the Federal Republic of Germany) has been steadily declining. In this respect, a trend reversal of the state further training strategies pursued in the vocational training system in Germany seems urgently necessary in order to offer effective qualification measures that are as targeted and tailor-made as possible for the extremely difficult and heterogeneous target groups considered here in the above-mentioned sense.

## References

- Autorinnengruppe Bildungsberichterstattung Deutschland (2022). *Bildung in Deutschland*. Bielefeld.
- Bundesministerium für Bildung und Forschung (BMBF) (2022). *Berufsbildungsbericht 2022*.
- Bundesministerium für Wirtschaft und Klimaschutz (BMWK) (2022). Fachkräfte für Deutschland. <https://www.bmwk.de/Redaktion/DE/Dossier/fachkraeftesicherung.html>.
- Böhm, K. (2011). *Schätzung der Stillen Reserve mit dem Mikrozensuspanel 2001-2004. Eine Machbarkeitsstudie*. IAB Forschungsbericht, 2. Nürnberg.
- Bundesagentur für Arbeit (BA) (2022a). *Die Arbeitsmarktsituation von Frauen und Männern 2021*. Nürnberg.
- Bundesagentur für Arbeit (BA) (2022b). *Arbeitsmarktsituation von langzeitarbeitslosen Menschen*. Nürnberg.
- Buslei, H., Haan, P., Kempfner, D., & Weinhardt, F. (2018). *Arbeitskräfte und Arbeitsmarkt im demographischen Wandel*. Gütersloh.
- Brenke, K. & Clemens, M. (2017). Steigende Erwerbsbeteiligung wird künftig kaum ausreichen, um den demografischen Wandel in Deutschland zu meistern. *DIW Wochenbericht*, 35, 675-685.
- Deutscher Industrie- und Handelskammertag (DIHK) (Ed.) (2022). *Die deutsche Wirtschaft im Sog der Energiepreiskrise. DIHK-Konjunkturumfrage Herbst 2022*. Berlin.
- Dohmen, D. (2020). *Berufsausbildung in Krisenzeiten nachhaltig unter Druck: was bedeutet die Corona-Krise für die Berufsbildung*. Forschungsinstitut für Bildungs- und Sozialökonomie. FiBS-Forum, 73. Berlin.

- European Commission (EC) (2022, 12. October). *Commission kick-starts work on the European Year of Skills*.  
<https://ec.europa.eu/social/main.jsp?langId=en&catId=89&newsId=10431&>
- Gösch, A. (2023). *Die Integration von Langzeitarbeitslosen in den ersten Arbeitsmarkt – Gelingensbedingungen am Beispiel von drei Modellprojekten des Landes Nordrhein-Westfalen*. [Dissertation, Universität Duisburg Essen].
- International Labour Office (ILO) (2010). *Global Employment Trends January 2010*. International Labour Office, Geneva.
- Ixmeier, S. (2022). „Da muss man dann halt überlegen, [...] wie man in diesem besonderen Fall irgendwie agieren kann“. Neue Ansätze in der beruflichen Qualifizierung langzeitarbeitsloser Personen mit gesundheitlichen Einschränkungen. In S. Bohlinger, G. Scheiermann & C. Schmidt (Eds.) *Berufsbildung, Beruf und Arbeit im gesellschaftlichen Wandel. Zukünfte beruflicher Bildung im 21. Jahrhundert* (pp.7-92). Springer.
- Jansen, A. & Risius, P. (2022). Sorgenkind Gastro? Berufswechsel in der Corona-Pandemie *IW-Kurzbericht* 60 Köln.
- Lipsmeier, A. & Münk, D. (1997). *Berufliche Weiterbildung. Grundlagen und Perspektiven im nationalen und internationalen Kontext*. Hohengehren.
- Maier, T., Kalinowski, M., Zika, G., Scchneemann, C., Mönnig, A. & Wolter, M. I. (2022). Es wird knapp. Ergebnisse der siebten Welle der BIBB-IAB-Qualifikations- und Berufsfeldprojektion bis zum Jahr 2040. *BIBB Report*, 16 (3).
- Menge, J., Schuldman, C. & Schmidt, S. (2017). Zukunftsbranche soziale Dienstleistungen – Höchste Zeit für die Aufwertung. *Equal Society Brief. Impulse für gerechte Verhältnisse in Politik, Gesellschaft und Wirtschaft*, 4. Friedrich-Ebert-Stiftung.  
<https://library.fes.de/pdf-files/dialog/13351.pdf>.
- Peichl, A., Sauer, S. & Wohlrabe, K. (2022). Fachkräftemangel in Deutschland und Europa – Historie, Status quo und was getan werden muss. *Ifo Schnelldienst*, 75(10), 70-75.
- Scheiermann, G. (2022). *Integrationsperspektive Duales System? Gelingensbedingungen für die Eingliederung Geflüchteter in betriebliche Ausbildung*. Bielefeld.
- Statistisches Bundesamt (2016). *Arbeitsmarkt auf einen Blick*. Wiesbaden.

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Kersh, N., Laczik, A. & Emms, K. (2023). Building bridges between higher education, vocational learning and employment: Fostering a sustainable ecosystem through practically based higher education (HE) models. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 229–236). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7821828>

## **Building Bridges Between Higher Education, Vocational Learning and Employment: Fostering a Sustainable Ecosystem through Practically Based Higher Education (HE) Models**

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### **Abstract**

The Higher Education (HE) sector in England demonstrates a tendency of diversification of their provision, specifically through developing strategies to integrate academic and workplace learning. The paper aims to consider a case study of practically-based higher education in a higher education institution in England, as an example of an industry engaged model of higher education which combines academic and practical learning, through cross-disciplinary contextually relevant curricula. The paper reports on the research in progress hence findings at this stage are preliminary and speculative. This paper will specifically focus on the contextual analysis of the case study. The findings indicate that the cross-over between academic studies and practical experiences involves continuous stakeholder collaboration, aiming to foster a deep understanding of student skills and expertise such that they are able to meet unknown challenges in the context of a constantly changing world of work.

### **Keywords**

industry-engaged higher education, employer engagement, workplace learning, ecosystem

### **1 Context**

The paper focuses on the complexities of building bridges between higher education and industry. Specifically it unpacks the ways in which higher education institutions respond to these complexities and develop approaches and strategies when moving their academic provision towards a more work-related provision, to enable students to engage with industries and learn alongside industry professionals. This requires developing and sustaining a unique educational ecosystem underpinned by the links between higher education and industry through integrating theory and practice and fostering stakeholder collaboration and communication.

This research is timely, as contemporary policy and research debates bring attention to an important issue of higher education graduates' work readiness (Kornelakis & Petrakaki, 2020; Bridgstock & Tippet, 2019). It is also timely as many universities introduce programmes that





are supported by industry in a variety of ways and are more practically-based. There is a strong emphasis on the significance of adequately preparing young people for the world of work and equipping them with the skills needed in the labour market to facilitate their employability and career chances (Cranmer, 2006; Prokou, 2008). The paper will focus on one higher education institution case study, specifically exploring the ways, the university has been developing strategies to facilitate stakeholder engagement within a local ecosystem.

## 2 Research Questions

The focus of the research is on identifying and exploring characteristics, challenges and implications of practically-based and industry engaged HE models operating within an emerging learning ecosystem, that facilitates crossing boundaries between academia and the workplace. The following research questions will be explored:

- What are the key features and components of the ecosystem that facilitate practically-based/industry engaged HE models enabling graduates to transition to the workplace?
- What are the processes, strategies and approaches that universities develop when moving their academic provision towards a more work-related provision?
- How can networks of HE institutions and businesses facilitate, support and sustain these models and processes within the ecosystem?

## 3 Theoretical considerations

Integrating practically-based and industry engaged approaches in the context of HE requires continuous boundary crossing, specifically through bringing together theory and practice in a meaningful (and innovative) way through strategies underpinned by stakeholder engagement. Such boundaries can be crossed by individuals as they learn at the boundaries of theory and practice as well as by interactions between actors of different practices (Akkerman & Bakker, 2011; Fettes et al., 2020; Evans et al., 2006; Akkerman, 2011). Previous studies have highlighted that integrating theory into practical activities and vice versa, is a multidimensional process that translates into different configurations of crossing boundaries (Kersh, 2015), e.g : (1) boundary crossing and knowledge and skills transfer between education and the world of work; (2) tailoring the curricula to the needs of industries; and (3) motivating students towards the acquisition and integration of subject-based and work-based knowledge.

In the literature, the concept of ‘boundary crossing’ has been traditionally employed in the context of vocational education and training research (e.g. Tuomi-Gröhn & Engeström, 2003; Guile, 2011). Its application to the context of practically based higher education offers opportunities to reconsider the changing nature of the higher education landscape, through exploring its intersections with vocationally related and practice-based learning within the emerging ecosystem that facilitates these innovative practices.

These developments are strongly underpinned by interactions and communications between different stakeholders, which contributes to shaping a unique learning ecosystem, that enables connecting the contexts of work, academic studies and lifelong learning (Spours & Grainger, 2018; Buchanan et al., 2017). Within this study, the concept of ecosystem contributes a better understanding of how individuals, networks and institutions interact, connect, and cross boundaries between learning and working spaces, including digital learning spaces. The concept of ecosystem, used in this study, has been employed in different disciplines as a tool to provide a better understanding of a range of interactions and interdependencies in a variety of contexts, spaces and environments, and there is no universal definition of what constitutes an ecosystem. Hodgson and Spours (2018) note that the concept is helpful to explore how individuals navigate learning and working spaces, while engaging in a range of interactions and communication, and how the spaces and contexts interact and connect through institutional and



other types of cooperation and networking. Spours and Grainger (2018) further bring attention to the emergent Social Ecosystem Model (SEM) which suggests a ‘spatial’ approach linking skills development not only to future work, but also *sustainable* living through what is termed *the working, living and learning nexus*. The multidimensional nature of ecosystems has also been problematised by Buchanan et al. (2017), who observe that a skill ecosystem has many components, where all parts are connected, and changing one part would bring changes to the rest of the ecosystem. Therefore, building and sustaining partnerships between relevant agents or key actors is difficult, and building trust amongst such players takes time and considerable skill. The concept of boundary crossing helps to illuminate the instances of this collaborations and partnerships, as stakeholders navigate and move between contexts and settings (i.e. academic and workplace environments). For our research, this highlights the importance of connecting the worlds of academic learning and workplace experiences, that happen through a range of cooperation among networks and may take place at macro, meso or micro levels, involving communication and collaboration between key actors (stakeholders).

#### **4 Methodology: Case study of practically-based higher education**

Our methodology involves undertaking a case study approach to explore and describe innovative and effective approaches of practically-based higher education, in the context of HE in England. It involves both theoretical and empirical research, as follows:

- Literature review and contextual research to identify example of good practice for a case study
- Case study includes 1) contextual analysis and 2) semi-structured interviews with key stakeholders, e.g. senior leadership, lecturers, employers, students.

The literature review phase involved researching practically-based approaches in HE and industry engaged higher education. This has provided a foundation for shaping empirical fieldwork, including: identifying our case studies, relevant stakeholders to be interviewed; making arrangements for interviews/focus groups etc.

Empirical data collection (case study of a university programme representing a model of practically based higher education) has involved undertaking both individual and focus group interviews with key informants, including HE lecturers and curricula leaders; industry representative, students (and other relevant stakeholders)

This research is in progress hence findings at this stage are preliminary and speculative. Data collection will be finalised and systematic analysis under way/findings finalised for the conference. This paper will specifically focus on the contextual analysis of the case study.

#### **5 The case study**

Our study focuses on a case of practically based higher education, that involves building bridges between academic leaning and work and developing industry collaborations in a medium-sized university in England (in the Greater Manchester area).

Greater Manchester is a metropolitan area in the North West of England with a population of 2.8 million people. It is the third most populated areas of England. The area has five universities and a College of Music engaging over 100,000 students in 2007. The Greater Manchester College group is an association of 24 local colleges. These colleges offer a selection of courses for 14 and older age group, including higher education courses. While further education colleges offer vocational courses at all levels from the outset, there is a tendency at universities to develop practically-based HE provision. These provisions are based on industry links from local employers. The main industries in the area that employ most of the working population include: 18.4% retail and wholesale; 16.7% manufacturing; 11.8% property and business services; 11.6% health and social work; 8.0% education; 7.3% transport and

communications; 6.7% construction; 4.9% public administration and defence; 4.7% hotels and restaurants; 4.1% finance; 0.8% electricity, gas, and water supply; 0.5% agriculture; and 4.5% other (Wikipedia, accessed: 03.03.2003). The composition of the local industry is important to consider when discussing collaboration of university and industry. Practically-based HE provisions draw on local enterprises, hence their offer will be tailored to locally based industries.

The case study offers a mix of undergraduate and postgraduate courses, with just over 20,000 students in 2018/19. The practically based higher education model involves developing pan-disciplinary clusters of industry collaboration. The model strongly builds on their industry-engaged and demand-led approaches, involving collaboration and communication between a range of stakeholders.

The university made a strong commitment to fostering industry engaged higher education. Partnerships with industry enables the university to produce graduates with relevant knowledge, provide excellent work experience opportunities and create a career-focused curriculum. However, it isn't just our students who benefit from our links with businesses and organisations across the world; through collaboration with businesses of all sizes, we give companies the opportunity to improve their competitiveness and productivity through the better use of knowledge, technology and skills (*extract from The University Business School website*). As further noted in a strategy document, industry collaboration strategy ensures alignment of academic studies, research and enterprise portfolios to employer needs. This is achieved through offering modes of learning which, together with expansion of portfolio of higher technical qualifications, significantly increases flexibility for learners and businesses.

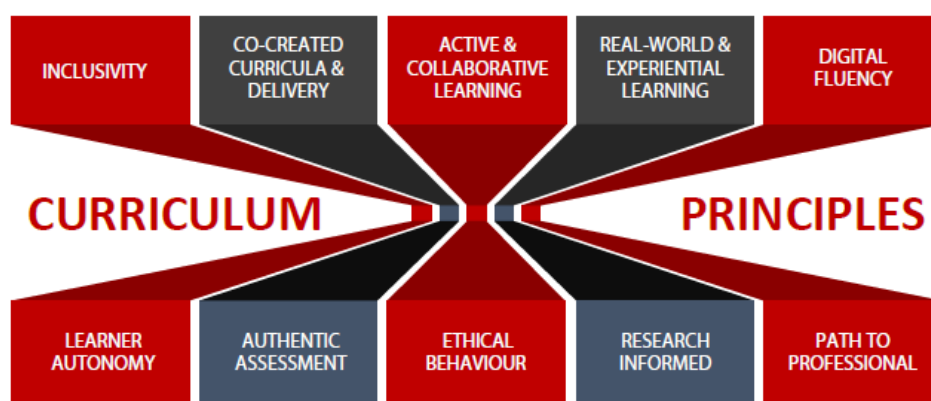
The consideration of the case study has indicated that the approaches that facilitate industry engagement and practically based higher education include both curriculum re-design and targeted (local) industry engagement.

### **Curriculum re-design**

The concept of curriculum redesign has been strongly associated with re-orientating the provision of the different traditional disciplines to ensure they fit suitably with the cross-disciplinary nature of 'Industry Collaboration' (Emms et al., 2021). Particular challenges have been related to redesigning some courses, that have been traditionally perceived as purely theoretical (e.g. English Literature). To address these challenges, and facilitate the reorientation of curriculum design, the university have developed 10 Curriculum Design Principles (CDPs), aiming to foster cross-disciplinary and industry engaged teaching and learning approaches (please see Figure 1, Emms et al., 2021).

**Figure 1**

Curriculum Design Principles



All existing courses were benchmarked against the CDPs to identify areas for development and curriculum redesign. A number of dedicated workshops were launched, to facilitate the redesign of all taught programmes to ensure the CDPs are embedded into the practice. For instance, ‘a workshop would articulate how the ten Industry Collaboration principles are embedded into a programme, and then agree actions across the team to enhance the Industry Collaboration-readiness of the programme’ (Emms et al., 2021).

### Industry engagement: Working with SMEs

Specific attention is paid to working with SMEs, i.e. contextualizing academic learning in local SME ecosystems. Building these relationships with the SME community, facilitates creating regional opportunities for work-related learning and Knowledge Transfer Partnerships (KTPs). This SME eco-system supports industry connectedness strategy and development of potential future strategic partners. (University’s Integrated Report, 2020)

The notion of industry collaboration, enables students to work closely with staff and industry partners on various work-based learning opportunities throughout their courses, such as placements, client-facing projects and other work-related experiences. As noted (Emms et al., 2021) industry relationship has now expanded, breaking down those traditional course silos. Our findings indicate that collaborative partnerships with industries contribute to the development of a local ecosystem, characterised by continuous communication and cooperation between all relevant stakeholders. Facilitating student engagement with industries is at the centre of these partnerships. One example of the development of cross-disciplinary stakeholder engagement is the involvement of the local rugby union club. This partnership was initially developed with the School of Health & Society enabling students to undertake internships, placements and funded masters around sports performance. The partnership has subsequently become cross-disciplinary and cross-departmental involving students from the School of Arts, Media & Creative Technology who have been actively involved in some projects with the rugby club, including the filming and broadcasting of the Rugby Union team’s pre-season warm up matches.

University Information and Legal Knowledge Scheme represents another collaboration within the local ecosystem, providing law students at the University with real world experience. This has been developed in partnership with two local law firms, that offer free legal advice to members of the public. This opportunity enables students to work alongside industry professionals. The university commitment to working and collaborating with local industries has also been illustrated through their engagement with a local media production company. The University current students on the Masters in Media Production are now getting the chance to

get experience with a local media production company, and this represents another meaningful collaboration and stakeholder engagement. This collaboration was developed to enable the company to employ local skilled graduates, and now around 10% of the company's workforce come from directly from the University's broadcast media department. However, the company has not only employed graduates but gives current students the chance to work on their development team as part of their course.

## 6 Initial findings

The case study suggests that the development of practically-based approaches, is based on a strong conviction that cooperation and collaboration among the key stakeholders represent key features of the ecosystem that facilitates industry engaged HE models enabling graduates to cross boundaries between academic learning and real-life workplace experiences. Engaging students through different forms of learning, workplace and community experiences has been strongly related to addressing their work-related skills, which are both underpinned and influenced by relevant ecosystems and ecologies. The findings indicate that the cross-over between academic studies and practical experiences involves more than simply transferring knowledge and skills from one context to another. It requires an enabling learning ecosystem, underpinned by a range of components, including continuous stakeholder collaboration, curriculum development and integration of theory and practice.

The case study has illustrated some emerging strategies and processes, that the university develops when moving their academic provision towards a more work-related provision. Specific strategies include (1) curriculum re-design and (2) industry engagement, particularly working with SMEs, which contributes to the development of a local ecosystem. The complex processes of building and sustaining such learning ecosystems strongly relates to facilitating meaningful communications among all relevant stakeholders. Within this study, the concept of the learning ecosystem helps to consider the complex methods of communication, strategies and networking approaches that universities develop when moving their academic provision towards a more work-related provision. The consideration of the concept of boundary crossing within a learning ecosystem contributes to a better understanding of the complex systems of communication and collaborations that underpin this process (Buchanan et al., 2017; Edwards, 2011). This includes using both digital and media channels and any other communication processes and practices (Tacchi & Tufte, 2020) that facilitate the links between higher education and industry networks and support and sustain these models and processes within the ecosystem.

The findings indicate that the development of the ecosystem is underpinned by a set of interrelated processes, that have been shaped by the emerging communication and collaboration patterns, between all key stakeholders within the local ecosystem. These complex processes, involve the development of communicative and collaborative ecologies, achieved through shared understanding and facilitating patterns of collaboration and communication between key stakeholders. Within this study, the preliminary findings will be underpinned by empirical evidence from the case study and findings complemented by the systematic analysis.

## References

- Akkerman, S. (2011). Learning at boundaries. *International Journal of Educational Research*, 50 (1), 21–25. <https://doi.org/10.1016/j.ijer.2011.04.005>
- Akkerman, S., & Bakker, A. (2011). Learning at the boundary: An introduction. *International Journal of Educational Research*, 50 (1), 1–5. <https://doi.org/10.1016/j.ijer.2011.04.002>
- Bridgstock, R., & Tippet, N. (Eds.). (2019). *Higher education and the future of graduate employability: A connectedness learning approach*. Edward Elgar Publishing.

- Buchanan, J., Anderson, P. & Power, G. (Eds.). (2017). *Skill Ecosystems*, The Oxford Handbook of Skills and Training. Oxford. 10.1093/oxfordhb/9780199655366.013.21
- Cranmer, S. (2006). Enhancing graduate employability: best intentions and mixed outcomes. *Studies in Higher Education*, 31(2), 169–184. <https://doi.org/10.1080/03075070600572041>
- Edwards, A. (2011). Building common knowledge at the boundaries between professional practices: relational agency and relational expertise in systems of distributed expertise. *International Journal of Educational Research*, 50, 33–39. doi: 10.1016/j.ijer.2011.04.007
- Emms, K., Laczik, A. & Dabbous, D. (2021). *Rethinking higher education: Case studies for the 21st Century*. London: Edge Foundation
- Fettes, T., Evans, K., & Kashefpakdel, E. (2020). Putting skills to work: It's not so much the what, or even the why, but how.... *Journal of Education and Work*, 33(2), 184–196. <https://doi.org/10.1080/13639080.2020.1737320>
- Guile, D. (2011). Workplace learning in the knowledge economy: The development of vocational practice and social capital. In M. Malloch, L. Cairns, K. Evans, & B. O'Connor (Eds.), *The SAGE Handbook of Workplace Learning* (pp. 385–394). SAGE Publications Ltd. <https://doi.org/10.4135/9781446200940.n28>
- Hodgson, A. & Spours, K. (2018). A social ecosystem model: conceptualizing and connecting working, living and learning in London's 'New East', ELVET Programme Research Briefing 3. London: Centre for Post-14 Education and Work, UCL Institute of Education.
- Kersh, N. (2015). Rethinking the learning space at work and beyond: The achievement of agency across the boundaries of work-related spaces and environments. *International Review of Education*, 61(6), 835–851. <https://doi.org/10.1007/s11159-015-9529-2>
- Kornelakis, A., & Petrakaki, D. (2020). Embedding employability skills in UK higher education: Between digitalization and marketization. *Industry and Higher Education*, 34(5), 290–297. <https://doi.org/10.1177/0950422220902978>
- Prokou, E. (2008). The Emphasis on Employability and the Changing Role of the University in Europe. *Higher Education in Europe*, 33(4), 387–394. <https://doi.org/10.1080/03797720802522593>
- University's Integrated Report, 2020 (2020). Salford Integrated Report. <https://www.salford.ac.uk/sites/default/files/2020-12/IntegratedReport2020.pdf>
- Spours, K., & Grainger, P. (2018). A Social Ecosystem Model: A new paradigm for skills development? [Digital scholarly resource]. <https://t20argentina.org/wp-content/uploads/2018/07/T20-Social-Ecosystem-Model-revised-KS-2.pdf>
- Tacchi, J., & Tuft, T. (Eds.). (2020). *Communicating for change: Concepts to think with*. Palgrave Macmillan.
- Tuomi-Gröhn, T., & Engeström, Y. (Eds.). (2003). *Between school and work: New perspectives on transfer and boundary-crossing* (1st ed). Pergamon.

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Krichewsky-Wegener, L. & Brück, L. (2023). Using smartphones for learning: A case study on the impact of digitalization on apprenticeship in the informal sector in Ghana. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 237–244). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7821856>

## Using Smartphones for Learning: A Case Study on the Impact of Digitalization on Apprenticeship in the Informal Sector in Ghana

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### Abstract

Increased use of smartphones in everyday life in Sub-Saharan Africa is commonly presented as an opportunity for learners in the informal sector to gain access to new knowledge and skills. At the same time, it is associated with the risk of creating new dynamics of marginalization (digital divide). Based on a case study conducted in Ghana, the aim of this paper is to gain a better understanding of how digital technologies affect patterns of inequalities in the particular context of apprenticeships in the informal sector. The analysis of interviews conducted with Mastercraft Persons and apprentices follows the expansive learning theory in the tradition of the cultural-historical activity theory developed by Engeström. As result, three patterns of change of the learning and training culture in workshops of the informal sector are identified, which have different effects on the digital divide between apprentices who have a smartphone and those who don't.

### Keywords

informal apprenticeship, digitalization, expansive learning theory

### 1 Context

In the context of development policy, digitalization is commonly presented as a major opportunity to increase the access to and the quality of education and training, especially for vulnerable groups in society (e.g. EC, 2017). Critical voices, however, point to the risks associated with it in terms of “a further widening of the digital divide (along North-South, rural/urban, affluent/poor, powerful/marginalised and gender lines)” and “increasing educational and social inequities” (Langthaler & Bazafkan, 2020, p.16). The aim of this paper is to gain a better understanding of how digital technologies affect patterns of inequalities in the particular context of apprenticeships in the informal sector. It is based on a case study conducted in Ghana in August 2022.

In Ghana, as in many other countries in Sub-Saharan Africa, apprenticeships in the informal sector are the main avenue for young people to develop vocational skills, especially for those with no formal education or lacking sufficient capital to participate in formal vocational education and training (VET). Apprenticeships in the informal sector are not



regulated by the state and are based exclusively on work-based learning. Learning and training practices are embedded in a social and cultural context characterized by a strong hierarchy between Mastercraft Persons (MCP), chief, senior and junior apprentices. Learning is problem-based and can be described well with the model of legitimate peripheral participation into a community of practice (Lave & Wenger, 1991). Asking questions to more experienced apprentices and to the MCPs is usually the apprentices' main strategy for building new knowledge, as books or other media are rarely used in apprenticeships (Allah-Mensah & McGrath, 2021; Jaarsma et al., 2011). Smartphones, as the main devices used by the population in Sub-Saharan Africa to access the internet, can be a transformative factor by providing both MCPs and learners alike access to new sources of information and new forms of communication..

While mobile phones are widespread in Ghana, with 130 mobile phone subscription per 100 inhabitants, the share of internet users reached 58% of the population in 2020 and according to our data, not every apprentice or MCP has access to a smartphone or let alone laptop (ITU, 2022). Inequalities related to the use of smartphones can be traced back in particular to the costs of mobile data and the lack of literacy and basic digital skills, but also in some cases to parents not wanting their adolescent children to be exposed to other viewpoints or religious beliefs. This paper addressed the following research question: How are smartphones used as learning devices in the context of apprenticeships in the informal sector and to what extent can we observe effects on patterns of social exclusion?

## 2 Approach

### 2.1 Theoretical framework

The theoretical framework used to describe and understand the disruptive potential of digital technologies for learning in the informal sector is based on the expansive learning theory in the tradition of the cultural-historical activity theory (Engeström & Sannino, 2010). Key premises of this theory resonate well with core characteristics of the study object:

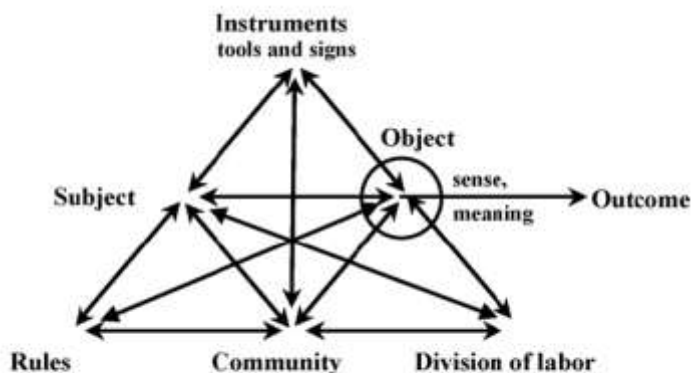
- the focus on *communities* as learning subjects: learning in the informal sector strongly relies on social interactions between MCPs and apprentices, who for a community of practice;
- learning is about *transforming and creating culture*: the use of smartphones for learning purposes can be considered as a change affecting the learning and training practices and thus the learning/training culture specific to apprenticeships in the informal sector;
- learning is understood in a broad sense, not only as an intentional and unilateral transmission of skills and knowledge, but also as a more or less implicit process of practice-related knowledge creation: “the learners construct a new object and concept for their collective activity, and implement this new object and concept in practice” (Engeström & Sannino, 2010, p.2). As in the case of smartphones being introduced at the workplace, there is no right or wrong way to use them, but rather a challenge of inventing new usages and associated skills: “Nobody knows exactly what needs to be learned. The design of the new activity and the acquisition of the knowledge and skills it requires are increasingly intertwined. In expansive learning activity, they merge” (Engeström & Sannino, 2010, p.3).

We intend to use the model of activity systems as heuristic framework to describe how smartphones emerge as a new “instrument” for learning and training in the context of apprenticeships in the informal sector.



**Figure 1**

General model of an activity system (Engestrom, 1987, p. 78)

**Fig. 1.** General model of an activity system (Engeström, 1987, p. 78).

Based on this theoretical framework, the research question can be reformulated: How are learners who do not own a smartphone included in the expansive learning process and what are the implications of the newly emerging learning cultures for them in terms of participation and access to skills?

## 2.2 Methodological approach

The case study is based on the re-analysis of data collected in Ghana in the framework of a research assignment for the German development cooperation in August 2022.<sup>17</sup> The assignment aimed at exploring the use of digital devices in apprenticeship in the informal sector in order to identify the potential for skills development interventions in Sub-Saharan Africa. Ghana was chosen as a case study because apprenticeship is well developed in the informal sector and the use of smartphones is widespread. Data was collected from MCPs and apprentices in three different trades: dressmakers, beauticians and hairdressers, and electricians. Data collection included four focus groups with MCPs as well as group interviews conducted with apprentices in 14 different workshops in Accra and the Northern city of Tamale. A total of 19 MCPs (47% women) and 61 apprentices (67% women) were interviewed. All the MCPs owned at least a smartphone, a few of them also a laptop or a tablet. Among the apprentices, 70% owned a smartphone and 11% a feature phone, with the latter allowing them to access pre-installed mobile applications such as WhatsApp. The remaining apprentices did not own a device that would enable them to access the internet.

The focus group and interview guidelines were focusing on the use of digital devices for working and for learning/training purposes, also addressing the challenges and opportunities associated with these use cases. The interviews and focus groups took place mainly in English, a local expert translating in some cases in Twi when interviewees did not feel fluent enough to answer questions in English.

The first step of the analysis followed the methodology of qualitative content analysis developed by Kuckartz (2014) in order to structure the material. In a second step, the activity system model was used to re-organise the data and identify patterns of social integration of apprentices not owning any digital device.

<sup>1717</sup> The research question addressed in this paper was not part of the ToRs for this assignment. The results presented here engage the sole responsibility of the authors. They have not been published elsewhere.

### 3 Results

The expansive learning theory goes beyond Lave & Wenger (1991), not limiting social learning processes to the unidirectional movement from incompetency to competency implied in the legitimate-peripheral-participation model. Instead, it is much more likely that apprentices and MCPs alike, by their respective use of smartphones and conceptions about this device, shape the learning/training practices. Therefore, two interacting activity systems were defined, the apprentices' and the MCP's system, in order to describe how they are challenged by the emerging use of smartphones as learning devices (see table 1).

**Table 1**

Activity systems describing learning and training in apprenticeships in the informal sector in Ghana

<b>"Nod"</b>	<b>Apprentices</b>	<b>MCP</b>
Subject	Apprentices (seniors, juniors)	MCP
Object	Learning	Training/Teaching
Rules	Hierarchic relationships between MCP and senior/junior apprentices: <ul style="list-style-type: none"> <li>- learner asks questions to senior/MCP and learns through participant observation, imitation</li> <li>- learner depends on MCP to get a certificate and to get prepared for taking national examinations</li> <li>- learner pays training fees to the MCP.</li> </ul>	Hierarchic relationships between MCP and apprentices: <ul style="list-style-type: none"> <li>- MCP assigns tasks to apprentices and teaches new skills problem-based;</li> </ul> Qualification standards, as far as apprentices are prepared for national examinations; Need to safeguard a "good reputation" in order to continue attracting apprentices, who represent a cheap working force.
Community	Peers, possibly adults outside the workshop practicing the trade in their family	Other MCPs, trade association
Instruments	Paper and pencil, sometimes books, working tools	Paper, sometimes board, working tools
Division of labour	Apprentices work in production depending on their skills level, seniors train juniors	MCPs work in production, supervise seniors and teach selected skills themselves (e.g. the "basics" and /or most advanced skills)

Smartphones are new instruments introduced in the two activity systems by individuals (MCP and/or apprentices), complementing and to some extent replacing the "traditional" instruments (e.g. paper and pencil, books, working tools).

Smartphones have a potentially "disruptive" character clearly identified in the interviews by both MCPs and apprentices insofar as they are:

- challenging the traditionally hierarchic learning culture, where juniors learn from seniors and MCP, by opening up a new avenue to skills development (e.g. video tutorials): this is expressed in the debates among learners whether it is possible to learn without a MCP, or the fear expressed by MCP to have their authority questioned by learners and to fail to attract enough apprentices because apprentices could think that they can learn the trade online by themselves;
- interfere with the learning/training process if they are used as entertainment devices or without sufficient experience or digital literacy to distinguish between good and bad quality content: some MCPs complain about that, while apprentices admit that they look at series, chat with friends etc. during working hours or miss on sleep to use

- “midnight bundles”, cheap data bundles offered between midnight and 5 am to allow them affordable downloading of videos;
- creating conflicts and frustrations among apprentices between those who own a smartphone and those who don't;
- opening up the communities to include more external members, thus increasing the competition among MCPs to attract “good” apprentices, putting pressure on them to take care of their image or reputation as trainers.
- questioning the role of MCPs in determining the content of learning tasks and progression path.

Based on the qualitative content analysis of the interview data, we identify three typical ways of dealing with these disruptions by integrating or banning the use of smartphones into the learning/training activities. Each of these typical patterns has implications for reduction or widening social inequalities by contributing (or not) to the skills development of disadvantaged learners.

A first pattern, which was the most common in the workshops visited, integrates smartphones into learning and training practices by ensuring access for disadvantaged learners and inventing new forms of collective learning. As a result, the digital divide between those who own a smartphone and those who do not is reduced to some extent.

An example of integrating smartphones into teaching practices is provided by an electrician in Accra. He uses videos occasionally, for instance to demonstrate what he cannot show in practice:

*“Respondent: For instance I tell the apprentices to look at a video on how to use a fire extinguisher when it comes to teaching health and safety.*

*Interviewer: On what smartphone do they watch the video?*

*Respondent: Usually they look at the video each on his own smartphone. If someone has no smartphone, he will look on the one of another apprentice. Or I will show it on my own or we look on a screen if there is one in the shop [i.e. one which was brought for repair]”*  
(Electrician MCP, Accra)

In all three trades, there are examples when learning with smartphones becomes a collective activity, with the MCP taking part alongside the apprentices:

*“Sometimes Madam shows a new style on her smartphone. We discuss with her how it is made – because often you don't see the back, or the details. Last week we learned to make a corset, with the help of videos.”* (Dressmaker apprentice, Accra)

This type of collective learning can be linked to changes in customer demand and working practices brought about by digitalization. When clients request for the replication of models found on Instagram or Pinterest, or when they bring in new types of electrical devices to be repaired, MCPs turn to the Internet to keep up with new techniques and solve unfamiliar problems. Social media and YouTube are the main sources of inspiration and know-how. Gathered around a smartphone or a tablet to watch a video or examine a picture, MCPs and apprentices form a community of practice that can be considered to extend beyond the workshop to integrate those who share their experience on the internet.

While the potentially distracting character of smartphones is acknowledged, some MCPs set rules to restrict the use of them for learning purpose only:

*“It is a work place rule to put phones away and only revert to them when we need to refer to some material or make an urgent call. For instance, when Madam brings a picture or video to discuss it together.”* (Dressmaker apprentice, Accra)

In some cases, MCPs give access to their own digital devices, provide a hotspot or share videos via Bluetooth to facilitate access of all their apprentices to digital learning content. In other cases, or in addition to this, apprentices also share their smartphones. In a hairdresser shop in Tamale, apprentices who own only a so-called “yam phone” (i.e. simple mobile phone without

Internet access) are allowed to use the smartphone of their colleagues when sharing free mobile data bundles with them:

*“Interviewer: How do you use your phones for work?”*

*Respondent 1: We browse the internet for new styles and practice what we see on each other.*

*Respondent 2: We those with yam phones usually get free data from service providers, so we sometimes put our SIM cards in the smartphones of our colleagues so we can do our research.”* (Hairdresser apprentice, Tamale)

Through these practices, apprentices who do not have a smartphone are not completely deprived of the benefits of accessing Internet for learning. They can learn basic digital skills, and some interviewees reported how senior apprentices had taught them to use YouTube to find “do-it-yourself”-videos to learn.

A second pattern, which remains almost a theoretical construct in the Ghanaian case study, would be the ban of smartphones from the workshop in order to avoid the changes that digitalization might bring. This could be the result of an MCP seeing smartphones as a distraction, a mere entertainment device. While there were no examples of MCPs completely ignoring or rejecting digitalization, there were some critical voices among the MCPs, who emphasised the importance of practical skills and did not see themselves as responsible for teaching digital skills to their apprentices:

*“We have to train the trade skills, we are not here to train them to watch YouTube”* (Beautician, Accra)

As a consequence, learners do not experience any support to develop good learning strategies using the smartphone. If they do not own a device, they might lack any opportunity to use the Internet as a learning resource.

A third, pattern, situated between those two extremes, is characterized by a “laissez-faire” approach, tolerating individual use of smartphones at the workshop, but without integrating it into collective learning practices. For example, in one dressmaker workshop in Accra, of seven apprentices and one former apprentice, who had come to participate in the interview, only one did not own a smartphone. While the MCP owned a laptop, he didn’t use it actively for teaching, nor did the senior apprentice, who said:

*“When I don’t know how to help, I tell the person to ask the Master”* (dressmaking senior apprentice, Accra)

While the youngest apprentice, who did not own a smartphone, said that *“nobody taught [her] something using the phone”*, some apprentices reported looking for videos and pictures in order to learn about new trends and techniques by themselves.

For all the apprentices interviewed, the cost of mobile data was mentioned as the main barrier to using smartphones as learning devices. In the workshop mentioned above, the MCP used to provide access to mobile data, but this was not (only) used for learning purposes, as reported by his apprentices:

*“The MCP sometimes buys data and you can use Wi-Fi if you contribute – but we used it too much to watch videos, so it isn’t that regular anymore.”* (dressmaking apprentice, Accra)

As neither the MCP nor the senior apprentices actively use smartphone for teaching, apprentices not owning a smartphone do not access the Internet for learning. Using digital devices for learning is left to the responsibility of individual learners, who may lack the skills or motivation to do so. As a result, the digital divide risks widening.

#### 4 Conclusion

A comparison of the three patterns of use of digital devices for learning and teaching in apprenticeship in the informal sector identified in this case study highlights the importance of embedding the use of digital technologies in social practices, taking into account the key role of MCPs in making the smartphone an *inclusive* learning device. When used as a tool for collective learning, smartphones provide apprentices with access to learning resources and an extended community of practice that goes beyond the boundaries of their workshop. Many examples were found, where apprentices who did not own a smartphone were included in the learning process, limiting the risk of a digital divide and subsequent social exclusion. However, in cases where MCPs have a negative attitude towards digital technologies, or simply ignore their learning potential, there is a high risk that learners deprived of internet access will be marginalized. As for those who can use their smartphone to access the internet, they may not be able to take full advantage of the learning potential of digital technologies due to a lack of digital learning skills and support to apply what they find on the Internet in practice.

The research methods used for this paper have a series of limitations. Among these, the most important is probably the loss of information induced, in some interviews, by the need to translate questions and answers. Moreover, a bias could exist because of the recruitment of interviewees. The MCPs were contacted via trade associations. As they were all active members of this trade association, they seemed particularly aware of skills development issues. This might explain that, overall, they had a positive attitude towards digitalization and were interested in using smartphones for teaching and learning. Different strategies could be used to further diversify the sample of interviewees for further studies. Another limitation of the study is that no data was collected to assess precisely the digital skills of MCPs and apprentices. A digital skills gap was therefore assessed only on the basis of the interviews. Further research is needed to better grasp all the consequences of digitalization in the informal sector in Ghana and other Sub-Saharan African countries.

#### References

- Alla-Mensah, J., & McGrath, S. (2021). A capability approach to understanding the role of informal apprenticeship in the human development of informal apprentices. *Journal of Vocational Education & Training*, 1–20. <https://doi.org/10.1080/13636820.2021.1951332>
- Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research*. Orienta-Konsultit Oy.
- Engeström, Y., & Sannino, A. (2010). Studies of expansive learning: Foundations, findings and future challenges. *Educational Research Review*, 5(1), 1–24.
- European Commission (EC) (2017). *Digital4Development: Mainstreaming Digital Technologies and Services into EU Development Policy*. <https://digital-strategy.ec.europa.eu/de/node/4100>
- Jaarsma, T., Maat, H., Richards, P., & Wals, A. (2011). The role of materiality in apprenticeships: The case of the Suame Magazine, Kumasi, Ghana. *Journal of Vocational Education & Training*, 63(3), 439–449. <https://doi.org/10.1080/13636820.2011.572173>
- International Telecommunication Union (ITU) (2022). *World Telecommunication/ICT Indicators Database*. <https://datahub.itu.int/>
- Kuckartz, U., & McWhertor, A. (2014). *Qualitative text analysis: A guide to methods, practice & using software*. SAGE.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511815355>

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Kühn, I., Ambrosi, V. & Kaune, P. (2023). Women in information and communication technology: Creating opportunities for career changers towards IT and IT-mixed professions. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 245–252). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7821871>

## Women in Information and Communication Technology: Creating Opportunities for Career Changers Towards IT and IT-Mixed Professions

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### Abstract

**Context:** Women are underrepresented in IT at all professional levels. This fact stands contrary to the growing capacity shortage within the whole sector. Different factors hinder women to enter IT professions, such as a lack of qualification, care and family tasks or a kind of clichés that hinder the industry being attractive. A high percentage of part-time employments or a significant gender-pay gap are one aspect of the disadvantage, another comes from missing digital-confidence and, through that, a lack of participation opportunities for women. A way to challenge the future skills shortage is to encourage and enable marginalised women to take up careers in the IT sector. This research aims to identify relevant factors that support this process. **Approach:** In focus groups with IT companies and regional employment agencies were carried out. Moreover, women from the target group at two different stages of professional development were inquired. The data was analysed following the social area approach in order to identify relevant factors in the living and potential learning environment of the target group. **Findings:** Results show a number of hindering factors, such as a lack of structures within companies or public organisations to either professionally involve newbies in IT or counseling for women interested in the sector. Women are both, afraid of and highly engaged in trying. Other promising factors are the will of companies to involve more women and the readiness of public bodies to contribute.

**Conclusions:** Solutions to reach more women for IT can be seen in creating networks including economic and public sector, organised exchange, expansion of counseling and specific transition education offers and transparency of pathways and joint promotion campaigns. The research is limited by a small sample.

### Keywords

women in IT, IT sector, vocational education and training, continuing vocational education and training, social area, career changing



## 1 Problem statement and research question

The global Information and Communication Technology (ICT<sup>18</sup>) sector is expected to grow at a compound annual growth rate of 6 % until 2026 (GlobalData, 2022). Despite the stable growth of the sector, its biggest challenge is the current and future lack of skilled workers (Bayer et al., 2022). Until 2030, a growing need for professionals is predicted especially in the industry 4.0 sector (Hall et al., 2016) and the field of Software as a Service (SaaS) (GlobalData, 2022). In Germany, half of the population has only basic digital skills (54 % in 2021; *ibid.*). Furthermore, a continuous underrepresentation of women in the IT sector is reported, not only for the German context (Spieler & Both, 2021), but worldwide (UNESCO, 2017).

Following Friemer & Warsewa (2020), the number of women in the IT sector stagnates at around 28% in the region of Bremen, Germany. They find that companies have difficulties to fill vacancies for IT specialists, while there is enough specialised training in the region (Friemer & Warsewa, 2020). Apart from that, women face a lot of disadvantages related to the labour market, such as the substantial gender pay gap (Hall et al., 2016; Chamber of Employees, 2022a) or, for the region of Bremen, high rates of part-time employments (about 74%; Chamber of Employees, 2022b; Brück-Klingeberg & Althoff, 2019).

This raises the question of reasons for and solutions towards a reduction of the mentioned underrepresentation. Research led by Spieler and Both (2021) indicates various motivations for women in Western cultures not to choose a career in IT, such as a lack of qualification, care and family tasks or a kind of cliché that prevents the industry from being perceived as attractive (Spieler & Both 2021). Moreover, the European Institute for Gender Equality in Lithuania (EIGE) reports that a lack of digital-confidence is a major barrier to the use of IT (EIGE, 2019). Another approach describes the character of the IT sector as excluding women through male-dominated re-construction mechanisms, which would contribute to a highly gender-specific view of problems to be solved (Maier-Rabler, 2022).

Former research on the transition of women into the IT sector was conducted e.g., by Ahuja (2002). She identified certain factors relevant at different levels of career stages and differs social and structural factors affecting women's careers in IT. Social factors, in her understanding, are the internal and external view of women problematising stereotypes on the one hand and, as a result, self-selection based on gender bias, which leads women into gender-typed professions (Ahuja, 2002). Structural factors are described as the limitations created by organisations. Hampering factors are work place conditions that do not fit the life reality of women, especially with family duties (e.g., long travels or working days and permanent continuing training). A lack of role models and mentors are also seen as part of structural factors. Ahuja identifies approaches to enhance the situation of women towards IT in the reduction of stereotypes, flexibilization of work structures, the critically reflected use of power at higher positions could enhance career aspirations. Moreover, role models and mentoring programs are mentioned as promising.

Other approaches come from Latin America. García-Holgado et al. (2016) aim to attract women for the IT sector by improving the processes of attraction, access and guidance in relevant programs (García-Holgado et al., 2016). In the focus of their research is the measurement of gender equality in Science Technology Engineering Mathematics (STEM) programs.

Informatics Europe (2016), a cross-national working group at European level, provides practical guidelines to engage women for IT by addressing and promoting them in a particular

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<sup>18</sup> The Information Technology (IT) and Information and Communication Technology (ICT) are different by scope, which is not always reflected in literature. The F.IT project refers to the local IT-sector, accordingly, the abbreviation IT is used for this research.



way (Bujdosó, 2016). Though the mentioned studies can only give an impression of the discourse, it seems that research in this field is limited from different perspectives: firstly, most of the studies focus on women at high professional level with academic perspective. Secondly, it shows that there is no overarching, generally effective solution so far, which is why research projects are likely to start with a direct regional reference. A third limitation appears to be the discussion of disadvantaged women mainly at the level of lacking social participation in everyday life, but not with direct regard to their potential for the local labour markets.

It is striking that the limited debate excludes the perspective of disadvantaged groups such as women without academic degrees. Therefore, the project “F.IT Frauen in IT [Women in IT]”<sup>19</sup> (duration: 09/2020–12/2023) focuses on this target group and their potential in the IT industry in Bremen. An important part of the project’s research is presented here and is informed by the following two research questions: *What factors within a social area would enable the specific group of women without academic degrees to enter the IT sector? What does that mean for the creation of specific (VET) offerings aimed at women to entering the IT-sector?*

## 2 Theoretical Framework

For this research, it is important to emphasize that equality does not mean gender neutrality (Noll, 2020). This respects the specific perception of women concerning the value and occupational opportunities of IT in relation to their individual perspective. Furthermore, the debate often focuses on female STEM and IT professionals, thereby excluding the perspective of vulnerable groups, such as women without academic degree. By focusing on this target group and their potential in the IT industry, the F.IT project aims to enrich the discourse.

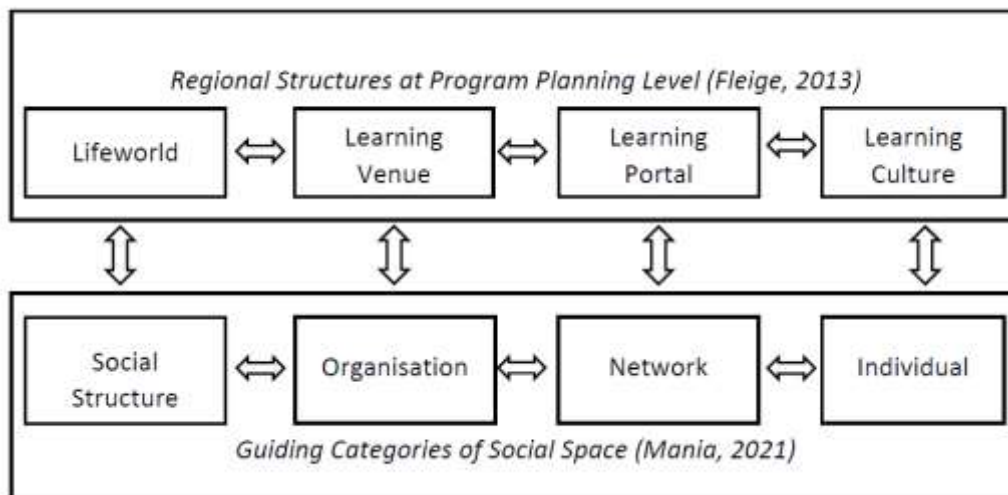
In order to understand, why some women choose a career in IT and why others do not, it is therefore necessary to reconstruct the conditions and environments these women live in. The study is based on the social area orientation approach (Fleige, 2013; Mania, 2021) that aims to improve the addressing of allegedly educationally disadvantaged groups (Mania, 2021). To identify challenges and opportunities of all actors, it respects traditional dimensions of program planning at the regional level (Fleige, 2013) and relates dimensions of the social orientation with those of the social area (Mania, 2021), termed the SONI-approach (Früchtel et al., 2010).

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<sup>19</sup> The project is funded by the Senator for Economic Affairs, Labour and Europe Bremen, co-financed by the European Union.

**Figure 1**

Integrated categories of the social area orientation approach (own presentation, following Fleige 2013 and Mania, 2021)



Relevant for this paper are the categories “social structure” (S), “organisation” (O), “network” (N) and “individual” (I). Figure 1 visualizes the structure of the theoretical frame. This approach helps to systematically structure different perspectives on a social area to identify conducive conditions that support women enter the IT sector. The *social structure* (S) addresses the societal frame as a structure for empowerment that illuminates the structural origins of problems and inequalities. The *perspective of organisation* (O) highlights organisational structures, internal processes and professional self-conception. The *network dimension* (N) picks up the topic of resources and opportunities of the social area and the potentials of the inherent social capital. The *individual level* (I), finally, comprises individual factors, such as interest, experiences, attitudes, expectations or life situation (Mania, 2021).

The program planning level approach targets the identification of the educational interests present in a geographically delineated space and how they can be stimulated through the development of the (physical) learning environments. Mutual search movements between (educational) institutions and potential learners aim participation. The systematic analysis of the social area of a region is the base for the development of future learning activities. These efforts specially focus groups at risk of exclusion (Fleige, 2013). The dimensions lifeworld (social cultural factors), learning venue (learning location), learning portal (participation through fitting education offers) and learning culture (institutional embedding of education offers) describe specific elements of how the specific conditions of a region can be applied to control the development of education offers (ibid.).

In the context of this study, the target group consists of women assumed to be disadvantaged against the background of an industry because they do not have an academic degree and, if they are older, may have a higher effort to balance professional development and family or care responsibilities. This paper focuses on the dimensions of SONI. The program development approach, within this context, serves to classify the results by the evaluation of local conditions for the potential learning environment.

### 3 Methods

This study employs a combination of focus groups with experts (Tausch & Menold, 2015) and descriptive quantitative inquiries of women interested in working in the IT sector (Döring & Bortz, 2016).

Experts within this study are representatives of IT companies (n=4; WS1), from public institutions with an administrative mandate and from a local VET and counselling agency (n=7; WS2). From the side of the target group, women from two different educational courses participated in the study, coming from either an IT orientation course or from an occupation course in the field of IT at a vocational school. Women in the first group were aged between 30 and >60 years (n=25) and in the second group between <18 and 28 years (n=12). The two groups of women answered two different online questionnaires aiming to identify specific life circumstances and motivational factors concerning their professional orientation. Women participating in the orientation course answered questions regarding their former career and job ambitions (OS1), while those at the VET school were asked about their worries and coping approaches during the decision process (OS2). Surveyed companies were asked about the requirements needed to enter the IT sector (WS1). The local public entities discussed possibilities to address more women interested in IT (WS2). Both focus groups were documented in detail. In order to scrutinize the findings from the online surveys, two currently career changing women (I1; I2) were interviewed during their internships, as well as their (male) internship supervisors (I3; I4). For this analysis, the first two interview documentations are used.

#### 4 Results and discussion

The first research question aims to identify *factors within a specific environment that would enable the women without academic degrees to enter the ICT-sector*. Selected results are presented according to the theoretical frame of the social area approach (Mania, 2021).

Findings regarding the *social structure* (S) of the region show a lack of transparency towards existing opportunities for women to move into IT or IT-related fields. Classic career paths dominate entry procedures (WS1). The regional employment agency as a public player seems to be an important door opener when it comes to attracting women to the IT sector (or not), provided that the women present themselves to the employment agency at all (WS2). Women state that local options are not visible enough. They rather come to offers through their own research work and after a long odyssey of search and decision-making processes (I1; I2; OS2).

Results for the *organisation perspective* (O) are that the external image of IT companies is very much based on the fact that people take advantage of (training) offerings on their own initiative and strive independently for individual professionalisation processes (entry by own engagement, OS1; OS2). If there is little or no prior experience, companies prefer apprentices over internships because they can get a better return for their efforts (WS1). If individuals do not come across opportunities in IT on their own initiative, counselling through the regional employment agency is an option (WS2; OS1). The agency is able to provide financial support for continuing education in IT. Among others factors, these efforts are limited by the potential in identifying interested women for continuing education courses or companies. Companies describe trainees that aim at a career change as highly engaged, but not sufficiently qualified for being integrated directly into ongoing project work. They require a rather focused than broad qualification (I3; I4). Overall, the sector reports a high interest of including women (WS1; I3).

For the *network dimension* (N), the attitude of the companies with regard to the design of employee-friendly workplaces, as well as numerous ideas for designing a possible entry via internships (WS1), indicate that the industry is open to future professionals, also from the target group of female career changers without academic degree. Moreover, the landscape of professionalization offers consists of a multitude of education providers within the field (WS2). Interviewed women mentioned an improvement of cooperation between public authorities (e.g., coordination between parental allowance office and employment agency; OS1) or a more direct approach by the companies desirable (OS2).

Finally, results at *individual level* (I) show that companies expect prior knowledge from their applicants (WS1; I3; I4). Additionally, they are concerned that women changing their careers at a later point in life feel under pressure and, thereby, challenge the “social aspects” of a company, e.g., by demanding special work-life-balance offerings (WS1). Women interested in IT report both, a certain fear of having worse chances on the labour market if they do not change careers and the fear of not being able to meet the requirements for apprenticeships or further education (OS2). However, they state that open-mindedness and empowerment help to motivate themselves (OS1; I1; I2). Technical experience in the past appears helpful in this regard (I1; I2). Remarkable is the often-negative association of further education with pressure from public administration authorities.

The results lead to a number of factors relevant to enabling women without academic degree to enter the IT sector. IT companies could *change their hiring strategies*, e.g., towards more qualified entry-level offers. Moreover, they are obliged to *clearly formulate the requirements* for future employees and, for example, to allow informally acquired skills to be tested in practice. Both approaches would contribute to a visibility at a lower level. In addition, it seems promising to implement internal structures or external cooperation to create *supporting structures* for IT beginners. A *clear statement on gender equality* or work-life-balance could attract those with care duties.

As a key-player between target group and IT-sector, the regional employment agency might adapt resp. extend its *advisory services* to draw women’s attention to the IT sector. The provided financial support must ensure that female candidates do not experience any blatant cuts in their quality of life.

The greatest assets of women who want to enter the IT sector is their *willingness to learn* as well as their *motivation*. They report self-confidence in dealing with their fears about their future and the demands of a job in IT.

The second research question asks for concrete VET offerings to support women to enter IT. It is noted that the synchronization of companies and local employment agencies is a challenging, but necessary task. This could be supported by VET through the creation of sustainable networks (including suitable formats of exchange) with low-threshold access for the target group. Regarding the women’s situation, especially CVET offers focusing on empowerment and sector-related knowledge might also be helpful. To reach more interested women, an inviting and area-wide joint promotion campaign of all actors from economy, public administration and VET appears promising.

## 5 Conclusion

This study identified the following factors enabling women without academic degrees to enter the ICT sector: (1) transparency of job requirements, (2) transparency of career pathways provided by all network actors, (3) a differentiated and sensitizing range of consulting services in public institutions, (4) creation of a work-life-balance not only in work contexts, but also in qualification processes and, finally, (5) appreciation of the women’s motivation and their willingness to learn as social capital. These factors can be accompanied by specific efforts at the program planning level, such as the creation of sustainable networks including formats of exchange, the creation of (C)VET offers that empower women to apply for the IT-sector and a joint, overarching public relation campaign.

Limitations are given by small sample sizes, the use of protocols as the data basis, the lack of availability of participants for interviews and workshops and the difficulties in finding women willing to enter IT.

Future research might aim to validate the presented results by enlarging the sample of women or by targeting nationwide federal employment agencies or enterprises in contrast to only locally operating agents. In addition to that, the importance of education and counselling

providers who serve as a link between women, public bodies and companies, could be examined. The development of supporting education offers in the region might be a research subject at program planning level. Finally, general and specific job requirements could be surveyed, e.g., through needs and work process analyses. Overall, continuing research on women's pathways in IT is needed, since it seems that there is not that one solution for the problem, but a number of solutions for different compositions of conditions.

## References

- Ahuja, M. (2002). Women in the Information Technology Profession: A Literature Review, Synthesis and Research Agenda. *European Journal of Information Systems* 11(1), pp. 20-34. [10.1057/palgrave/ejis/3000417](https://doi.org/10.1057/palgrave/ejis/3000417)
- Arbeitsnehmerkammer Bremen [Chamber of Employees Bremen] (2022a). Einkommen – Verdienstunterschiede, <https://www.arbeitnehmerkammer.de/politik/statistik/frauen.html#c4338>
- Arbeitsnehmerkammer Bremen [Chamber of Employees Bremen] (2022b). *Beschäftigungsverhältnisse und Frauenanteile*. <https://www.arbeitnehmerkammer.de/politik/statistik/frauen.html#c4338>
- Bayer, F., Pauly, B., & Wohlrabe, K. (2022). *Branchen im Fokus: ITK-Branche*. <https://www.econstor.eu/bitstream/10419/250866/1/ifo-sd-2022-02-p56-59.pdf>
- Brück-Klingberg, A. & Althoff, J. (2019). *MINT-Berufe: Strukturen und Trends der Beschäftigung in Bremen* [STEM professions: Structures and trends in employment in Bremen] 2019 / 1. Nürnberg: Institut für Arbeitsmarkt- und Berufsforschung.
- Bujdosó, G.; Ghezzi, C.; Hardman, L.; Hillston, J.; Jaccheri, L.M.; Kirchner, H. & Pereira, C. (2016). More women in informatics research and education, <https://www.informatics-europe.org/dl/more-women-in-informatics-research-and-education>
- Döring, N., & Bortz, J. (2016). *Forschungsmethoden und Evaluation in den Sozial- und Humanwissenschaften*, 5th ed., Heidelberg: Springer Verlag. 10.1007/978-3-642-41089-5
- European Commission (2022). *Digital Economy and Society Index (DESI) 2022 – Germany*. <https://digital-strategy.ec.europa.eu/en/policies/countries-digitisation-performance>
- European Institute for Gender Equality (EIGE) (2019). *Women in the ICT sector*. <https://eige.europa.eu/publications/work-life-balance/eu-policies-on-work-life-balance/women-in-ict>
- Fleige, M. (2013). Weiterbildung im Sozialraum: Kategorien für die Modellierung sozialräumlicher Bildungspartizipation in erwachsenendidaktischer Perspektive [Continuing education in social space: Categories for modelling socio-spatial participation in education from an adult didactic perspective]. *DIE Zeitschrift für Erwachsenenbildung* 2013(3), pp. 45–47. <https://www.die-bonn.de/zeitschrift/32013/weiterbildungseinrichtung-01.pdf>
- Friemer, A. & Wasserwa, G. (2020). Struktur und Entwicklungsperspektiven der IT-Branche im Land Bremen [Structure and development prospects of the IT sector in the state of Bremen]. Bremen: Institut Arbeit und Wirtschaft (IAW). <https://doi.org/10.26092/elib/1125>
- Früchtel, F., Cyprian, G., & Budde, W. (2010). Sozialer Raum und Soziale Arbeit: Textbook: theoretische Grundlagen (2.Aufl.) [Social Space and Social Work: Textbook: Theoretical Foundations]. Wiesbaden: VS. 10.1007/978-3-531-92235-5\_1
- García-Holgado, A., Camacho Diaz, A., & García-Peñalvo, F. J. (2019). Engaging women into STEM in Latin America: W-STEM project, Proceedings of the Seventh International Conference on Technological Ecosystems for Enhancing Multiculturality (TEEM 2019) (León, Spain, October 16-18, 2019), ACM, New York, NY, USA, pp. 232–239.

- <https://doi.org/10.1145/3362789.3362902>
- GlobalData (2022). *Information Technology (IT) Sector ICT Market Size and Forecast* (by Country, IT Solution area and Vertical), 2022-2026. <https://www.globaldata.com/store/report/it-sector-ict-market-analysis/>
- Hall, A., Maier, T., Helmrich, R., & Zika, G. (2015). *IT-Berufe und IT-Kompetenzen in der Industrie 4.0*. Bonn: Bundesinstitut für Berufsbildung (BiBB). [https://ams-forschungsnetzwerk.at/downloadpub/it\\_berufe\\_kompetenzen\\_in\\_der\\_industrie\\_4.0\\_bi\\_bb2016.pdf](https://ams-forschungsnetzwerk.at/downloadpub/it_berufe_kompetenzen_in_der_industrie_4.0_bi_bb2016.pdf)
- Maier-Rabler, U. (2022). Frauen als Nicht-(Mit-)Gestalterinnen der digitalen Transformation. In N. Alm, P. C. Murschetz, F. Weder & M. Friedrichsen (Eds.), *Die digitale Transformation der Medien* (pp. 95–116), Wiesbaden: Springer Gabler. <https://doi.org/10.1007/978-3-658-36276-8>
- Mania, E. (2021). Sozialraumorientierte Bildungsarbeit für sogenannte „bildungsferne Gruppen“. *Hessische Blätter für Volksbildung* (HBV), 2021(4), pp. 31–40.
- Noll, N. (2020). Gender Equality ≠ Gender Neutrality: when a Paradox is Not So Paradoxical, After All, GenderSci Lab, <https://www.genderscilab.org/blog/gender-equality-does-not-equal-gender-neutrality>
- Spieler, B., & Both, G. (2021). Gender & Diversitäts-Aspekte in der Informatik: Beispiele aus der Hochschullehre. In F. Apelt, J. Grabow & L. Suhrcke [Eds.]: *Buzzword Digitalisierung. Relevanz von Geschlecht und Vielfalt in digitalen Gesellschaften* (pp. 69–90). Opladen; Berlin; Toronto: Verlag Barbara Budrich 2021.
- Tausch, A., & Menold, N. (2015). Methodische Aspekte der Durchführung von Fokusgruppen in der Gesundheitsforschung. Welche Anforderungen ergeben sich aufgrund der besonderen Zielgruppen und Fragestellungen? *gesis papers* 2015(12), Köln: GESIS - Leibniz-Institut für Sozialwissenschaften. [https://www.gesis.org/fileadmin/upload/forschung/publikationen/gesis\\_reihen/gesis\\_papers/GESIS-Papers\\_2015-12.pdf](https://www.gesis.org/fileadmin/upload/forschung/publikationen/gesis_reihen/gesis_papers/GESIS-Papers_2015-12.pdf)
- UNESCO (2017). *Measuring Gender Equality in Science and Engineering: The SAGA toolkit*, France: United Nations Educational, Scientific and Cultural Organization. <https://uis.unesco.org/sites/default/files/documents/saga-toolkit-wp2-2017-en.pdf>

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## Comparing Dualised Forms of Initial VET across Countries: Insights from the IEM Survey

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### Abstract

Worldwide, the importance of dualised forms of initial vocational education and training is increasing. Within the EU, in particular the high youth unemployment in parts of Europe has led to an increased interest in more practice-integrated initial VET. This has led to an introduction of new and expansion and/or modernization of existing apprenticeship schemes across the EU over the last decade (Cedefop und OECD 2021). Due to this relatively recent development, there are few systematic overviews of existing and new training programs with company-based components and only a few efforts to classify/typify this diversity (e.g. Markowitsch und Wittig 2020)<sup>20</sup>. The present paper aims to add to the literature through an exploratory analysis based on the BIBB International Expert Monitor survey on dualised forms of IVET firstly conducted in 2021/22. The expert survey was specifically designed to capture and monitor dualised forms of IVET over time. The analysis firstly provides an overview of dualised forms of IVET across the sampled countries based on a clear definition of dualised forms of IVET. It then moves on to explore similarities and differences between the countries on the basis of five selected indicators of attractiveness of dualised forms of IVET. Lastly, an analysis of the reported developments over time (in the past five years) is undertaken.

### Keywords

work-based learning, apprenticeship, expert survey, trends, challenges

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<sup>20</sup> One notable example is the Cedefop European database on apprenticeship schemes – see [Cedefop European database on apprenticeship schemes | CEDEFOP \(europa.eu\)](https://www.cedefop.europa.eu/en/database-on-apprenticeship-schemes).



## 1 Introduction

Worldwide, the importance of dualised forms of initial vocational education and training is increasing<sup>21</sup>. Within the EU, in particular the high youth unemployment in parts of Europe - as a result of the global financial crisis and the euro crisis - has led to an increased interest in more practice-integrated initial VET. This has led to an introduction of new and expansion and/or modernization of existing apprenticeship schemes across the EU over the last decade (Cedefop und OECD 2021, Markowitsch und Wittig 2020 and Grollmann und Markowitsch forthcoming). Due to this relatively recent development, there are few systematic overviews of existing and new training programs with company-based components and only a few efforts to classify/typify this diversity (e.g. (Markowitsch und Wittig 2020)<sup>22</sup>.

The present paper aims to add to the literature through an exploratory analysis based on the BIBB International Expert Monitor survey on dualised forms of IVET firstly conducted in 2021/22 which was specifically designed to capture and monitor dualised forms of IVET over time. The analysis firstly provides an overview of dualised forms of IVET across the sampled countries. It then moves on to explore similarities and differences between the countries on the basis of five selected indicators. Thirdly, an analysis of the reported developments over time (in the past five years), in order to uncover dynamic changes. Lastly, the current challenges and current trends in dualised IVET are highlighted.

## 2 Varieties of dualised forms of IVET

There is a substantial literature on defining characteristics of VET systems trying to provide VET system typologies at country level (for more comprehensive overviews see (Pilz 2016; Bosch 2016) and (Busemeyer und Trampusch 2019). Early attempts in comparative VET research proposed different criteria for the classification of VET systems such as the dominant venue where training takes place (Lynch 1994) or the role the state plays in the process of skill formation (Greinert 1988) and sociologist like (Allmendinger 1989), Blossfeld (1992), and Müller and Shavit (1998) brought into play criteria such as standardization (i.e. nationwide-shared standards), certification of vocational skills (which reliably represent the qualification), stratification (i.e. the hierarchy of occupational positions as well as the process of distribution of each generation into stratified occupational levels), and vocational specificity (extent to which education and training system provides education programmes with a high share of vocational content) as relevant criteria for classification of different VET systems (Pilz 2016; Rageth 2018). Busemeyer and Trampusch (2012) develop a distinct typology of skill formation systems along two dimensions: the degree of firm involvement in (initial) VET and the degree of public commitment of the state towards the provision and financing of VET, which allows them to identify four ideal type skill formation systems: a statist system (such as in Sweden or France), a collective system (such as in Germany, Switzerland and Austria), a liberal system (such as in the US) and a segmentalist skill formation system (such as in Japan). By combining the approaches Pilz (2016, 2017) derives at a more comprehensive typology taking into account the macro- (skill formation and stratification), meso- (standardisation) as well as the micro-level (practice of learning) which seems to be better in classifying a more diverse set of countries (e.g. including countries like China or India) than earlier approaches.

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<sup>21</sup> We prefer using the phrase dualised forms of IVET instead of work-based learning in VET, as the latter seems to be used more broadly. We also refrain from using the term apprenticeship because the notion has changed in practice and now covers various training systems differing from the traditional understanding (Markowitsch und Wittig 2020: p.2).

<sup>22</sup> One notable example is the Cedefop European database on apprenticeship schemes – see [Cedefop European database on apprenticeship schemes | CEDEFOP \(europa.eu\)](https://cedefop.europa.eu/en/cedefop/european-database-on-apprenticeship-schemes).



A peculiarity of this literature is that it tends to mainly include the same countries as examples and often lacks empirical verification at a broader level. Another problem of such country typologies is that they cannot capture the differences within skill formation systems in a country, as they inherently tend to focus on the dominant VET programme, thereby neglecting the often diverse VET landscapes within countries (Rageth 2018). In Germany for example, which is seen as one of the traditional dual VET systems, purely school-based VET exists (although at a lower level) alongside the dual VET schemes (Haasler 2020). Moreover, in some countries we might observe a shift towards more dual VET scheme/a dual VET system while in others, the importance of dualised forms of IVET might be diminishing, which implies that the VET systems in countries are (constantly) changing over time, some faster than others.

Within the European Union for example, apprenticeship schemes have been a policy priority from 2010 onwards with the Bruges communiqué (EU 2002) and the recent Osnabrück declaration (EU 2020) which led to an introduction of new and expansion and/or modernization of existing apprenticeship schemes across the EU over the last decade (Cedefop und OECD 2021). One approach to explain this development is the so-called feedback mechanism (see Markowitsch und Hebler 2018) which postulates, that a purposeful institutional procedure exists, which allows VET (sub-)systems to continuously renew themselves and adapt to emerging labour market needs (Markowitsch und Wittig 2020: 7). Another problem for comparisons are the often rather wide definitions of dualised forms of IVET which leads to the fact that often very different schemes and systems treated as similar are compared. Markowitsch und Wittig (2020: p. 19) for example point out, depending on the definition or sources between 30 to 80 different apprenticeship programmes can be identified in Europe<sup>23</sup>.

There are only few systematic overviews<sup>24</sup> of existing and new training programs with company-based components and only a few efforts to classify/typify this diversity (Markowitsch und Wittig 2020). We aim to add to the literature through an exploratory analysis of novel expert survey data on work-based learning in VET from the BIBB International Expert Monitor. We do so through a four step-approach: Firstly, we introduce a clear definition of dualised form of IVET as a starting point to pre-select the programs/schemes we aim to compare. In a second step we identify relevant dimensions for a comparison of dualised forms of IVET in the sampled countries and explore the differences. Our guiding question thereby is: What are potential factors determining the attractiveness of dualised forms of IVET? Third and last, we explore the reported developments across the identified factors over time by analysing which countries report a positive or negative (or no change) across the selected indicators.

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<sup>23</sup> They themselves identify 37 apprenticeship programmes across 25 European countries. In an order to differentiate between the schemes (not countries) they suggest to focus on training logics and identify four of these: corporate training (specific skills training needed by enterprises), professional education (apprenticeships organised and structured by occupations, school or university education (strengthened work-based elements within upper-secondary or post-secondary VET), and public training schemes (active labour market policies to help the unemployed or other disadvantaged groups). They differentiate the schemes according to purpose of the training, ownership (who defines the content) and financing.

<sup>24</sup> One notable example is the Cedefop European database on apprenticeship schemes – see [Cedefop European database on apprenticeship schemes](https://www.cedefop.europa.eu/en/database) | CEDEFOP (europa.eu).

### 3 Capturing and monitoring dualised forms of initial VET (IVET): The International Expert Monitor (IEM)

Comparative data on VET systems, VET schemes and their governance are difficult to obtain if existent. Moreover, although a number of studies and sources do exist, a systematic comparison of specific types of IVET programs is rather challenging (as will be laid out below). Against this backdrop, the International Expert Monitor has been developed by section 3.1 - Vocational Education and Training in International Comparison, Research and Monitoring - at the Federal Institute for Vocational Education and Training (BIBB<sup>25</sup>), Germany in order to try to capture and especially monitor, how dualised forms of initial VET evolve over time within selected countries. This paper is based on the results of the first round of the IEM survey which was conducted online in English using the software LimeSurvey and took place from December 2021 to April 2022.

At the beginning, selected expert in all EU-27 countries as well as other selected countries were contacted and asked to join the IEM. Where experts could not participate, either other pre-selected experts or recommended experts were asked and finally in total 36 countries/regions (24 EU-27 member states/regions<sup>26</sup> and 12 non-EU member states/regions) could be covered. On average the sample of VET experts has 18,2 years of work experience in the field.

At this stage, three potential caveats have to be pointed out regarding the survey: First, a major problem of international surveys on VET are the often different conceptions of dualised forms of IVET prevalent in the surveyed countries and the different definitions used in the international context (see for example Comyn und Brewer 2018: p.3). To avoid this problem, we started the survey with a clear definition of what we understand as dualised forms of initial VET in the context of our investigation. According to Markowitsch and Wittig (2020) – although the definitions vary - five characteristics of apprenticeship seem to be essential across all definitions. Apprenticeships are characterised as: (1) long-term; (2) alternating training at the workplace and in an educational institution or training centre; (3) nationally recognised qualification; (4) training or employment contract; and (5) remuneration/wage. Based on this observation, we define dualised forms of IVET as any type of systematically structured vocational training for young people that takes place in alternation between an educational institution or extra-company vocational training institution and a company and meets the following criteria:

- (1) It is primarily aimed at young people before they enter the labour market;
- (2) It contains an in-company training component of at least 40% (including practical training in schools);
- (3) It is based on a written agreement between the trainee, the employer and/or the training institution;
- (4) It includes a payment/financial compensation;
- (5) It has a duration of at least 2 years;
- (6) It is at ISCED level 3/EQF level 3 or higher; and
- (7) It leads to a formal transferable educational qualification.

By defining a minimum threshold of in-company training/practical training in schools and minimum length of training we narrow the definition much stronger than others in comparison to the for example the apprenticeship toolbox<sup>27</sup>.

<sup>25</sup> Bundesinstitut für Berufsbildung / Federal Institute for Vocational Education and Training (BIBB).

<sup>26</sup> For Belgium two experts for the Flemish (Flanders) and French-speaking (Wallonia) regions were surveyed. Following Cedefop we refer to Flanders as Belgium-FL and the Wallonia region as Belgium-FR.

<sup>27</sup> <https://www.bibb.de/en/apprenticeshiptoolbox.php>

A second potential caveat might be the reliance on a single expert per country which could imply that the answers to a country might be biased towards personal/official views depending on the (position of the) respondent. We have tried to deal with this problem by focusing on institutions/experts with a distinct reputation in the field and with much experience in answering survey questionnaires on VET. We also believe that by extending the sample to more than one expert per country, the difficulty arises of identifying (a sufficient number of) such experts as often - especially in smaller countries - there are not many such experts who could be surveyed.

Thirdly, as a consequence of the first two caveats, our results should and cannot be understood as representative in a statistical sense, as they are based on individual subjective responses for each country. While this complicates the interpretation of the results, we believe that much can be learned and derived from this endeavour, especially in the rather complex field of work-based learning in VET. Hence, our aim is to start providing an overview of the distribution, differences and dynamics of dualised forms of IVET in the sampled countries, which we shall lay out in the following sections.

## 4 Results from an exploratory analysis

### 4.1 Dualised forms of IVET

In our sample of 36 countries/regions, 87.1% (N=31) report to have dualised forms of IVET which meet our definition laid out above while five experts report that such forms of IVET meeting our definition currently do not exist in their countries. These are Colombia, Cyprus, Finland, Lithuania, and Scotland; see Table A1 in the Appendix). All these five countries without dualised forms of IVET do have similar programs with work-based learning elements in place, that however do not fully meet our definition.

### 4.2 Differences between the countries – indicators of attractiveness

Next, we explore the differences between the countries regarding five indicators of attractiveness of dualised forms of VET. These are (1) the embeddedness of dualised forms of IVET in the VET system, (2) the regulation of dualised forms of IVET, (3) the involvement of key stakeholders/ownership, (4) the social standing of these forms of training and (5) employability chances of graduates of these forms of training on the labour market.

*Embeddedness* refers to the embeddedness of dualised forms of IVET within the existing system of vocational qualifications in the surveyed country and is captured in the survey through a question where the experts are asked to evaluate the embedding of dualised forms of IVET in the system of vocational qualifications (on a scale from 1 (very bad) to 5 (very good)). *Regulation* refers to the legal framework which regulates dualised forms of IVET and is proxied through a question where the experts were asked to evaluate the adequacy of the legal framework with regard to dualised forms of IVET (on a scale from 1 (very bad) to 5 (very good)). The *involvement of the stakeholders* refers to the degree to which important stakeholders are involved in the governance and shaping of dualised forms of IVET. This is captured as the involvement of employers and employee organizations/associations through two questions: first the experts' evaluation of the involvement of employers in the development and modernization of qualifications and second through the experts' evaluation of the involvement of employee organizations/associations in the development of regulations of dualised forms of IVET (both on a scale from 1 (very bad) to 5 (very good)). *Social standing* refers to what reputation dualised forms of IVET enjoy in contrast to school-based or other type of VET programs. It is captured in the survey through a single question where the experts are asked to rate the social standing of dualised forms of IVET compared to school-based/other VET programs (on a scale from 1 (very bad) to 5 (very good)). Lastly, *employability* refers to the

labour market prospects of graduates of dualised forms of IVET and is measured by using the experts' rating of the degree of employability of graduates of dualised IVET.

It should be noted that we do not believe that these are the only indicators which affect attractiveness not that these are the most important ones. Furthermore, we do not believe these indicators to be independent from each other. Moreover, we do not aim to argue that a program, which performs "better" on any of these indicators is to be considered a better dualised program. Instead the sole aim is to identify a range of indicators, which help us to identify differences between similar types of programs across countries and to explore the different changes the programs experience in recent years.

Applying these five indicators we obtain the following picture: Only a small number of experts used the ratings "very bad" or "bad" (12.5%) across the five indicators, while over 60.3% of the ratings were in the categories "good" or "very good" and around one-third (27.2%) of all given ratings were in the 'neutral' category ("neither/nor") (see Table 1). Although this does not seem to be much variation, some important observations can be made.

As one might would expect, employability has the highest percentage of 'good' and 'very good' answers (87.1%) followed by embeddedness (63.3%) and regulation (60%). The lowest 'good' and 'very good' ratings are to be found for stakeholder involvement of employers (51.7%) and employees (53.5%) and social standing (37.7%). It shows that the dualised forms of IVET in the countries seem to meet the demand of industry and their graduates seem to be evaluated as positive regarding their employability. Similarly, the embeddedness of dualised forms of IVET is perceived as positive, which implies that the programmes/schemes are rather well integrated in the overall VET system and the involvement of employer associations/organizations is also rated positively. Less positively evaluated is the involvement of employee organisations/associations in dualised forms of IVET, which is often either lacking for a number of reasons.

**Table 1**

Summary of ratings across countries regarding the five indicators of attractiveness

	(1) Embedded- ness	(2) Regulation	(3) Stakeholder involvement		(4) Social standing	(5) Employ- ability	Total
			Emple- yer	Emple- yee			
Very Good	13 (43.3%)	5 (16.7%)	8 (25.8%)	6 (20%)	4 (12.9%)	15 (48.4%)	51 (28.0%)
Good	6 (20%)	13 (43.3%)	10 (33.3%)	10 (33.3%)	8 (25.8%)	12 (38.7%)	59 (32.4%)
Neither / Nor	9 (30%)	7 (23.3%)	9 (30%)	8 (25.8%)	12 (38.7%)	4 (12.9%)	49 (26.9%)
Bad	1 (3.3%)	4 (13.3%)	3 (10%)	5 (16.1%)	5 (16.1%)	0 (0%)	18 (9.9%)
Very Bad	1 (3.3%)	1 (3.3%)	0 (0%)	1 (3.3%)	2 (6.5%)	0 (0%)	5 (2.7%)
Total	30 (100%)	30 (100%)	30 (100%)	30 (100%)	31 (100%)	31 (100%)	182 (100%)

IEM survey 2021/22. Totals lower than 31 are due to missing values. \*

In a next step we rank the countries according to their mean value across all five indicators (six items), whereby countries with missing values were not ranked. We find Switzerland (1), Latvia (2), Germany (3), Denmark (3), Belgium-FR (4), Iceland (5) and Spain (5) among the top-five countries/regions with the highest mean values across all five indicators, and Sweden (13), Ukraine (12), South Korea (12), Greece (12), Italy (11), Israel (11), Slovakia (11), Slovenia (11) among the bottom-five countries/regions with the lowest mean values across all five indicators. Luxembourg (6), Romania (6), Belgium-FL (6), Ireland (7), Netherlands (7) and Austria (8) are on the middle ranks (see Table 2).

Again, as one might expect, countries like Switzerland, Germany, Denmark and Iceland<sup>28</sup> all with a long tradition and strong dual VET system are among the top-five countries, while countries/regions with a rather recent history of dualised programmes/schemes and or with a strong school-based VET system are to be found among the bottom-five countries / regions according to their mean ranking across the five indicators. More interestingly are countries like Latvia and Spain among the top-five countries/regions and Sweden and South Korea among the bottom-five countries / regions which one would not necessarily expect there.

**Table 2**

Summary of ratings on five indicators at country level

	Country	(1) Embedded -ness	(2) Regulation	(3) Stakeholder involvement		(4) Social standing	(5) Emplo y- ability	Mean	Rank
1	Australia	Very g.	Good	-	Good	Good	Very g.	-	-
2	Austria	Good	Good	Good	Good	Neutral	Good	3,8	8
3	Belgium-FL	Very g.	Good	Good	Good	Neutral	Very g.	4,2	6
4	Belgium-FR	Very g.	Good	Very g.	Very g.	Neutral	Very g.	4,5	4
5	Bulgaria	Neutral	Good	Good	Bad	Good	Very g.	3,7	9
6	Croatia	-	Good	Neutral	Very g.	Neutral	Good	-	-
7	Denmark	Very g.	Very g.	Very g.	Very g.	Neutral	Very g.	4,7	3
8	France	Good	Good	Neutral	Neutral	Bad	Good	3,3	10
9	Germany	Very g.	Good	Very g.	Good	Very g.	Very g.	4,7	3
10	Greece	Neutral	Neutral	Bad	Neutral	Neutral	Neutral	2,8	12
11	Iceland	Good	Very g.	Good	Good	Good	Very g.	4,3	5
12	Ireland	Neutral	Good	Very g.	Good	Neutral	Very g.	4	7
13	Israel	Neutral	Bad	Neutral	Neutral	Neutral	Good	3	11
14	Italy	Good	Neutral	Good	Bad	Very bad	Good	3	11
15	Latvia	Very g.	Good	Very g.	Very g.	Very g.	Very g.	4,8	2
16	Luxembourg	Very g.	Good	Very g.	Good	Bad	Very g.	4,2	6
17	Netherlands	Very g.	Very g.	Good	Good	Bad	Good	4	7
18	Norway	Neutral	Neutral	Good	Very g.	Good	Neutral	3,7	9
19	Poland	Good	Neutral	Good	Good	Neutral	Good	3,7	9
20	Portugal	Very g.	Good	Bad	Neutral	Bad	Good	3,3	10
21	Québec (Canada)	Neutral	Neutral	Neutral	Neutral	Good	Good	3,3	10
22	Romania	Good	Good	Good	Good	Good	Very g.	4,2	6
23	Singapore	Very g.	-	Very g.	Bad	Good	Very g.	-	-
24	Slovakia	Neutral	Bad	Neutral	Bad	Good	Good	3	11

<sup>28</sup> The VET system in Iceland goes back to the time when Iceland was part of the Danish kingdom (Cedefop 2021b: p. 40).

25	Slovenia	Very g.	Neutral	Bad	Bad	Very bad	Very g.	3	11
26	South Korea	Bad	Bad	Neutral	Neutral	Neutral	Good	2,8	12
27	Spain	Very g.	Very g.	Neutral	Neutral	Very g.	Very g.	4,3	5
28	Sweden	Very bad	Very bad	Neutral	Very bad	Bad	Neutral	1,8	13
29	Switzerland	Very g.	Very g.	Very g.	Very g.	Very g.	Very g.	5	1
30	Ukraine	Neutral	Bad	Neutral	Neutral	Neutral	Neutral	2,8	12
31	UK (excl. Scotl.)	Neutral	Neutral	4	-	Neutral	Good	-	

*Source: IEM survey 2021/2022.*

### 4.3 Developments in the past five years

A major part of the survey was dedicated to quantify the changes which have taken place regarding dualised forms of VET in the last five years. For this purpose, most questions with ratings - including the five indicator proxies - were followed by a question whether the aspect has improved or worsened in the last five years (on a scale from 1 “much worse” to 5 “much better”). For the analysis we categorize the values 4 “better” and 5 “much better” as positive changes, the value 3 “neither better nor worse” as no change (“neutral”) and the values 1 “much worse” and 2 “worse” as negative changes.

As will be laid out, the surveyed countries do not only differ with regard to central characteristics of the dualised form of IVET, but also with regard to their recent developments. In order to obtain an understanding of the dynamics and changes over the recent past, we first start with an analysis of the reported changes in the past five years regarding the five. For each of the questions which we use as proxies, a follow-up question asked the experts to rate whether the situation has change to be better or worse in the past five years. A country expert could report a positive (much better & better), negative (much worse & worse) or neither positive nor negative change (neither better nor worse) - which we refer to as ‘neutral’ in the following - for each of the five indicators. Table 3 lays out how many changes were reported by country and also displays a ranking regarding the mean value for the five variables as well as the grouping of the countries according to our four-fold categorization.

In total, more positive changes (74) than neutral changes (65) were reported across all sampled countries. Moreover, 14 countries reported more positive changes than no changes or negative changes and 12 countries reported more neither positive nor negative changes than positive or negative changes. And across all countries, only five negative developments were reported, out of which Sweden reported three. Sweden is thus the only country which reported more negative changes (3) than positive (2) or no changes (1). Five countries reported positive changes across all five indicators/six items (Greece, Latvia, Québec (Canada), Romania, and South Korea), while three countries reported only neutral changes (Denmark, Germany, and Luxembourg). As some questions were either not answered or answered with “don’t know”, there are altogether 13 missing values.

It seems that countries with strong and settled VET systems like Denmark and Germany are less dynamic than young or transforming VET systems like Greece, Latvia, and Québec (Canada) who display positive changes across all indicators. Other countries, like France, Israel, Italy, Norway, Slovenia, or Slovakia with stronger school-based VET systems who are at the lower end of the ranking of the mean value across the five indicators display more neither (positive)/nor (negative) changes and thus seem to be rather stagnant regarding the development of dualised forms of IVET.

**Table 3**

Changes in the past five years across five indicators of attractiveness

Country/Region	Positive	Neither / Nor	Negative	Missings
Australia	0	3	0	3
Austria	0	5	1	0
Belgium-FL	3	3	0	0
Belgium-FR	4	2	0	0
Bulgaria	5	1	0	0
Croatia	0	5	0	1
Denmark	0	6	0	0
France	3	3	0	0
Germany	0	6	0	0
Greece	6	0	0	0
Iceland	5	1	0	0
Ireland	4	2	0	0
Israel	0	5	1	0
Italy	2	4	0	0
Latvia	6	0	0	0
Luxembourg	0	6	0	0
Netherlands	1	4	0	1
Norway	1	5	0	0
Poland	4	2	0	0
Portugal	3	3	0	0
Québec (Canada)	6	0	0	0
Romania	6	0	0	0
Singapore	4	1	0	1
Slovakia	2	4	0	0
Slovenia	2	4	0	0
South Korea	6	0	0	0
Spain	5	1	0	0
Sweden	2	1	3	0
Switzerland	-	-	-	6
Ukraine	5	1	0	0
UK (excl. Scotl.)	5	0	0	1
<b>Total Sum</b>	<b>90</b>	<b>78</b>	<b>5</b>	<b>13</b>
<b>Country Sum</b>	<b>14</b>	<b>12</b>	<b>1</b>	

Source: IEM survey 2021/2022. Country sum refers to the number of countries with the majority of answers in the respective category (Positive, neutral or negative).

Next, in an attempt to further differentiate between the countries/regions we categorize them according to the highest number of ratings in one of the three categories (either positive, neutral or negative). For example, if a country expert rated at least **four** changes across the five indicators (six questions) as positive (in the sense that there has been a positive change on this indicator in the past five years), the respective country would be categorized as a rapid mover/as a dynamic country/region. Slow movers/stagnant are those with at least three ratings in the 'neutral category' and backward movers/deterioration are those countries/regions with at least three negative rated changes. Australia, Belgium-FL, France, Portugal, and Switzerland are not categorized due to missing values or because they did not reach four positive, neither positive nor negative or negative changes.

Following these steps, we can classify 14 countries/regions (Belgium-FR, Bulgaria, Greece, Iceland, Ireland, Latvia, Poland, Québec (Canada), Romania, Singapore, South Korea,

Spain, Ukraine, UK (excl. Scotland)) as rapid movers/dynamic, while 12 countries (Austria, Croatia, Denmark, Germany, Israel, Italy, Luxembourg, Netherlands, Norway, Slovenia, Slovakia) are slow movers/stagnant. Sweden is the only potential backward mover, however with only three negative changes reported (see Table 4).

What sticks out here is that among the slow movers/stagnant countries are overtly those countries with an established dual VET system like Austria, Denmark, and Germany, while the rapid movers/ more dynamic countries are Bulgaria, Latvia, Romania or Spain with WBL schemes that are school-based; and countries with apprenticeship programmes like the UK or Ireland, which seems to show that these countries are undergoing a vast transformation. In this respect the outlier Sweden sticks out and more in-depth information is needed to understand the reasons for the negative ratings.

**Table 4**

Summary majority changes across five indicators

Rapid movers / Dynamic	Slow movers / Stagnant	Backward movers / Deterioration
Belgium-FR, Bulgaria, Greece, Iceland, Ireland, Latvia, Poland, Québec (Canada), Romania, Singapore, South Korea, Spain, Ukraine, UK (excl. Scotland)	Austria, Croatia, Denmark, Germany, Israel, Italy, Luxembourg, Netherlands, Norway, Slovenia, Slovakia	Sweden

Source: IEM survey 2021/2022. Not classified: Australia, France, Belgium-FL, Portugal, and Switzerland.

## 5 Conclusion

The aim of this paper was to add to the literature on dualised forms of IVET by exploring a new data source: the BIBB International Expert Monitor survey on work-based learning in IVET, first conducted in 2021/22. The IEM captures dualised forms of IVET in the sampled countries. Although the explorative and descriptive analysis has been limited in terms of scope and depth, first initial results have shown some interesting results. With the next subsequent rounds, more insights can be gained and a more nuanced picture of dualised forms of IVET across countries in and outside the EU can be obtained.

## References

- Allmendinger, J. (1989). Educational systems and labour market outcomes. *European Sociological Review*, 5 (3), 231–250. DOI: 10.1093/oxfordjournals.esr.a036524.
- Blossfeld, H.-P. (1992). Is the German Dual System a Model for a Modern Vocational Training System? A Cross-National Comparison of How Different Systems of Vocational Training Deal With the Changing Occupational Structure. *International Journal of Comparative Sociology*, 33 (3-4), 168–181. DOI: 10.1177/002071529203300302.
- Bosch, G. (2016): Typologien nationaler Berufsbildungssysteme. Ihr Nutzen im Gesellschaftsvergleich. *Zeitschrift für Berufs- und Wirtschaftspädagogik*, 1 (1), 15–36.
- Busemeyer, M. R., Trampusch, C. (2012). The Comparative Political Economy of Collective Skill Formation. In: M. R. Busemeyer und C. Trampusch (Eds.), *The Political Economy of Collective Skill Formation* (pp 3-38). Oxford University Press.
- Busemeyer, M. R., Trampusch, C. (2019). The Politics of Vocational Training: Theories, Typologies and Public Policies. In: D. Guile und L. Unwin (Eds.). *The Wiley Handbook of Vocational Education and Training*. (pp. 137-164). London: John Wiley & Sons, Ltd.



- Cedefop (2021a): How many apprentices are in the EU? Estimates based on Cedefop database on apprenticeship schemes and reflections on available EU data sources: European Centre for the Development of Vocational Training. Online verfügbar unter <https://www.cedefop.europa.eu/en/publications/4196>.
- Cedefop (2021b): Spotlight on VET 2020 compilation. Vocational education and training systems in Europe. Hg. v. European Centre for the Development of Vocational Training.
- Cedefop; OECD (2021): The next steps for apprenticeship: Publications Office.
- Comyn, Paul; Brewer, Laura (2018): Does work-based learning facilitate the transitions to decent work? Online verfügbar unter [https://www.ilo.org/employment/Whatwedo/Publications/working-papers/WCMS\\_635797/lang--en/index.htm](https://www.ilo.org/employment/Whatwedo/Publications/working-papers/WCMS_635797/lang--en/index.htm).
- EU (2002): The Bruges Communiqué on enhanced European Cooperation in Vocational Education and Training for the period 2011-2020. Online verfügbar unter [https://www.cedefop.europa.eu/files/bruges\\_en.pdf](https://www.cedefop.europa.eu/files/bruges_en.pdf).
- EU (2020): Osnabrück Declaration on vocational education and training as an enabler of recovery and just transitions to digital and green economies. Online verfügbar unter [https://www.cedefop.europa.eu/files/osnabrueck\\_declaration\\_eu2020.pdf](https://www.cedefop.europa.eu/files/osnabrueck_declaration_eu2020.pdf).
- Greinert, Wolf-Dietrich (1988): Marktmodell-Schulmodell-duales System. Grundtypen formalisierter Berufsbildung.
- Grollmann, Philipp; Markowitsch, Jörg: Drei Szenarien zur Zukunft der betrieblichen Berufsausbildung in Europa. Beitrag zum Sammelband "Konkurrenz zwischen akademisch und beruflich Qualifizierten - Mythos oder Realität?".
- Haasler, Simone R. (2020): The German system of vocational education and training: challenges of gender, academisation and the integration of low-achieving youth. In: *Transfer: European Review of Labour and Research* 26 (1), S. 57–71. DOI: 10.1177/1024258919898115.
- Lynch, Lisa M. (1994): *Training and the Private Sector. International Comparisons*. Chicago: University of Chicago Press (NBER-Comparative Labour Markets Series). Online verfügbar unter <http://gbv.ebilib.com/patron/FullRecord.aspx?p=408616>.
- Markowitsch, Jörg; Hefler, Günter (2018): Staying in the Loop: Formal Feedback Mechanisms Connecting Vocational Training to the World of Work in Europe. In: *IJR/VET* 5 (4), S. 285–306. DOI: 10.13152/IJR/VET.5.4.3.
- Markowitsch, Jörg; Wittig, Wolfgang (2020): Understanding differences between apprenticeship programmes in Europe: towards a new conceptual framework for the changing notion of apprenticeship. In: *Journal of Vocational Education & Training*, S. 1–22. DOI: 10.1080/13636820.2020.1796766.
- Müller, Walter; Shavit, Yossi (1998): The Institutional Embeddedness of the Stratification Process: a Comparative Study of Qualifications and Occupations in Thirteen Countries. In: Shavit, Yossi, Ed. | Müller, Walter, Ed. (Hg.): *From School to Work. A Comparative Study of Educational Qualifications and Occupational Destinations*: Oxford University Press, Evans Road, Cary, NC 27513 (\$135).
- Pilz, Matthias (2016): Typologies in Comparative Vocational Education: Existing Models and a New Approach. In: *Vocations and Learning* 9 (3), S. 295–314. DOI: 10.1007/s12186-016-9154-7.
- Pilz, Matthias (2017): Typologien in der international-vergleichenden Berufsbildungsforschung. Funktionen und ein neuer Ansatz. In: *Zeitschrift für Pädagogik* 63 (6), S. 761–782.
- Rageth, Ladina (2018): A Configurational Analysis of Vocational Education and Training Programmes: Types of Education-Employment Linkage and their Explanatory Power.

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## Quality Management in Vocational Education and Training: A Reflection on Educational Governance in Austria, Germany and Spain

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### Abstract

In many European regions, the introduction of New Public Management in the 1990s led to decentralised school development. The increased freedom of school organisation raised the demand for system-wide coordination and steering elements. Therefore, the development of comprehensive quality management (QM) systems plays a key role in educational governance across Europe. Various QM systems reflect different governance approaches prevailing in individual countries. This paper analyses which understanding of educational governance is reflected by different conceptions of QM in Austrian, German and Spanish VET systems and how the coordination of actions in these complex multilevel systems is shaped by QM? The first findings of this study indicate that it is not the democratisation of the understanding of quality which is in the focus of current QM systems, but the decentralisation of responsibility of predefined outcomes and the operational realisation of governmental requirements. The findings show that in the formalised VET system, the accountability and performativity function seems to be on the rise. In the non-formal VET system, the marketing function is prevalent.

### Keywords

quality management, educational governance, vocational education and training, Austria, Germany, Spain



## 1 Introduction

Until the early 1990s, the school system (including school-based vocational education) in many European regions was hierarchically structured and centrally organised. Schools were externally steered and were tasked with fulfilling administrative instructions from the relevant school authorities. Increasing criticism of the inefficiency of this bureaucratic form of control and the introduction of New Public Management led to decentralised school development in many countries and consequently to a separation between strategic and operational school management (Dubs, 2003). Thus, the school has evolved from a state enforcement organ to a service organ that is given more decision-making autonomy and is expected to comply with educational objectives set by the state (Schedler, 1995). The increased freedom of school organisation is associated with the concern about possible undesirable developments of individual schools and, in turn, increased the demand for system-wide coordination and school-wide steering elements. Therefore, since the late 1990s and early 2000s the development of comprehensive quality management (QM) systems and the regular monitoring of the school's performance play key roles in educational governance across Europe (e.g., Altrichter & Heinrich, 2007; Dubs, 2003). At the same time, the European quality assurance reference framework for vocational education and training was designed to guide member states in developing and improving the quality of their vocational education and training (VET) systems. However, various QM systems have been implemented across Europe, reflecting different governance approaches prevailing in individual countries.

In recent years, the concept of governance has been applied to the analysis of VET, as VET systems are systems with complex action coordination mechanisms and structured by different levels of governance (state, private providers, social partners, etc.) (e.g., Bürgi & Gonon, 2021; Deitmer, 2015). Individual VET systems contain varying forms and levels of organisation to enable coordination and steering of actions (Daun, 2011). Using an educational governance perspective, in this paper we would like to analyse how QM is framed in selected European countries and how this structures VET schooling differently. We follow the understanding of QM which includes systematically applied procedures with which VET quality is evaluated, improved and assured. QM includes both the teaching and learning process and organisational management of VET institutions (Cedefop, 2015; Dubs, 2003). Based on this understanding of QM, the following research question is pursued:

Which understanding of educational governance is reflected by different conceptions of QM in selected European VET systems and how is the coordination of actions in these complex multilevel systems shaped by QM?

In international and comparative VET research, this question has not been analysed and discussed in depth so far. The countries Austria, Germany and Spain are selected because they belong to different facets of educational governance regimes and different VET systems in Europe.

## 2 Theoretical framework

To examine the current levers of steering in the VET systems, we use the perspective of educational governance according to Altrichter (2010), and Kussau and Brüsemeister (2007). This approach rejects the assumption of direct controllability by the state and follows an extended understanding of steering. Educational governance is perceived as a complex interaction of different actors with partly contradictory interests. At the centre of this perspective is the problem of coordination of actions of different actors, who are all co-producers of system performances. The concept of coordination of action serves as a tool of analysis and explanation of how actors at different points in a complex system participate in the regulation and performance of that very system (Altrichter, 2010; Altrichter & Heinrich, 2007).

Altrichter and Heinrich (2007) propose several categories for analysing governance constellations. Possible categories of analysis are guiding values and impact claims, individual and organised actors within the regime, different system levels, rights of disposal and structures of regulation. The focus is on the question of how various actors with different rights of disposal coordinate their actions in a multilevel system. For the analysis and description of the action coordination of a specific governance regime, an orientation towards “classical models of societal coordination” (Altrichter, 2010, p. 148) such as network, market or hierarchy is possible. Moreover, Altrichter (2010) suggests as heuristic framework for analysing differences between education systems five dimensions that de Boer et al. (2007) have identified in a country comparison study of the governance structure of university systems: state regulation, external guidance, competitive pressure and quasi-markets, managerial self-governance and professional self-governance (of teachers). These models and dimensions are ideal-typical descriptions and usually do not occur in pure form in reality, but only as a combination or in a more differentiated form. The heuristic categories can thus be helpful in obtaining an initial orientation about the specific governance structure, but they can never represent the empirical complexity (Altrichter & Heinrich, 2007).

### 3 Methodology

The study is based on the analysis of documents in the three selected countries, including government reports, recommendations, regulations and requirements, but also research studies, including theoretical and empirical publications as well as reports from schools and school associations. The document analysis is following the three steps: 1) selecting, 2) sampling, and 3) thematic analysing (Morgan, 2022). The factors authenticity, credibility, representativeness and meaning are used for a qualitative validation of the documents (Flick, 2018).

Based on the document analysis, a structured programme theory of quality management concepts is elaborated for each country. A predefined structure of the programme theory enables a systematic comparison between the countries. So, the tertium comparationis are driven by the change and action model of the programme theory (see in detail Chen, 2005) and the categories of the educational governance perspective (Altrichter & Heinrich, 2007).

### 4 Findings

The following is a brief overview of the initial findings of the governance analysis of the individual countries. A summarised comparison is given in the discussion section.

#### *Austria*

In Austria, the Federal Ministry of Education (FME) introduced a new QM system called QMS (Quality Management System for Schools) for all vocational and general education school types in the school year 2021/22. A fundamental principle of QMS is the four-phase Deming-quality cycle with the idea of systematic, evidence-oriented and continuous improvement (Gramlinger & Jonach, 2022). In addition, QMS is inspired by the Q2E function model according to Landwehr and Steiner (2020) and serves both data-based development of school and teaching processes and outcomes as well as provision of accountability to all stakeholders of a school (FMESR, 2021). Key objectives are to ensure high-quality education, to foster learners' individual potential and to promote teacher professionalism and cooperation (FMESR, 2021).

In order to achieve these objectives, a clear structure of the organisation, the processes and the responsibilities of the QM system at each school, a quality framework with a set of quality criteria that constitute “a good school and good teaching in Austria” (FMESR, 2021, p. 8), and various steering tools to guide the QMS activities are centrally specified. Strong emphasis is also placed on generating data about the quality and effectiveness of the school's processes and teachers' actions through regular internal and external evaluations and systematic educational

monitoring by the school inspectorate. QMS is designed as a multilevel system (see in detail FMESR, 2022). It is coordinated and conceptually further developed at a centrally organised national level by the FME. The regional school inspectorate is responsible for supporting the implementation of QMS in schools, for ongoing quality controlling and for conducting review and target setting meetings with the school management (FMESR, 2019). At school level, three central actors – the school management, teacher teams and individual teachers – are designated as being responsible for the realisation of the specified measures and the achievement of the targeted outcomes of QMS (FMESR, 2021).

Overall, QM in Austria is characterised by a governance regime that is shaped by centralised external steering through output orientation, standardised targets and prescribed forms of monitoring and control. In addition, VET professionals in schools are supposed to be motivated and actively engaged in QM for which schools are promised increased organisational and pedagogical freedom of design (FMESR, n.d.). However, the supposed self-governance takes place within a limited, pre-structured scope of possibilities (see in detail Hautz, 2022). Within the framework of QMS, the intention is to align the behaviour of teachers to policy objectives by making them more accountable for learners' outcomes and guide their decisions with common standards of comparison.

### *Germany*

QM in Germany is seen as an impulse provider for the further development of the school system (Schulministerium NRW, 2023) and as a link between a school's self-evaluation and external evaluation, with the focus on fulfilling the supra-regional educational mission (Becker et al., 2006). This mission implies equal opportunities in vocational education along the path of sustainability and digitisation of learning processes (BMBF, 2023). Derivative goals are anchored in regional frameworks for actions used by QM-teams and internally at schools (MK, 2021). The implementation of these goals places high demands on all stakeholders and expect schools to act in a highly participative manner (MSB NRW, 2023).

Various actors coordinate the QM system in Germany. First, it is the German state in the form of the ministries of education in the federal states that sets normative documents and regulations. Second, school inspectors recruited from among the school personnel and working in teams act based on reference frameworks as external evaluators. Third, school internal inspectors elaborate the internal evaluations within the school. Furthermore, the principals and teachers are expected to serve as implementers of the evaluated measures. The current processes in the German QM system are characterised by a redistribution of power. Thus, decision-making and responsibility for the school development has shifted more and more from the ministries to the vocational schools. At the same time, the increased accountability to higher-level authorities and society should make the school more transparent (Becker et al., 2006). Yet, the focus remains on the pursuit of standards, and reliance on qualitative feedback systems rather than evaluation of outcomes alone (Becker & Spöttl, 2007). Also, external evaluation experts from private organisations could be newly accentuated as players in QM as well as the national reference point DEQA-VET which plays a mediating role between the national and the European level (DEQA-VET, 2023).

Hence, it could be concluded that the governance of QM in Germany is still driven by a central external control through output orientation (e.g., comparative tests), unified overall substantial goals and mandatory modes of supervision and evaluation procedures but with tendencies towards higher school autonomy.

### *Spain*

The Spanish education system has experienced a change from a highly centralised governance structure in the 1970s to a regional decentralisation. Nowadays, the Spanish Ministry of

Education establishes the national framework laws (education and vocational education), but it only administrates schools in Ceuta and Melilla, the two Spanish cities in Northern Africa. All other schools are accountable to the regional administrations, known as *comunidades autónomas*. Therefore, in the case of formal vocational education, QM in Spain aims to promote coordination and integration of various actors involved in its governance structure. Together with formal VET, there have been two other subsystems. One starting in mid-1960s, known as vocational training to train and qualify both adults and young people that are unemployed; and a second one, the continuing vocational education and training system (CVET), which was constituted in 1993 to support the training of the active occupied population. Vocational training providers in the latter have been mainly employer federations, trade union foundations and private providers, while the former was run by non-for-profit organisations, municipalities as well as private providers. QM in the formal VET system is supervised by the regional inspection (Martínez-Morales & Marhuenda-Fluixá, 2020). However, that inspection does not apply to the non-formal VET subsystems. The external supervision is mainly of financial character.

Thus, QM instruments are used by private providers, non-profit organisations and even municipalities as a trademark to show to their customers, providers and authorising administrations that they were complying with quality measures. Both employer federations and trade union foundations for training have also entered the QM market. Training providers who are not making the effort to accredit their quality through ISO or other standards might risk losing competitiveness in the training business.

The implementation of a dual model of school-based VET since 2012 has also highlighted the importance of QM in the formal VET sector, so that QM in Spain is determined by the relationship between school and markets. For this system to work, there needs to be a solid alliance, cooperation and trust between the three coordinating bodies (national, regional and local) and three actors (administrations, schools and teachers, and companies).

Regarding non-formal vocational training, the authorities have established a working group responsible for developing the annual plan for the evaluation of the quality, impact, effectiveness and efficiency of the whole vocational training system for employment. At the same time, through educational inspection and evaluation of formal VET, the Spanish government places emphasis on teaching and learning processes, supervising teaching practice, outcomes in the educational process, guidance for management teams, and ensuring compliance by the educational administrations themselves.

## 5 Discussion

First findings are finally briefly analysed from the lens of action coordination to reflect on different patterns of agency in responding to VET governance and QM in the selected countries regarding various eco-systems of skill formation.

Since the trend towards New Public Management in the 1990s, there has been an increased expectation of governance participation of the educational actors in the VET system in all three countries, especially on the part of the school management, teachers and also the training companies. On the one hand, a democratisation of QM through decentralised educational governance seems to be emerging here. On the other hand, the findings show that standards, quality requirements and educational objectives continue to be set top-down by the ministries of education, and that the actors in the VET institutions are held accountable fulfilling them. An explicit participatory design of these standards and performance targets at school level is not in the focus of the analysed policy documents.

Consequently, the findings of this study indicate that it is not the decentralisation of the understanding of quality which is in the focus of current QM systems, but the decentralisation of responsibility of predefined outcomes and the operational realisation of governmental

requirements. A shift of operational tasks from the ministries of education to the actors of the VET institutions is apparent, which in part leads to additional workload and changes in the scope of duties for pedagogical actors. Participation in shaping governance is limited. Thus, the democratising function of current governance regimes in the formal VET system of all three countries must be viewed critically. In addition, it can be seen that where the VET system is not formalised or QM is not determined by the government, a market-driven need for a QM system has evolved. Here, QM is less about accountability or democratisation and participation, but rather about customer-oriented signalling and differentiation from competitors in the market.

From an educational governance perspective, the comparison of the first findings shows that two central functions of QM are dominant in the investigated countries, depending on the existing governance regime. In the formalised VET system, the accountability and performativity function seems to be on the rise. In the non-formal VET system, the marketing function is prevalent. The function of quality development or improvement at the level of teaching and learning tends to be a secondary aspect. Due to this accentuation, there is a danger that “non-intended results” (Altrichter, 2010, p. 150) are produced in VET systems through the coordination of action, where the “pedagogical core business” (Coffield et al., 2007, p. 736) loses its attention and significance.

## References

- Altrichter, H. (2010). Theory and evidence on governance: Conceptual and empirical strategies of research on governance in education. *European Educational Research Journal*, 9(2), 147–158. <http://doi.org/10.2304/eeerj.2010.9.2.147>
- Altrichter, H., & Heinrich, M. (2007). Kategorien der Governance-Analyse und Transformationen der Systemsteuerung in Österreich [Categories of governance analysis and transformations of system governance in Austria]. In H. Altrichter, T. Brüsemeister & J. Wissinger (Eds.), *Educational Governance: Handlungskoordination und Steuerung im Bildungssystem* [Educational governance: Action coordination and steering in educational system] (pp. 55–103). VS Verlag für Sozialwissenschaften. [https://doi.org/10.1007/978-3-531-90498-6\\_3](https://doi.org/10.1007/978-3-531-90498-6_3)
- Becker, M., & Spöttl, G. (2007). *Mehr Eigenständigkeit für berufliche Schulen – führt das zu mehr Qualität?* Experten-Workshop zur Qualität in der Beruflichen Bildung – Forschungsergebnisse und Desiderata. [More autonomy for vocational schools - does that lead to more quality? Expert workshop on quality in vocational education and training - research results and desiderata]. BIBB. [https://www.agbfn.de/dokumente/pdf/Vortrag\\_becker\\_spoettl.pdf](https://www.agbfn.de/dokumente/pdf/Vortrag_becker_spoettl.pdf)
- Becker, M., Spöttl, G., & Dreher, R. (2006). Berufsbildende Schulen als eigenständig agierende lernende Organisationen. Stand der Weiterentwicklung berufsbildender Schulen zu eigenständig agierenden lernenden Organisationen als Partner der regionalen Berufsbildung (BEAGLE); Forschungsbericht [Vocational schools as autonomously acting learning organisations. Status of the further development of vocational schools into autonomously acting learning organisations as partners in regional vocational education and training (BEAGLE); research report]. In M. Becker, G. Spöttl & R. Dreher (Eds.), *Materialien zur Bildungsplanung und zur Forschungsförderung* [Materials on education planning and research funding]. BLK. <http://www.pedocs.de/volltexte/2008/225/pdf/heft135.pdf>
- BMBF [Federal Ministry of Education and Research]. (2023). *Richtlinie zur Förderung von Projekten im Rahmen des Programms „Nachhaltig im Beruf – zukunftsorientiert ausbilden“ (NIB)*. [Guideline for the funding of projects under the programme “Sustainable at work – future-oriented training” (NIB)]. Bundesanzeiger vom



- 27.01.2023. [https://www.bmbf.de/bmbf/de/bildung/berufliche-bildung/foerderinitiativen-und-programme/nachhaltigkeit-in-der-beruflichen-bildung/nachhaltigkeit-in-der-beruflichen-bildung\\_node.html](https://www.bmbf.de/bmbf/de/bildung/berufliche-bildung/foerderinitiativen-und-programme/nachhaltigkeit-in-der-beruflichen-bildung/nachhaltigkeit-in-der-beruflichen-bildung_node.html)
- Bürgi, R., & Gonon, P. (2021). Varieties within a collective skill formation system: How VET governance in Switzerland is shaped by associations. *International Journal for Research in Vocational Education and Training*, 8(1), 46–64. <https://doi.org/10.13152/IJRVET.8.1.3>
- Cedefop [European Centre for the Development of Vocational Training]. (2015). *Handbook for VET providers: Supporting internal quality management and quality culture (Cedefop Reference series 99)*. Publications Office of the European Union. <https://doi.org/10.2801/82638>
- Chen, H. T. (2005). *Practical program evaluation: Assessing and improving planning, implementation, and effectiveness*. Sage.
- Coffield, F., Edward, S., Finlay, I., Hodgson, A., Spours, K., Steer, R., & Gregson, M. (2007). How policy impacts on practice and how practice does not impact on policy. *British Educational Research Journal*, 33(5), 723–741. <https://doi.org/10.1080/01411920701582363>
- Daun, H. (2011). Globalization, EU-ification, and the new mode of educational governance in Europe. *European Education*, 43(1), 9–32. <https://doi.org/10.2753/EUE1056-4934430102>
- De Boer, H., Ender, J., & Schimank, U. (2007). On the way towards new public management? The governance of university systems in England, the Netherlands, Austria, and Germany. In D. Jansen (Eds.), *New forms of governance in research organisations* (pp. 137–152). Springer.
- Deitmer, L. (2015). Governance of Vocational Education and Training (VET). In M. I. Mazharul & H. Moazzem (Eds.), *Sustainable Development: South Asian Conundrum* (pp. 76–90). IIDS Australia, IIMS India, & BEN Germany.
- DEQA-VET (2023). *Deutsche Referenzstelle für Qualitätssicherung in der beruflichen Bildung [German Reference Point for Quality Assurance in Vocational Education and Training]*. [https://www.deqa-vet.de/de/daqavet\\_88364.php](https://www.deqa-vet.de/de/daqavet_88364.php)
- Dubs, R. (2003). *Qualitätsmanagement für Schulen [Quality management for schools]*. IWP Institut für Wirtschaftspädagogik.
- Flick, U. (2018). *An introduction to qualitative research*. Sage.
- FMESR [Federal Ministry for Education, Science and Research]. (2019). *Verordnung des Bundesministers für Bildung, Wissenschaft und Forschung betreffend das Schulqualitätsmanagement [Regulation of the Federal Minister of Education, Science and Research concerning the School Quality Management]*, BGBl. II Nr. 158/2019.
- FMESR [Federal Ministry for Education, Science and Research]. (2021). *QMS at a glance. Overall presentation of the Quality Management System for Schools. Version 1.0*.
- FMESR [Federal Ministry for Education, Science and Research]. (2022). *Akteurinnen und Akteure [Actors]*. <https://www.qms.at/ueber-qms/akteurinnen-und-akteure>
- FMESR [Federal Ministry for Education, Science and Research]. (n.d.). *Bildungsreform 2017. Freiheit für die Schulen, Transparenz fürs System, Modellregionen für die gemeinsame Schule [Education reform 2017: Freedom for schools, transparency for the system, model regions for the common school]*. <https://www.bmbwf.gv.at/Themen/schule/zrp/bilref.html>
- Gramlinger, F., & Jonach, M. (2022). QMS. Das neue Qualitätsmanagementsystem für Schulen wird implementiert [QMS. The new quality management system for schools is being implemented]. *Schulverwaltung: Fachzeitschrift für Schulentwicklung und Schulmanagement*, 10(4), 98–101.

- Hautz, H. (2022). The ‘conduct of conduct’ of VET teachers: Governmentality and teacher professionalism. *Journal of Vocational Education & Training*, 74(2), 210–227. <https://doi.org/10.1080/13636820.2020.1754278>
- Kussau, J., & Brüsemeister, T. (2007). Educational Governance: Zur Analyse der Handlungskoordination im Mehrebenensystem der Schule [Educational governance: To analyse the action coordination in a multi-layer-system of school]. In H. Altrichter, T. Brüsemeister & J. Wissinger (Eds.), *Educational Governance: Handlungskoordination und Steuerung im Bildungssystem [Educational governance: Action coordination and steering in educational system]* (pp. 15–54). VS Verlag für Sozialwissenschaften.
- Landwehr, N., & Steiner, P. (2020). *Schulinternes Qualitätsmanagement nach dem Modell Q2E: Funktionenmodell*. [School internal quality management according to the Q2E model: Function model]. <https://www.q2e.ch/wp-content/uploads/sites/162/2020/05/q2e-das-funktionenmodell-ausf-hrliche-fassung-blau.pdf>
- Martínez-Morales, I., & Marhuenda-Fluixá, F. (2020). Vocational education and training in Spain: Steady improvement and increasing value. *Journal of Vocational Education & Training*, 72(2), 209–227. <https://doi.org/10.1080/13636820.2020.1729840>
- MK (2021). *Strategischer Handlungsrahmen für berufsbildende Schulen in Niedersachsen. Regionale Kompetenzzentren weiterentwickeln [Strategic framework for vocational schools in Lower Saxony. Further developing regional competence centers]*. Ministry of Education and Cultural Affairs of Lower Saxony.
- Morgan, H. (2022). Conducting a qualitative document analysis. *The Qualitative Report*, 27(1), 64–77. <https://doi.org/10.46743/2160-3715/2022.5044>
- MSB NRW (2023). *Konzept zur Weiterentwicklung der Qualitätsanalyse [Concept for the further development of quality analysis]*. Ministry for School and Education of the State of North Rhine-Westphalia.
- Schedler, K. (1995). *Ansätze einer wirkungsorientierten Verwaltungsführung [Approaches of outcome-oriented administration leadership]*. Haupt.
- Schulministerium NRW [Ministry of Education NRW]. (2023). *Qualitätsanalyse [Quality analysis]*. <https://www.schulministerium.nrw/schule-bildung/schulorganisation/qualitaetsanalyse>

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## Vocational Students at Risk of Social Exclusion in Estonia: Social Ecology Approach

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### Abstract

The study focuses on the social ecology of learning and development of students at risk of drop out from IVET that could lead to early school leaving and social exclusion. To understand better the complex of the interrelated factors of drop out risks the concepts of social ecology, ecological agency form the theoretical and methodological framework of the study. Sample of interviewed students consists of 20 students (14 female and 6 male) of age between 16 and 22 years from different vocational schools and regions in Estonia studying different specialities. Among sample there are students who had dropped out from several schools as well as those that have had rather smooth educational careers. As the result of empirical analysis, we identified three clusters of students, representing three different ecologies of students at risk with the emphasis on the development of their agentic capacities. The ecologies reflect also different experiences of getting help or not in the close environments of students in the case of emerging problems and the consequences on their further learning and development, including the perspectives for the future life.

### Keywords

social ecology, students at risk, vocational education

### 1 Introduction

The focus of the study is on the social ecology of learning and development of students in the situation of risk of dropping out from IVET (initial vocational education) that could lead to early school leaving and social exclusion. Tackling social exclusion and supporting at-risk groups has been a high priority in the European Union (EU) policies during the last decade and more. Although the early leaving rate from education and training has steadily decreased from



13.8% in 2010 to 9.7% in 2021, progress has stagnated since 2016 with significant differences across countries, regions, genders and for specific population groups (Psifidou et al., 2022). Despite policy interventions the share of vocational students, who interrupt studies and share of dropouts in Estonia has remained almost the same, accordingly 20% and 12% over the years (Jaggo, 2019). The same problem can be identified also in some other EU countries, particularly those, having school-based VET systems (Psifidou et al., 2022). Previous studies reveal that the main causes of social exclusion among young people are low motivation, negative learning and life experiences, low skill levels, no future prospects or unrealistic future expectations (Goldman-Mellor et al., 2016; Ose & Jensen, 2017; Beck, 2015). In 2013-2017, the most common reasons for dropping out of vocational education in Estonia were failure to study, absence from studies, employment or economic reasons, vocation unsuitability, health and other reasons (Jaggo, 2019, p.20). The problem of social exclusion is challenging because of its complexity, i.e. involvement of various factors and multilevel institutional and individual actors. Unfortunate circumstances and situations can create the self-sustaining vicious circle of exclusion in early age that may cause cumulative educational disadvantages that are impossible to break out without external help (Reiska, 2018). Therefore, it is highly important to understand better the reasons for dropping out in the wider social and personal context and provide systematic and individualized support.

We approach the problem of students in the drop-out risk from IVET from socio-ecological perspective to better understand the complex of impacting factors and the ways how the social ecology of their learning and development functions. The social ecological approach also allows to look at the risk factors that have been mainly described in individual terms (low academic results, motivation problems etc) as related to broader structural and institutional factors and give more holistic understanding of the processes and mechanisms contributing to the becoming into the risk (Lörnic, D'Angelo & Kaye, 2019, p. 413).

## **2 The institutional and structural context**

At the macro level, the potential institutions that play a role in the ecology of students at risk, concern the mutual relationships between general and vocational education and labour market. IVET in Estonia is provided after the 9-year basic, compulsory education at the lower and upper secondary level. The latter means that students get in parallel to a vocational certificate also certificate of general upper secondary education that allows them to continue studies at Higher Education (HE) level. IVET is provided also at the level of lower secondary education (students get vocational, but not secondary education certificate) that doesn't allow them to continue studies at HE level. Estonian vocational education system can be characterized as a school-based system with rather strong segregation at secondary level (Loogma, 2022). Students with lower academic results and/or vulnerable family/socio-economic family background tend to move after basic education to the vocational track and academically more capable to the general secondary education track. The negative selection to the IVET track is based on the historically determined and socially shared beliefs about the VET's inferiority of vocational education as to compare to academic education (Loogma et al., 2019). The negative selection into the IVET track has been reproduced by a vicious cycle involving social and cultural mechanisms, such as feedback from labour market and employers (e.g. lower salaries of graduates of IVET, feedback from employers about poor general skills of IVET graduates, modest ability for movements in labour market and education etc) keeps this ecology to "work". Therefore, in addition to the historically evolved understandings about the "inferiority" of IVET, interactions between those beliefs and actual labour market outcomes work as the main mechanisms of sustainability of this pattern at macro level. (*Ibid*).

### 3 Conceptual framework and research questions

#### *Social ecology approach*

Social ecology is treated not as the established and consistent theory, but rather as a methodological approach to analyse complex phenomena (e.g. Weaver-Hightower, 2008; Evans et al., 2011). The two main analytical directions can be distinguished in the applications of social ecological analysis. The Bronfenbrenner's well-known ecological system theory (1979) has an individual as primary unit of analysis focussing on the development of an individual in the framework of interdependencies in and between five-level (both, closer and distant) environments that shape young peoples' opportunities and experiences (Lörnic et al., 2019). The another cluster of applications of socio-ecological approach is related rather to the macro-level analysis, analysis of organizations and various social groups (Evans et al., 2011, p. 356) and as well, policy analysis (Weaver-Hightower, 2008). Both directions share the idea of dynamic and multilevel interdependencies enabling an ecology to work and self-sustain. However, several different conceptual frameworks for application of this interdisciplinary analysis have utilized as the aims and contexts of phenomena studied varies widely. Social ecology approach has been applied for research across the different areas and for different phenomena in many contexts (Jackson & Barnett, 2020), including a number of studies, conducted specifically to better understand learning and development in various contexts and uncover factors, that impact directly or indirectly the learning and development in certain practices. (*Ibid*).

Generally, by a social ecology we understand the social associations that function in the interplay of multilevel structures, institutions, individual actors and their interrelations, and interactions. Thus, political processes, historical-cultural circumstances, power relations, socio-economic changes, social relationships can form self-regulating and self-sustaining ecologies (Weaver-Hightower, 2008; Evans, 2020). The analysis of any social ecology can include following categories of elements of an ecology: involved actors and their relationships, environments, structures /institutions, processes and changes that allow the process and ecology to work (Weaver-Hightower, 2008, p. 156). Education and labour market institutions, families, friends and other actors and institutions interact in the generation of learning ecologies that can be experienced as transformative, adaptive or reproductive of social inequalities (Evans, 2020, p.164). Because of self-organizational dynamics that function without the central control/regulation individuals and groups have possibilities to exercise *agency* and therefore influence the all dynamics of an ecology through the interdependences. (Weaver-Hightower, 2008). The understanding of human development as contextualized by Bronfenbrenner's ecological system theory coincides with the contextualized understanding of agency that makes concept of agency significant for social ecological analysis.

#### *Ecological agency*

According the conceptualization of ecological agency (Emirbayer & Mische, 1998; Biesta & Tedder, 2007), agency is treated not as an individual capacity, rather as bounded to a context, something that people do and that has to be achieved in and through engagement with particular environment (contexts-for-action). The approach of ecological agency also suggests that agency should be understood as a process, that is a composition of influences from the *past experience*, orientations towards the *future* and quality of engagement with the *present*. (Biesta & Tedder, 2007, p.135). Ecological agency emphasizes on the changing interdependences between the context and personal conditions in development of agency while a person moves from one environment to another (Emirbayer & Mische, 1998). In this process actors "recompose" their temporal-relational orientations (agentic orientations) and are capable of changing their relationship to structure (*Ibid*, p. 1006). The concept focuses on the ways in which agency is achieved in a particular context-for-action, within a particular 'ecology'. (*Ibid*).

Treating agency as achieved does also mean that the agentic capabilities, such as self-confidence, self-regulation, goal-determination and others can develop and should be supported in an environment to meet challenges and overcome them.

*The framework for ecological analysis of learning and development of students at risk in IVET*  
For the analysis of students' experience we apply the adopted triangle model of Eraut (2004, p.269) and Evans et al. (2011, p.360) of mutual relationships between:

- challenges, students meet in various (institutional) environments;
- support and feedback, they may get/or not to meet challenges and overcome difficulties in a specific context
- (impact on) the development of agentic capacities, such as (self)confidence, motivation, purposiveness, perseverance, initiative and others.

The model is related to the view of ecological agency, involving development of agentic orientations (Emirbayer & Mische, 1998, p.1004) that may change while students move between different environments such as between different schools, from school to work etc. and where they meet challenges that require learning and are considered as difficulties encountered in a specific context. The ways of overcoming the difficulties may result in growth of agentic capacities that in turn, have potential to transform the at-risk situation and open up for students the ways to move on in education and/or work and not be excluded. At the same time, lack of support and/or unmet encountered difficulties may result in reproduction and continuation of the at risk situation in other contexts in the future. We presume, that capacity or ability to meet challenges depends on how students are supported whether by the family members, teachers, peers or whether a student feel to be supported.

The aim of the paper is to better understand the process of learning and development of young IVET students at risk from the viewpoint of social ecology and understand the impacting factors of the risk situation from the perspective of young people themselves, based on their experience in the different micro level / close environments.

The research focuses on the questions: 1) how the students at risk perceive the roles (e.g. supportive or restricting) and interrelationships of actors in the process of their learning and development? 2) What kind of social mechanisms (e.g. interrelated factors and interdependencies) can be identified in the social ecology of students at risk allowing to transform or reproduce the inclusion/exclusion?

#### **4 Methodology**

Sample of interviewed students includes young people in IVET who are at risk of dropping-out from VET school. The sample consists of 20 students (14 female and 6 male) of age range between 16 and 22 years. Students were from 6 different vocational schools in Estonia studying different specialities. Among sample there are students who had dropped out from several schools as well as those that have had rather smooth educational careers. Students are from different regions and with different social and family backgrounds. The data were collected by the semi-structured individual interviews that involved sections, covering students' family background, past and present school and work experiences, social activity, support and future plans. Interviews were mediated via Zoom web-environment extending between 50 and 60 minutes, recorded by Zoom recording system and transcribed verbatim. The ethical principles of informed consent, confidentiality, and the responsibility for data processing in accordance with data protection legislation were followed in the research. The plan for research ethics was improved by the ethical board of research at Tallinn University.

While analysing transcribed texts we combined deductive analysis with narrative analysis. First, we analysed text, based on the triangle model, starting from the identifying main challenges and problems students encounter in the different learning environments they are

engaged in at micro-level or close environments (family, schools, hobby circles, work (practical training as part of IVET curriculum, occasional/summertime jobs, volunteering and other work) and others. Then we analysed the process of overcoming the challenges and whether students get help. Further, we analysed the implications of the ways challenges were overcome or not on the further development of a student, particularly what concerns development of agentic abilities. Then we clustered the students' personal stories as processes of interrelations between challenges and support in particular environments with the implications on further development of students' learning and agency. Finally, we constructed short narratives that embrace individual students' background and challenging experiences over time. The portrayals are presented as characterizing different ecologies of learning and development of students.

## 5 Analysis of students' experience

As the result of empirical analysis, we identified three clusters of students, representing three different ecologies of learning and development of at-risk students with the emphasis on the development of their agentic capacities. The ecologies reflect also different experiences of getting help or not in school(s) in the case of emerging problems and the consequences on their further learning and development, including the visions/perspectives for the future life.

*First*, some students are convinced and confident they can solve the challenges and problems they encounter at school and work themselves and they don't need any help (from teachers nor from schools). However, they still have supportive relationships outside the school to rely on. It seems to happen in these cases when students are interested, motivated and goal-determined in their studies and future (career) prospects. **Rain's** story can be interpreted as a case of transformative ecology as it refers to the rise of agentic capacities and at the same time, favourable prospects for future. Rain is an example of the type of students who exercise agency making purposeful choices while choosing IVET and have rather clear vision for his future work. Rain studied cooking in a vocational school after basic school, which is his purposeful choice. In the basic school he had difficulties with math. He characterizes teachers as angry and rigid, labelling students. Math teacher put him in the low performance group. Even if he had courage to ask for help, he didn't get help and felt that the teacher liked to help well-performing students much more. „... *help [from teachers] was varying ... for example, some teachers try to show how [to do correctly]; another teacher however, try to show quickly to move on to her favourite students*“. Despite this negative experience he succeeded to finish basic school to move on to vocational school to study cooking he liked and was interested in. Another challenge he met in the course of practical training in a restaurant. At the beginning work was very difficult; however he is proud that coped finally well *...there were small rooms, ... the meal was very complicated (many components)...however, four weeks was enough to make things clear for myself ...I learned to perform everything well*. Besides cooking he is very interested in military activities (as a hobby) taking steadily part of military trainings with his brothers. He has few friends, however considers relationships with brothers and training mates as close ones. In meeting those challenges he is finally convinced that can cope well even without external help by learning by himself *“I can cope by myself and doesn't need external help“*

*Secondly*, another type of ecology refers rather to adaptive type of ecology. **Meelis's** story demonstrates the case when the basic school environment was felt as restrictive and isolating, vocational school on the contrary, was experienced as rather positive and supportive, raising self-confidence and well-being. Even though he overcame trauma experienced at basic school, and argues that will finish the school, he still feels that cannot change things around him and hesitates to pose more ambitious goals for the future arguing that he is lazy, trying to cope with as little efforts as possible and is afraid of failing at work. Meelis was bullied in the basic school that lasted from 4th grade to 8th grade. Even teachers tried to handle the problem and mother supported when he didn't want to go to school anymore the bullying eventually stopped and he



was recognised by others while he started regularly taking up sport - exercising the lifting. Even he found the way to avoid bullying he was upset „*That's I didn't like that I was accepted by others only when I started to exercise* “. As well, he has difficulties with math. However, he feels himself much successful and confident at vocational school as the marks are better and importantly, he gets positive feedback from teachers. He has challenges in vocational school in math at the beginning; however, he overcome them and suddenly become the best in the class in math and earned positive feedback from teachers,, ... *I am doing well in math; teacher prizes me... and... in speciality lessons I am doing well, teacher asked to help him* “.

The *third* type of ecology demonstrate how an ecology may work to reproduce exclusion. **Heli** studies in a vocational school 2nd year as construction finisher. Even though she chose construction finisher field rather coincidentally (schoolmates study this and her father is working in the field) she likes the field. She has some friends outside of school and rather good family relationships. In the primary school she experienced a lot of school bullying. Later, in the 5th grade she moved to a small school in the countryside where she experienced very good relationships recalling the school as *very cool* even though she had to repeat a class once. She was rather active at this school, and was also a member of the student union at the basic school. After the basic school she has left two vocational schools because of conflicts with teachers and her *laziness* studying currently in the third one. She has complicated relationships with some of teachers and as well, with her group mates currently. She gets a feeling that she doesn't have enough energy and motivation to do all the tasks at school and thinks to leave the school again to go to work. Even though she gets support from a teacher and her brother, she feels, that is lazy and not good at dealing with (time) pressure and therefore, she knows that *it is better to start fresh*. She is rather confused about her future perspectives.

## 6 Conclusions

The results indicate that the life and learning paths of young people at risk are influenced by micro-level actors, such as family members, teachers and peers, in the basic school that precede vocational school. The environment for emerge and support of agentic capacities of students varies from context to context. Some students who experience little support at the school can have possibilities for self-expression and get support while working. The opposite cases came forward as well. Some students who feel to be supported and safe in the vocational school had difficulties and fears to go to work. Even though students feel the growth in terms of self confidence in vocational school, it does not mean, that they feel to have enough power or will to influence on the surrounding environments and they prefer to *stay in the back* and not to express her/his opinions.

Family has perceived rather as supportive even in the cases of “broken” families and/or parents working abroad. At least some family members, though distant members are supportive in school matters. The experience of students at basic school, may be affected by the family background as the choice to move to study into vocational track after the basic school was in many cases suggested by members of a family, considering also the proximity of a school to the place of living. Some students struggle with serious problems at basic school, related to the combination of bad relationships with peers (related also to school bulling) and teachers, learning difficulties and feeling of isolation and little support at school. Although having supportive family relationships, family may not be able to provide enough support. The situation can even lead to mental health problems that in turn can result in disengagement, missing lessons and learning difficulties. Feeling of disengagement and learning difficulties refer to the dissatisfaction of some of basic psychological needs (needs for relatedness and competence) that lead to amotivation (Gagne & Deci, 2005, p.337).

If the problems haven't been properly met at earlier stages of education the consequences tend to carry forward to vocational school and moreover, to the further (educational) choices



and achievements through decrease of agentic capacities of students. Another mechanism of becoming into the risk situation is related to the health problems of students. No matter whether the health problems can be caused by traumas in earlier periods of life or not, the health problems, such as anxiety, stress and others if not treated properly, can restrict the normal learning and development of students in IVET and in the later life. As well, some risks of exclusion are related to the social economic circumstances of the families of students. The need to earn own money may put pressure on students to go to work as soon as possible; this, in turn, can result of interruption of studies.

However, in some cases transition from basic school to vocational school was appreciated by students and vocational school seems to be more suitable environment for them allowing more flexibility in studies, and teachers and peers are more supportive and caring. In those cases, the vocational school may support agentic capacities of students who had negative experience at basic school mainly through the positive feedback and support in the case of leaning difficulties, creation of positive climate and paying attention to students' concerns. Positive experience at the vocational school can help to broke up the wicked-cycle of reproducing risks and possibly lead to adaptive and/or transformative ecologies of learning and development of students.

Thus, as the result of concurrency of many unfortunate circumstances, such as little support from families, poor learning results, school bullying and negative labelling by teachers at basic school the agentic capacities such as self-esteem and confidence of the young people at-risk decrease. Those situations may have long lasting consequences on students' lives, reproducing the risks and rising the likelihood for social exclusion. However, despite the pervious negative experience of students' vocational education still has possibilities to change the reproductive ecology to adaptive or transformative that would enable students to move on in more or less ambitious way.

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### References

- Beck, V. (2015). Learning providers' work with NEET young people. *Journal of Vocational Education & Training*, 67(4), 482–496.
- Biesta, G., & Tedder, M. (2007). "Agency and learning in the life course: Towards an ecological perspective." *Studies in the Education and Adults*, 39 (2): 132-149. doi:10.1080/02660830.2007.11661545.
- Gagne, M., Deci, E.L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior*. 26, 331–362 (2005). doi: 10.1002/job.322
- Emirbayer, M., & Mische, A (1998). What Is Agency? *American Journal of Sociology*, 103 (4), 962–1023
- Eraut, M. (2004). Informal learning in the workplace. *Studies in Continuing Education*, 26(2).
- Evans, K., Waite, E., Kerch, N. (2014). Towards a Social Ecology of Adult Learning in and through the Workplace. In M.Malloch, L.Cairns, K.Evans and B. O'Connor (Eds.), *The Sage Handbook of Workplace Learning*. (pp. 356-370). Sage.
- Evans, K (2020). Learning Ecologies at Work. In R. Barnett and N. Jackson (Eds.). *Ecologies for Learning and Practice. Emerging Ideas, Sightings, and Possibilities*. (pp. 163-176). Sage.

- Goldman-Mellor, S., Caspi, A., Arseneault, L., Moffitt, E. (2016). Committed to work but vulnerable: Self-perceptions and mental health in NEET 18-year-olds from a contemporary British cohort. *Child Psychology and Psychiatry* 57(2), 196–203.
- Jaggo, I. (2019). *Ülevaade kutsehariduse katkestamisest 2005-2017*. Tartu: Haridus- ja Teadusministeerium.
- Jackson, N. & Barnett, R. (2020) Introduction. Steps to ecologies for learning and practice. In R. Barnett and N. Jackson (Eds.). *Ecologies for Learning and Practice. Emerging Ideas, Sightings, and Possibilities*. (pp. 1-15). Sage.
- Loogma, K., Ümarik, M., Sirk, M., Liivik, R. (2019). How history matters: the emergence and persistence of structural conflict between academic and vocational education: The case of Post-Soviet Estonia. *Journal of Educational Change*, 20, 105–135. [https://doi: 10.1007/s10833-018-09336-w](https://doi.org/10.1007/s10833-018-09336-w).
- Loogma, K. (2022). Estonia: expanding the institutional landscape. In V. Tutlys, J. Markowitsch, S. Pavlin, J. Winterton (Eds.). *Skill Formation in Central and Eastern Europe. A search for Patterns and Directions of Development*. (pp 121-138). Peter Lang. (Education).
- Lörinc, M., Ryan, L., D'Angelo, A., Kaye, N. (2020). De-individualising the 'NEET problem': An ecological systems analysis. *European Educational Research Journal*, 19(5), 412–427.
- Ose, S. O., Jensen, C. (2017). Youth outside the labour force — Perceived barriers by service providers and service users: A mixed method approach. *Children and Youth Services Review*, 81, 148–156.
- Psifidou, I. Mouratoglou, N. Farazouli, A. Harrison, C. (2022). *Minimising early leaving from vocational education and training in Europe: career guidance and counselling as auxiliary levers*. Luxembourg: Publications Office. Cedefop working paper, No 11. <http://data.europa.eu/doi/10.2801/75320>
- Reiska, E. (2018). *Noorte sotsiaalne tõrjutus. RASI toimetised nr 3*. Tallinn: Tallinna Ülikool.
- Weaver-Hightower, M.B. (2008). An Ecology Metaphor for Educational Policy Analysis: A Call to Complexity. *Educational Researcher*, 37(3):153-167.

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Maret, A. & Loogma, K. (2023). A narrative understanding of boundary crossing by vocational teachers in their career path. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 281–290). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7821940>

## A Narrative Understanding of Boundary Crossing by Vocational Teachers in their Career Path

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### Abstract

The article explains the career path of vocational teachers. Vocational teachers, with few exceptions, have a background related to a different economic sector. The decision to become a teacher is challenging as it involves adapting to new behaviours, culture and regulations. Within the transformation process, an individual can cross the border from his/her initial occupational field to the vocational school. As a vocational teacher, the individual has to adapt several structural changes, pedagogical demands and trend in a vocational field. Drawing on the analysis of narrative interviews with 21 Estonian vocational teachers, the article highlights the factors and motives for becoming a vocational teacher and analyses the transition processes and perspectives of the vocational teachers' career. The individuals' career path has been analysed using the concept of boundary crossing. As the narrated career paths represents the individual's own view of career related factors, the career is considered a subjective career.

### Keywords

boundary crossing, vocational teacher, professional understanding

## 1 Introduction

The recommendation that VET teachers should have sector-specific work experience has prompted VET schools to adopt strategies to attract industry professionals to become VET teachers (OECD, 2021). The fact that VET teachers mostly have occupational backgrounds is recognised (Andersson and Köpsén, 2015) but questions about motives of career change and the process of transformation need clarification.

It is recognised, that VET teachers regularly come to the occupation by “accident”, without a well-developed intention (Berger and D’Ascoli, 2012). Oftentimes, the career change from industrial worker to VET teacher takes place after the long career path, which may encompass periods of unemployment and employment in various organisations (Loogma, 2018). However, becoming a VET teacher is not the initial career plan but it rather seen as a condition in the choice when this becomes an alternative (Berger and Girardet, 2015). The recommendation that VET teachers should have sector-specific work experience (OECD, 2021) and usually have first work experience as specialist in an occupational field means that tend to be more committed to their initial (occupational) field and community. This can be explained by shorter



teaching experience and longer work-life experience outside school (ibid, p.340) Andersson and Köpsén (2015, p.340). During the transition to a VET teacher's position should to detach themselves from the world with which they once identified (Sarastuen, 2020, 346) and gain new identities, which at its best, includes both teacher identity and vocational identity (Fejes and Köpsén, 2014).

Nevertheless, before they can move between practical field and pedagogical field they have to cross the boundary from the vocational field to teaching.

## **2 The context of Estonian VET teachers' career**

During the last 30 years, Estonian VET has undergone two main transformations. First, the transformation from Soviet system to a school-based system caused by the collapse of the Soviet planned economic system. The second wave of changes, which brought about structural changes, and therefore potentially influenced the careers of VET teachers, is related to the neoliberal turn and Europeanization in vocational education (Loogma, 2016). For VET teachers, however, it caused discontinuities as well as new starts (Loogma, 2018).

By the year 2009, several flexible new forms of vocational training, including targeting vulnerable groups (students without basic education, students with special needs) were ratified (Loogma, 2016). Almost simultaneously, the approaches of learner-centred and outcomes-based teaching were introduced.

In Estonian VET the term 'teacher' is used for both roles - teacher and trainer (Vocational Education Institutions Act, 2013), which means that teacher is expected to teach theoretical knowledge and practical skills.

The career of VET teachers is largely determined by the formal requirements, which have been laid out in the professional standards on the levels of the European Qualification Framework (EQF 5, 6, 7).

Most senior vocational teachers have experienced several career changes and their professional understanding has been formed in different working conditions, including aforementioned societal transition period, which meant the loss of work often requiring them to move into different economic sectors or occupational field. (Loogma, 2016).

The focus of this article is to highlight the motives and the transition processes of becoming a vocational teacher. For that, we examine the personal stories of vocational teachers.

We assume that both the structural circumstances, as well personal life-related circumstances are forcing career changes upon VET teachers and boundary-crossing activities.

## **3 Theoretical framework**

The conceptual framework applied in this article comprises the concepts of career, subjective career, boundaries and boundary crossing processes in the career path.

The notion of a career means a process – a sequence of work-related experiences (Hall, 2002, 11) or a sequence of social positions filled by a person through their life or an aspect of their life such as their involvement in work' (Watson, 2017; 391). The notion of a subjective career refers to the distinction made between objective and subjective aspects of the career. While objective aspects of a career comprise the obvious movements between educational and work institutions, a subjective career is an individual's view on her/his career involving subjective experience and memories (Watson, 1980, 124; Young and Collin, 2000). The subjective career as a personal view of her/his career path enables to an individual critically reflect on the past changes and attribute meaning and consistency to her/his working life (Riverin-Simard, 2000; Hall and Mirvis, 2013).

However, the construction and shaping of the career are seen as an interplay between structural factors, particularly available opportunity structures (Watson, 2017) from one side

and self from another side (Young and Collin, 2000; Wolf, 2018; De Vos Van der Heijden and Akkermans, 2020).

Besides voluntary boundary crossing in their career path, some people are involuntarily pushed into a boundaryless career by structural changes (Guan et al., 2018). The notion of sustainable careers contributes to the prevailing sustainability debate and paying attention to the fit between an individual and her/his career, such as satisfaction and feeling of success, people's physical and mental health and well-being and economic revenue (De Vos, Heijden and Akkermans, 2020, 3).

The subjective career manifests itself in narratives about what and how individuals recall and relate to their life and career. In their memories and perceptions about their career, individuals try to attribute meaning and achieve coherence between various aspects of their working lives (Watson, 1980; Young and Collin, 2000).

The distinctions between professions or vocations, scientific fields and knowledge areas can be described and manifested using the concept of boundaries (Lamont and Molnar, 2002). Boundaries can be defined as social and cultural differences that give rise to discontinuities in interaction and action, simultaneously suggesting a sameness and continuity in the sense that within discontinuity two or more sites are relevant to one another in a particular way (Lamont and Molnar, 2002; Akkerman and Bakker, 2011, 140).

However, boundaries are not only barriers to continuity, as these embody the potential and resources for learning and innovation (Akkerman and van Eijck, 2013).

The movements between various sites of activities involve boundaries and boundary processes related also to horizontal learning in terms of new understandings and identity development, changed practices, and institutional development (Akkerman and Bakker, 2011, 142). In this article, we consider a career as a subjective career based on the memories and subjective understanding of the work-related contexts, motives of choices and movements.

#### **4 Research questions**

This paper will seek to answer the following research questions:

1. What kinds of motives and contextual factors, both structural and personal factors have impact on the career turns in the way of becoming a vocational teacher?
2. How is boundary crossing manifested in the course of becoming a vocational teacher?

#### **5 Methodology**

The research is based on narrative life history interviews, conducted with 21 vocational teachers. By nature, a narrative is a story of transformation, as while narrating about life the individual connects the past and the present, self and others (Lawler, 2002). We considered the narrative approach for achieving a better understanding of the career of vocational teachers that captures the experiences, events and “contextual influences in a way that other research methods may not” (Bold, 2012, 21).

The construction of the sample was based on the principle of heterogeneity. A total of 8 interviewees were female, and 13 were male, most (17) were older than 45. They had worked as welders, chefs, mechanics, secretaries, builders, engineers, tractor drivers or service workers. Half of the participants had higher professional education before and some had acquired pedagogical higher education after becoming a VET teacher.

The two-step narrative interview method was applied. First, in the non-structured interview stage, the interviewee talked about the way they have got to the position of a vocational teacher. In the second stage, the questions, specifying the necessary aspects of the life stories, work identity and future perspectives were discussed.

In analysing the interviews, we applied the thematic analysis approach (Braun and Clarke, 2006). Analysis started with open coding. Although we implemented mainly an inductive approach, the theoretical concepts were used in identifying the content units. Then we aggregated the content units into categories and finally, integrated the categories into themes and selected illustrative quotes.

## 6 Findings

From the narratives collected from the participating vocational teachers, we distinguished the following themes: 1) becoming a vocational teacher; 2) VET work and boundary crossing; 3) VET teachers' role and position, and 4) future perspectives, which revealed factors such as career satisfaction, success in boundary crossing, and the vocational allegiance.

### *Becoming a vocational teacher*

Becoming a vocational teacher was unplanned. The interviewees became vocational teachers based on a former professional career or their educational path and mostly (13) after an offer from the VET school. Motives of younger vocational teachers included the prospects for self-development, better job security compared to the private sector, potential training programmes, and an intriguing challenge. For instance, Marko accepted the VET school proposal at the age of 23.

*I was wondering why to go ... I will just get professional training through school more than in a private company. (Marko, 30)*

For some, becoming a vocational teacher was due to the lack of suitable options in the region, that it provided a steady salary, and the need to leave unemployment.

*I had been unemployed for a whole year. ..., I applied everywhere of course, wherever I could ... Then it happened that I was invited to a job interview and they asked if I wanted to apply my knowledge in teaching .... (Priit, 53)*

Becoming a vocational teacher was tied up with changes in their personal life, such as divorce. For example, after his divorce, Arno re-evaluated his previous career.

*And money didn't taste good anymore, and well, I was its slave, but I also lost my life to it. (Arno, 58)*

Some who recognised the teaching profession as an adolescent showed personal initiative. In some cases, the decision to become a vocational teacher was made after acknowledging lack of satisfaction in their current work.

*I stepped inside the door and asked whether you need a good 50-year old, .... And they said, of course, they welcomed me with open arms. (Riina, 50)*

Some interviewees exercised agency when responding to job advertisements.

To conclude, becoming a vocational teacher was mostly an unplanned decision. Three patterns can be distinguished when it comes to becoming a vocational teacher: 1) the invitation to teach came from vocational schools; 2) vocational teachers exercised agency by replying to an advertisement or enquiring at the vocational schools about job opportunities or 3) vocational teachers left teaching but returned.

### ***Vocational teachers work as boundary crossing***

Becoming a vocational teacher brought about substantial changes. Difficulties in adjusting to the new field of practice were more often linked to the absence of learning materials and students not meeting their expectations. These aspects were reinforced by the fact that vocational teachers often lacked pedagogical training. Sometimes, adjusting to the requirements of the new or different socio-cultural environment of a vocational school in terms of self-control, use of language, dress code and other aspects took several years.

*And of course, if you go there from construction sites, then you kind of speak in slang, you are not that type who chooses his or her words, as is expected from teachers ... and I remember that there were people who kicked me under the table – because ...my vocabulary, of course, started to change slowly towards more politeness (Ene, 64)*

Some VET teachers, getting out of unemployment, perceived this career development as a step backwards. Priit, despite his initial disappointments and acclimatisation, found meaningful perspectives in the work of vocational teachers, and started to learn to manage his classes better.

*Absolutely, the only reason I'm at university today ... I just have to do it, for this simple reason that, first of all, I could deal better with my romps [students]. This is ... the most important. (Priit, 53)*

The transformation period from a specialist to a vocational teacher, marked by changes in professional identity, varied greatly. Some teachers considered themselves vocational teachers after a few years, but some maintained a stronger relation with their initial occupational field, considering themselves primarily as a specialist in a vocational field. However, teachers who remarked on the lack of collegial support and participation in teacher networks tended to remain identified with their previous field rather than with the teaching profession. For example, Raivo, who has worked as a vocational teacher for more than ten years, defines himself on the basis of his former occupation. Raivo feels isolated and has no interest in pedagogical courses.

*I still feel like a lifelong electrician and want to teach what electricians need to know. (Raivo, 64)*

At the beginning of his vocational teacher's career, Raivo was in his 50s. According to Raivo's narration he does not remember any support from the VET school. Some of those who started working as VET teachers at a younger age recognised that they had a mentor.

Riina experienced the process of becoming VET teacher rather as cultural border crossing resulting in the changing manner of speech, wardrobe, and behaviour. She passed pedagogical courses and created collegial relations.

*I think that today, three years later, I'm already more a teacher than a builder. Quite definitely, because when I look at what I say, and how I speak, and how I teach these students. (Riina, 50)*

Mostly, after the initial acclimatisation, vocational teachers started to seek cooperation with colleagues and other practitioners considering this as a source of learning and enriching their practice.

*I have other people from the same field from different schools, we have a workgroup, we come together .... we can be competitors...but at the same time when we call each other, ask for materials, ask how you do this? Can you come to my lesson? Then we have support. (Rita, 54)*

Positive feedback and organisational support tended to increase the teachers' sense of well-being, organisational identity and in turn, shaped the platform for active professional development and further boundary crossing, which involved the new occupational practice.

Vocational teachers who were characterised by intrinsic motivation and/or who had organisational or workgroup support recognised profound changes in their behaviour and attitudes. Those who focused mainly on the students and the subject, but at the same time had a lack of contact with colleagues within the VET school community, identified themselves as practitioners. Despite some vocational teachers recognising a stronger connection with their occupation, and others with the teaching profession, evaluate cooperation with practitioners as a source of professional development.

### ***Understanding the vocational teacher's role and positions***

Several senior teachers considered their own paramount goals supporting students' skill development, securing the students' future lives, teach the next occupational generation and to help students in difficult situations. Several narrated cases revealed the altruistic actions of vocational teachers.

However, in talking about future perspectives some senior as well as some of the middle-aged teachers pointed to the question of age. For example, Rita, in a good physical tone woman noted:

*I feel that there should be younger people in front of the class, I feel that I am not so attractive anymore. (Rita, 54)*

The way how teachers perceive the role and position of vocational teachers is influenced by former career. For example, for those who have enjoyed considerable autonomy at previous work, the circumstances of vocational teachers were perceived as rather restricted.

*The first difference is that vocational teacher is nobody in reality. You are nobody, absolutely. Everything has been decided for you. (Priit, 53)*

### ***Future perspectives***

While discussing VET teachers' future perspectives, half of the participants plan to work as VET teacher until their retirement. The senior teachers see their future as connected to the same vocational school and subject field where they feel safe. Some of the middle-aged vocational teachers want to create their own businesses.

*Eventually, I want to be that kind of guy, who most of the time does things in his own enterprise for people and goes to vocational school to teach ... in my opinion, that would be the best possible solution. (Aivar, 45)*

Among middle-aged or younger teachers, some have thought about resigning from vocational teaching because of the lack of autonomy, lack of time, and funding policy. Teachers' contribution to advertising the school and attracting potential students is perceived as time-consuming obligation, which does not coincide with VET teachers' professional work.

*I feel almost like a sales secretary or some kind of salesperson. I have to do this and that, to attract students to come to school .... (Marika, 48)*

The younger vocational teachers, who felt that a job in a specific school enabled flexible schedules, professional training, time for family and friends, hobbies and social activities, were satisfied with their careers and were not planning any career changes. Some were planning to get on and dreamt of a future in an organisation which offers wider future perspectives in their specific fields.



*... I'd make my choice according to the self-development opportunities in one place or another... a vocational teacher in the IT field you need to be, you need to know everything, you need to belong everywhere, you cannot run in one specific direction, I would like to know more about administrating .... (Janno, 24)*

The motives for further development vary among vocational teachers depending on meanings, they attributed to the vocational teaching (to earn money, opportunity for self-development, sharing their skills, helping others, a dream job).

In conclusion, the future career perspectives of vocational teachers are related to their age, their previous career path, and whether they are oriented more towards their occupational or pedagogical identity. Senior VET teachers consider further work as vocational teachers a familiar and safe career path. Some want to open their own business and pursue a career in their own subject field. Mostly, these are younger or middle-aged teachers who possess significant skills in a specific field.

## **7 Discussion and conclusion**

The results highlighted patterns in terms of how and why the respondents chose the career of a vocational teacher. Becoming a vocational teacher was driven by the limited opportunity structures, including limited suitable options in the local labour market, the need to leave unemployment, seeking self-development possibilities and striving toward their own adolescent calling. In most cases, becoming a vocational teacher was a consequence of rather accidental circumstances, such as responding to an offer from a local vocational school. This trend has also been highlighted by Berger and D'Ascoli (2012). The teachers did not very often exhibit their own agency in choosing a career as a vocational teacher.

At the beginning of their careers as VET teachers, boundary crossing manifested itself in learning and understanding of the organisational culture of a vocational school, changing their behaviour patterns and language style, as well as acquiring pedagogical skills and competencies. Later, after adapting to life as a teacher, to maintain a connection with their occupational field, teachers had to cross boundaries again to retain relationships with enterprises and in their own specialist field. The collaboration with colleagues within their vocational school and those of others, as well as representatives of enterprises and sector organisations, are among the most important factors of successful boundary crossing. However, it turned out that the support from the organization was rather low. Moreover, some VET teachers experienced isolation and frustration, as mentorship was actually not offered.

Becoming a vocational teacher was rarely the first choice on their career path. In the “normal” way, the primary process of socialisation into the world of work took place in an occupational field/culture. Therefore, many vocational teachers see their occupational field as more meaningful and visible and have maintained their vocational or professional identity. However, in some cases, teachers crossed the boundary from being a specialist to a VET teacher, and developed a new hybrid identity (Farnsworth and Higham, 2012) and considered themselves simultaneously a specialist and a teacher.

When looking at the teachers' motives to work, the caring motive is a recurring theme. This harmonises with Köpsén (2014), who associated it with teachers' vocational identity. In our study, the senior teachers expressed the allegiance to their former speciality and at the same time, appreciate that they can teach the next occupational generation. The successful boundary-crossing between communities enables sustainability, as the previous life career still has the meaning because of relations and professional skills. Thus, a sustainable career manifests itself in the social relations in and beyond the VET school and in the sense of self-efficacy provided by educating the next generation of vocational professionals. Moreover, feelings like success

or satisfaction may help VET teachers to overcome the regret of giving up their previous vocational work, as pointed by Sarastuen (2020).

Our study highlighted the dilemma between the two sides – professional working life and working as vocational teachers – vocational/professional and pedagogical. This study revealed that limited collaboration within the occupational or pedagogical community puts the sustainable development of vocational teachers at risk.

At the beginning of their career as a VET teacher, the socialisation into the pedagogical community of the vocational school means boundary crossing in several senses. This finding is supported by Akkerman and Bakker (2011), who highlighted that this process involves a change in professional identification as well as living in to a new cultural environment. Successful socialisation, however, means that to some extent, their identity as a specialist continues to be important.

Our findings confirm that there are some similarities between the careers of VET teachers in Nordic countries. In Sweden (Fejes and Köpsén, 2014) and Finland (Vähäsantanen, Saarinen, Eteläpelto, 2009), some vocational teachers, also use their free time to run their own small businesses and appreciate working in their “own” vocational or professional field. Keeping close contacts with the work in a specialist field is one manifestation of the boundary crossing that occurs between their private life, professional field and vocational teaching. As in Finland, the continuous need among Estonian teachers to cross boundaries between various fields depends foremost on the teacher’s individual efforts, and maintaining this practice would benefit from the support of their vocational school (Vähäsantanen, Saarinen, Eteläpelto, 2009). However, the results suggest that becoming a vocational teacher is a process where the outcome depends on the individual’s own activity and organizational support. This harmonises with a sustainable career perspective, and supporting the existing workforce strengthens the VET organisation and makes it more attractive to the potential VET teachers.

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## References

- Akkerman, S. F., Bakker, A. (2011). Boundary Crossing and Boundary Objects. *Review of Educational Research*, 81(2), 132-169. doi:10.3102/0034654311404435.
- Akkerman, S. F., van Eijck, M. (2013). Re-theorising the student dialogically across and between boundaries of multiple communities. *British Educational Research Journal*, 39(1), 60-72. doi:10.1080/01411926.2011.613454.
- Andersson, P., Köpsén, S. (2015). Continuing professional development of vocational teachers: participation in a Swedish national initiative. *Empirical Research in Vocational Education and Training*, 7(7). doi:10.1186/s40461-015-0019-3.
- Berger, J.-L., D’Ascoli, Y. (2012). Motivations to Become Vocational Education and Training Educators: A Person-Oriented Approach. *Vocations and Learning*, 5(3), 225-249. doi:10.1007/s12186-012-9075-z.

- Berger, J.-L., Girardet, C. (2015). The determinants of VET educators' occupational choice, *Education and Training*, 57(1), 108-126. doi:10.1108/ET-04-2013-0062.
- Bold, C. (2012). *Using Narrative in Research*. Thousand Oaks: SAGE Publications
- Braun, V., Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. doi:10.1191/1478088706qp063oa.
- De Vos, A., Van der Heijden, B. I. J. M., Akkermans, J. (2020). Sustainable careers: Towards a conceptual model. *Journal of Vocational Behavior*, 117. doi:10.1016/j.jvb.2018.06.001.
- Farnsworth, V., Higham, J. (2012). Teachers who teach their practice: the modulation of hybridized professional teacher identities in work-related educational programmes in Canada. *Journal of Education and Work*, 25(4), 473-505. doi:10.1080/13639080.2012.708726.
- Fejes, A., Köpsén, S. (2014). Vocational teachers' identity formation through boundary crossing. *Journal of Education and Work*, 27(3), 265-283. doi:10.1080/13639080.2012.742181.
- Guan, Y., Arthur, M. B., Khapova, S. N., Hall, R. J., Lord, R. G. (2018). Career boundaryless and career success: A review, integration and guide to future research. *Journal of Vocational Behavior*, 110 B, 390-402. doi.org/10.1016/j.jvb.2018.05.013.
- Hall, D. T. (2002). *Careers In and Out of Organizations*. Thousand Oaks, London, New Delhi: Sage Publications.
- Hall, D. T., Mirvis, P. H. (2013). Redefining Work, Work Identity, and Career Success. In D. L. Blustein (Eds.). *The Oxford Handbook of the Psychology of Working*. (pp 203-217). New York: Oxford University Press.
- Köpsén, S. (2014). How vocational teachers describe their vocational teacher identity. *Journal of Vocational Education and Training*, 66(2), 194-211. doi:10.1080/13636820.2014.894554.
- Lamont, M., Molnár, V. (2002). The study of boundaries in the social sciences. *Annual Review of Sociology*, 28, 167-195. doi:10.1146/annurev.soc.28.110601.141107.
- Lawler, S. (2002). Narrative in Social Research. In T. May. (Ed.). *Qualitative Research in Action*. (pp. 242-258). London: Sage.
- Loogma, K. (2016). Europeanization in VET Policy as a Process of Reshaping the Educational Space. *International Journal for Research in Vocational Education and Training*, 3(1), 16-28. doi:10.13152/IJRVET.3.1.5.
- Loogma, K. 2018. Critical Incidences and Events in Vocational Teachers' Life Careers. In L. M. Herrera., M. Teräs., P. Gougoulakis. (Eds.). *Vocational Education and Training – the World of Work and Teacher Education*. (pp 402-420). Stockholm: Premiss.
- OECD. 2021. Teachers and Leaders in Vocational Education and Training. *OECD Reviews of Vocational Education and Training*. OECD Publishing, Paris. <https://doi.org/10.1787/59d4fbb1-en>
- Riverin-Simard, D. (2000). Career development in a changing context of the second part of working life. In A. Collin., R. A. Young. (Eds.). *The future of the career*. (pp 115-129). London: Cambridge University Press.
- Sarastuen, N. K. (2020). From vocational worker to vocational teacher: a study of identity transition and loss. *Journal of Vocational Education and Training*, 72(3), 333-349. doi:10.1080/13636820.2019.1607533.
- Vocational Educational Institutions Act. (2013). Accessed 17 December 2022. <https://www.riigiteataja.ee/en/eli/ee/504022014002/consolide/current>.
- Vähäsantanen, K., Saarinen, J., Eteläpelto, A. (2009). Between school and working life: Vocational teachers' agency in boundary crossing settings. *International Journal of Educational Research*, 48, 395-404. doi:10.1016/j.ijer.2010.04.003.

- Watson, T. J. (1980). *Sociology, Work and Industry*. Routledge & Kegan Paul: London, Boston and Henley.
- Watson, T. J. (2017). *Sociology, Work and Organisation*. London and New York: Routledge.
- Wolf, C. (2018). Not lost in translation: Managerial career narratives and the construction of protean identities. *Human Relations*, 72(3), 505-533. doi:10.1177/0018726718778094.
- Young, R. A., Collin. A. (2000). Introduction: framing the future of career. In A. Collin, and R. A. Young. (Eds.). *The Future of Career*. (pp 1-17). Cambridge: Cambridge University Press.

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## Vocational Education and Training offered in Second Chance Schools in Spain: Possibilities and Limits from an Organizational Analysis

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### Abstract

The paper provides theoretical and empirical analysis of how second chance schools are addressing the challenge of early school leaving through provision of vocational training and vocational and personal guidance.

Our research context is provided by accredited second chance schools in Spain, which are undergoing an external evaluation process since 2017 which is also part of the strategy that these schools have to gain visibility, respect, legitimation and funding as well by education and employment administrations.

Our theoretical approach builds upon South American literature on the weight of the institutional dimension in providing formal and non-formal vocational training, in an attempt to differentiate what are the crucial elements of the curriculum and the organization of training that introduce differences in what seems to be otherwise a similar vocational offer. We focus upon five different aspects, one of them clearly curricular (training itself) while the other four are more likely organizational: selection and admission processes; intermediation processes as training comes to an end; networking with other organizations that receive or submit young students to second chance schools; and the organizational culture, values and identity that help stressing differences among institutions. We also rely upon five quality criteria: pertinence, relevance, integrality, efficacy and efficiency, that are explained in relation to the appropriateness of training for the needs of the labor market, the students, and the means available to organizations.

We apply that framework to analyze 18 second chance schools in several Spanish regions, in order to assess how different they are and how relevant the organizational culture is.

### Keywords

second chance schools, quality, fight against early school leaving, organization

### 1 Introduction

Early school leaving is a relevant problem of European educational policy, and it has been a major problem in Spain since the shift of the century, though the crisis in the past decade have contributed to solve it as returning to education was perceived as an acceptable option for many. The problem does not only lie upon individuals, but also on the features of education systems and the loss of legitimacy in present times (Alexander, Loewenthal and Butt, 2020).



In 2016, the Spanish Association of Second Chance Schools was founded to tackle this problem, according to similar experiences developed in France and in parallel to similar developments taking place in Portugal. The notion of second chance schools, coined by the European Union in the mid 1990s, has been researched by Kiprianos & Mpourgos (2020), and Paniagua (2022), and it has been one of the several measures adopted to retain or re-enrol students in the system, particularly through vocational training and practice-based programs (Williamson, 2014).

## 2 Theoretical framework

Jacinto and Milenaar (2009) have shown the relevance of institutional factors affecting the pedagogical quality of vocational training programs that reengage students in education. Based upon their work and that of González (2003), who addresses the organizational dimensions of schools as relevant facilitators of pedagogical interventions, we have devised a framework to analyse the quality of the provision of vocational programs in their relation to the demands of students with specific needs.

This framework embeds the five quality criteria suggested by Jacinto (1998): Pertinence (adequacy to the qualification demands of the labour market); relevance (adequacy to the expectations and needs of the youth); integral offer (both in terms of valid and wide qualifications that comprise technical and social skills as well as in terms of social and support actions that provide the conditions for learning processes to happen); efficacy; and efficiency. These criteria will allow us to identify different kinds of second chance provision, under the assumption that there is no one best second chance school, but that their success depends upon selection and matching criteria where the offer of the school is appropriate to respond to the demands of young people and to foster them to increase their personal and social development and their own employability.

By doing so, we take forward upon the studies of Martínez-Morales (2021) and consider other experiences where the institutional is relevant such as Calvo, Gutiérrez and Bayarri (2020) and Martins et al. (2020) have done too. We opt for an organizational perspective rather than a didactical or methodological one. We do not want to focus on curriculum design and development, neither on the way that vocational training is delivered. Rather, we want to look at the way in which the institutions are constituted and what is the rationale guiding the decisions they take in the mid and long-term.

Given that we have conducted research with second chance schools in Spain since 2019, this has helped us develop several hypotheses that we are currently studying with these institutions:

1. We expect that Covid-19 has affected the vocational offer, considering that certain occupations are no longer as attractive as before and that some were considered as essential services during lockdown. Perhaps, second chance schools have attempted to diversify their offer to address more seriously both telework as digitalisation. Perhaps the gender division of work has been further affected by this. Furthermore, digitalisation might have an impact upon their methodologies, not just content.
2. Second chance schools offer of vocational qualifications tend to retain students until they achieve these qualifications, while those which are not accredited to provide a formal VET qualification tend to accelerate access into the labour market of their students or to make them return to the education system. We expect also to find second chance schools whose main priority is not access into the labour market nor return into the education system, but rather personal reconstruction and development of the adolescent.
3. We expect to find differences between second chance schools who are part of a larger organization that offer other educational and social support and those where the whole organization is a second chance school, the former being able to adapt their vocational offer

to a larger extent than the latter, which are subject to the staff that is member of the organization.

4. We expect differences in the awareness and update of labour market needs among second chance schools. According to this and their own vocational offer, we expect second chance schools to avoid access of those youth whose interest are not covered by their qualifications. Furthermore, schools that have programs to allow students explore their vocational interest and follow their own pathway accordingly, even if this means leaving the second chance school.
5. All second chance schools gather at least two of the three first quality criteria suggested by Jacinto (1999), that is, pertinence, relevance, and integral offer; and at least one of the two latter criteria (either efficacy or efficiency). These are the foundations for their success.
6. Accordingly, attraction and selection processes of second chance schools are conducted intentionally to make the best out of their limited chances. Second chance schools keep registration open all year through, to serve the needs of young people who have dropped the formal education system or newcomers, given the amount of migrant population that they enrol (up to a third of their whole registration). This is possible given the variety of their offer, consisting often of non-formal vocational training as well as other complementary support such as housing, leisure, and others.
7. Second chance schools take part of networks with other organizations that are active in the beginning, whenever there is selection and access into the second chance school, but also in their final stages, when it comes to look for work placements for students and for facilitating access into the labour market or return to the education system.
8. The institutional identity and prestige of the second chance school is well-known in its environment, it remains stable, and it makes of them a resource to which social and educational organizations address whenever they have youth that might benefit from attendance to second chance schools.
9. We expect to find, whatever the differences, certain features in all second chance schools that facilitate innovation processes within them.

To analyse our hypothesis, we have developed an overarching framework to analyse the study of these educational organizations, which comprises the following dimensions:

- Context in which the school is located. Although most accredited second chance schools are located in urban areas, we search for differences among large and small cities, where the role of industrial, agriculture and service economies is different.
- Intervention strategies. We embed training provision as one more process within a wider intervention rationale, that we divide in three steps.
  - o First, the actions taken by the organization to approach, select and welcome new students that they want to enrol.
  - o Second, the training provision itself, how it evolves and what are the dimensions it covers. We do not just focus upon training, but also take into consideration what makes training possible. Therefore, by training provision we understand the following:
    - Vocational training that is conducive to accredited qualifications
    - Vocational training that is merely non-formal training and that achieves no official recognition even if it qualifies the young person
    - Academic education such as instrumental skills in languages, maths, and another basic cultural knowledge
    - Personal development assistance such as emotional intelligence, social skills, affective or sexual education, education in leisure activities

- Non-curricular support provided to youth, be it housing, legal assistance, financial aid, health support or others. Adaptive measures to Covid-19 are also considered here
- Third, all the preparation addressed to facilitate the young person leaving the organization with chances to succeed in adult and working life. This includes several actions such as guidance, intermediation, and follow-up of the young person's trajectory:
  - Work placement and access into the labour market
  - Return to formal vocational education
  - Network with other institutions where the young person can proceed with other forms of specialized support that may be needed and that cannot be provided by the second chance school
- Teaching-learning processes, where we look to how the curriculum is designed and developed, which are the methods employed by the staff and what is the role of technology in the educational process<sup>29</sup>
- Relations with other education, social and work institutions in the area, where we look at networks among organizations, and also how they handle the balance between cooperation and competition with those that are similar to them
- Institutional identity of the second chance school, where we consider the main features of their organizational culture, what are their values and mission and how do these relate to their original constituency, be it an association, foundation or cooperative (as a legal form) and be it promoted by a religious institution or a civil one.

Those are therefore the issues we have been looking at when approaching second chance schools and the variables that have guided our data-gathering process so that we could end up with a proper interpretation of the keys behind the success of each of the schools as well as with the basis to compare different schools among them.

### 3 Methodology

The research we report in this paper is part of a larger study that attempts to cover the relation between offer and demand in second chance schools in Spain. There are currently 45 accredited second chance schools, they are present in 10 Spanish regions: Andalucía, Aragón, Basque country, Canary Islands, Castilla – La Mancha, Castilla – León, Catalonia, Madrid, Navarra and the Valencian Community. To conduct our study of the organizations, we have got permission from 18 schools located in seven different regions. We have also involved 29 of them in our quantitative study, where we are conducting a longitudinal study consisting of the application of questionnaires among students enrolled in these schools in three different moments in school years 2021/2022 and 2022/2023.

However, this paper focuses on the side of the offerings. We have gathered documentation of the 18 schools willing to participate in our study, from different sources:

- The accreditation reports produced by the accreditation committee of the Spanish Association of Second Chance Schools, as well as the self-evaluation reports produced by the schools in that process.
- Data with all the offerings of the schools since they were accredited (starting 2017) until schoolyear 2020-2021.
- Relevant internal documents produced by the school dealing with their educational proposal, internal rules, internal handbooks or teachers, selection criteria of students and teachers, assessment criteria of students learning, as well as others.

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<sup>29</sup> These results will be not addressed in this paper



- Documentation available in the websites of the non-for-profit organizations that back second chance schools, including how they marketize themselves, the year reports of what they have done, their networks, their different policies (on gender, bullying, etc.) as well as position documents of the organizations.

We analysed all the documents and have produced individual reports of each schools that have been validated by staff in the schools, in order to make sure that our interpretation is not mistaken due to missing information and/or misunderstandings. Our reports are shaped with the framework we have devised and presented above.

#### 4 Findings

Our findings are being subject of discussion within the research group at the time of writing this paper, and they will be shared with the schools in the national gathering they have in late April 2023.

So far, we have been able to apply our analytical framework and apply it to compare the different organizational features of the schools; then deciding on how the five quality criteria result in each of them and third; daring to state whether our assumptions were right or wrong.

Let us present first some basic features of the 18 schools analysed in our sample:

School 1, West Spain. It is school promoted by a Foundation, inspired by the Salesian Christian religious order, serving the needs of young people coming from all over the region, as it is equipped with a residence.

School 2, North Spain. It is a school promoted by a Foundation, inspired by a movement of Catholic lays but registered as a civil organization. This Foundation has several second chance schools in different regions, and vocational education and training is at the core of their action.

School 3, North Spain. It is a school promoted by the local authorities in a rural area, with the aim to contribute to its local development in both social and economic terms, employing non-formal vocational training for this purpose.

Schools 4 and 5, North Spain. These are schools promoted by a cooperative of workers, most of them teachers, who have several locations within the region, often located in industrial parks, where they offer both formal and non-formal vocational education.

School 6, North Spain. It is an association with two vocational training sites in a large city.

School 7, East Spain. It is a school promoted by a Foundation, located in a large city and its main provision is vocational training, formal and non-formal.

School 8, 9 and 10, East Spain. These are promoted by three different Foundations, one of which (school 8) is a major player in the vocational training market, while the Foundations behind schools 9 and 10 are recognized for the social services they provide in different domains and different age populations. They all offer formal and non-formal vocational training, and they are all located in the same city as school 7.

Schools 11 and 12, North-East Spain. School 11 is promoted by a young civil Foundation, and it is one of the few among our sample where the second chance school and the organization itself are the same and undifferentiated. School 12 is promoted by a Catholic religious order and intends to serve the needs of vulnerable young people and their families. Both are active in a large metropolitan area.

School 13 is promoted by a civil association, in a large city in central Spain, and it has several locations serving the needs of different kinds of people in vulnerable situations. The school offers non-formal vocational training.

School 14 is promoted by the same Foundation as school 2, but located in an Eastern city in the country. It offers formal and non-formal vocational training.

School 15 is an association and, the same as school 11, one of the few where the second chance school and the organization are one and the same. It has several locations where it offers social support, basic education, and formal and non-formal vocational training.

School 16 is promoted by an association in a Southern touristic town, but the main location of this association is in a different city in the Southern coast. It offers mainly careers guidance and facilitates work placements.

Schools 17 and 18 are promoted by a Foundation set by a Catholic religious order and they are in two different southern cities, with different social and industrial fabric, so that they appear to be rather different organizations even if they both offer non-formal vocational training and basic education.

In table 1, we summarize the main findings according to the organizational dimensions of our framework; while in table 2 we synthetize the quality criteria as identified in the schools. In some cases, we could not gather appropriate information and therefore we have indicated so with the sign – in the table.

**Table 1**

Organizational dimensions of second chance schools

	Selection	Training	Intermediation	Networks	Organizational culture
1	Admin.	Several VET qualifications	Placements	Social and employment	Working culture
2	Intentional recruitment	Diversified VET qualifications	Companies hiring	Social and educational	Local neighbourhood
3	Migrant youth	Traditional VET qualifications	-	Local reach	Public resource
4	Intentional recruitment	VET & basic education	Limited	Limited	Dependent
5	Intentional recruitment	Limited VET qualifications	Limited	Social services	Local resource
6	Intentional and limited	Diversified VET qualifications	Vocational exploration	Companies and public administration	Special education needs
7	Administration & intentional	Limited VET qualifications	Individualized	Coordination	Social and work recognition
8	Administration	Limited VET qualifications	Guidance as the key	Cooperation	Political foundation
9	Intentional	Diversified VET qualifications	Personal, labour, and academic guidance	Strong relation to companies	Strong cohesion and professionalism
10	Intentional	Wide and diversified VET qualifications	Expert vocational guidance	Strong relation to companies	Social and work recognition, professionalism
11	Intentional	Diversified VET qualifications	Focused upon work placements	Strong administrative support	High presence in social media, digitalisation, positive view
12	Those with no other chances	Limited VET qualification	Personal, labour, and academic guidance	Sufficient cooperation	Relevant social and local recognition
13	Open system	Limited VET qualification Digitalization	Labour orientation	Cooperation with companies	Changing identity

14	Intentional	Limited VET qualification Basic education	Personal, labour, and academic guidance	Social and public networks	Social recognition Individual support
15	Intentional	VET qualification Basic education	Personal, labour, and academic guidance	Strong cooperation with companies	Relevant social and local recognition
16	Open system	Basic education	Vocational guidance	Work placements	Employment agency
17	Intentional	Basic education	Support in different life domains	Dependent upon Foundation	Employment agency
18	Intentional	Vocational training	Support in different life domains	Internal to foundation	Internal to foundation Employment agency

**Table 2**  
Quality criteria

	Pertinence	Relevance	Integral	Efficacy	Efficiency
1	-	Short training Placement	Training Employment Psychosocial	X	Networking
2	Local cluster	VET not demanded	Skills of all kinds	Limited	Optimal
3	Local needs	Accredited qualification	Legal support	Successful	Optimal
4	Local cluster	Limited given access criteria	Skills of all kinds	Successful	Optimal
5	Local cluster	Relevant	Skills of all kinds	Successful	Optimal
6	Local cluster	Highly relevant, adapted	Overall personal and social emancipation	Successful	Optimal
7	Reengagement in education	Choice of VET qualification	Family financial support	Successful	Optimal
8	Uneven according to qualification	Sufficient	Basic support	Relative success	Optimal, very well resourced
9	-	-	-	Successful	-
10	Labour market needs	-	-	-	Optimal
11	Local needs	Vocational accreditation of migrants	Social and personal support	-	Optimal
12	Locally rooted	Focused upon language competence	Strong support in different life domains	Successful	Optimal
13	Digital competencies	Short-term training	Loose support	Successful	Networking
14	Uneven vocational qualification Basic education	Focused upon personal accompaniment	Strong support in different life domains	Successful	Optimal and stressed
15	Vocational qualification Basic education	Focused upon personal accompaniment	Strong support in different life domains	Successful	Optimal and stressed

16	Local needs	Basic education Qualification	Vocational guidance	Relatively successful	Optimal
17	Uneven	Personal development	Strong support in different life domains	Successful	Optimal
18	Uneven	Emancipation	Strong support in different life domains	Relatively successful	Optimal

We finalize our presentation of findings by referring to the assumptions upon which our research is being carried out:

Schools' offerings are more tied to the equipment and staff available in the school than to the interest of the students that register in the school.

Institutions have a weight upon the organizational identity of the schools, but most schools have been able to develop its own organizational culture that makes them different from other schools promoted by the same institution. This happens due to staff hiring policies, to the facilities of the organization, its location within the cities they are and the kind of youth they enrol.

There are no differences in the VET provision according to the religious/lay background of the institutions promoting second chance schools. There are no differences either in relation to the other VET providers in the same geographical area.

Schools manage to select their students so as to maximize the opportunities they have to be attracted to the vocational field in which they are qualifying. Therefore, they can all be considered as successful in terms of efficacy.

## 5 Discussion

The initial analysis of the 18 second chance schools points in the direction of finding different organizational arrangements that reflect both the adaptation to the circumstances of the context in which the schools are located (both labour market as competitor schools) as well as it is the result of the institutional identity of the school, which plays a major role because in most cases the institution offers other services than those of the second chance schools

We end our contribution with an attempt to present the basis of a possible typology of second chance schools, able to show differences worth considering in their ability to serve the needs to a diverse population in different regional and local contexts.

1. Schools addressing particularly youth of migrant origin and unaccompanied minors. Here we find schools with number 1, 5, 11, 17 and 18. Given the legal situation of these youth, these schools work in close relation to residential services, and they emphasize not just the language preparation of the youth and their professional qualification, but also the need to cover for other ordinary areas of everyday life that those youth living with their families usually do not need.
2. Schools with a strong orientation towards facilitating access into the labour market.
3. Here we identify schools with number 2, 4, 8, 13, 15 and 16. These are schools that might well act as employment agencies, and they tend to establish relations to company either for placements or for hiring after the training. Furthermore, we can differentiate those who work upon vocational exploration and guidance from those who offer a wide variety of qualifications, even non-formal and non-accredited, but that increase the employability of their youth.
4. Schools with a strong focus upon the personal and social needs of the youth they serve.
5. Schools with numbers 4, 6, 9, 10, 12 and 14 tend to have intentional selection processes that they use to provide youth with a relevant and integral provision, that ranks higher than pertinence of the offer.
6. Schools with a strong link to the area in which they work.

7. These are schools which have been in the same neighbourhood for many years and whose work is focused upon youth from the area, that are well recognised among employers and schools in it and that play a key role using their networks to facilitate becoming adults. Schools number 2, 3, 6, 12, 14 fall under this category.
8. Schools with a strong dependency of the institution promoting them.
9. There is a final group of schools that are either depending on the institutions behind them, as the case of 4, 5, 16 and 17. Even if it is not the same, we can also state that schools with numbers 7, 9 and 10 share a similar pattern given the work they do in the city in which they are located.

A final word to mention that we are currently discussing our reports with the schools and we attempt to present first results that might lead to reconsidering some of our interpretations exposed in this paper.

## References

- Alexander, P., Loewenthal, J., & Butt, G. (2020). 'Fuck It. Shit happens (FISH)': a social generations approach to understanding young people's imaginings of life after school in 2016-2017. *Journal of Youth Studies*, 23(1), 109-126. <https://doi.org/10.1080/13676261.2019.1704406>
- Calvo, S., Gutiérrez, S., & Bayarri, C. (2020). Rasgos comparativos de programas de reenganche formativo y sociolaboral en el ámbito no formal en Gijón (Asturias). *Educatio Siglo XXI*, 38(2), 67-86. <https://doi.org/10.6018/educatio.414701>
- González, M.T. (coord.) (2003). *Organización y gestión de centros escolares*. Madrid, Pearson.
- Jacinto, C. (1998). ¿Qué es la calidad en la formación para el trabajo de jóvenes de sectores de pobreza? Un análisis desde las estrategias de intervención. In C. Jacinto & M.A. Gallart (Eds.). *Por una segunda oportunidad*. (pp. 311-341). Cinterfor,
- Jacinto, C., & Millenaar, V. (2009). Enfoques de programas para la inclusión laboral de los jóvenes pobres: lo institucional como soporte subjetivo. *Última década*, 30, 67-92.
- Kiprianos, P., & Mpourgos, I. (2020). Back to school: From dropout to Second Chance Schools. *Journal of Adult and Continuing Education*, 28(1), 27-48. <https://doi.org/10.1177/1477971420979725>
- Martínez Morales, I. (Coord.) (2021). *La formación en las escuelas de segunda oportunidad (E2O) acreditadas en España: perfil, trayectoria y condiciones de éxito de las y los jóvenes*. Madrid: Ministerio de Educación y Formación Profesional. <https://sede.educacion.gob.es/publiventa/la-formacion-en-las-escuelas-de-segunda-oportunidad-e2o-acreditadas-en-espana-perfil-trayectoria-y-condiciones-de-exito-de-las-y-los-jovenes/gestion-de-centros/25700>
- Martins, F., Carneiro, A., Campos, L., Ribeiro, L. M., Negrão, M., Baptista, M. I. y Matos, R. (2020). Derecho a una segunda oportunidad: lecciones aprendidas de la experiencia de quien abandonó y regresó a la educación. *Pedagogía Social: Revista Interuniversitaria*, 36, 139-153. doi: 10.7179/PSRI\_2020.36.09
- Paniagua, A. (2022). *Programes de segona oportunitat. Què funciona per millorar el retorn educatiu i les transicions al treball de les persones joves?* Fundació Bofill
- Williamson, H. (2014). *Mapping of barriers encountered by young people in vulnerable situations. Report of the expert seminar 30/9-2/10*. European Youth Centre, Strasbourg.

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## Gentle Guidance Does it? Are Public Employment Service Recommendations Affecting Adjustment of IVET Capacities in Croatia?

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### Abstract

Since 2010 the Croatian Employment Service (CES) annually produces detailed regional “Recommendations for enrolment and granting policy in education”. Schools, Counties and Ministry of Education are to consider those recommendations in their planning, but no compliance mechanism was mandated for this labour market information input. This paper analytically explores the way in which the education system responds to outside signals by using a course-school-year panel of entry places and actual enrolments in publicly-funded VET in Croatia in 2013–2021 period, and respective set of county-level recommendations. We estimate whether either the observed changes in administratively defined places in VET courses, or actual enrolment are responsive to recommendations. Both descriptive table and analytical models indicate a certain level of responsiveness of education system stakeholders to recommendations. However, it is a weak one, with institutions often adjusting capacities in opposite direction, with demographics and unfilled capacities playing a greater role in determining change. The direct effect of recommendations on enrolment demand was not identified. Such findings are coherent with a statist skill production regime with corporatism at the margin, and with general resilience of the institutions responsible for VET supply to external input.

### Keywords

skill intelligence, VET capacity adjustment, enrolment policy recommendations, panel analysis, Croatia

### 1 Introduction

Vocational education systems throughout the Europe are facing ever growing challenges to remain relevant and capacitated in face of external shocks and factors, such as economic, technical and demographic changes (European Centre for the Development of Vocational Training., 2018). Within the specific national contexts, those are addressed by modernization via a plurality of instruments (European Centre for the Development of Vocational Training., 2018; Tütlys et al., 2022). The stakeholders and instruments involved are largely contingent on the national skill production regimes (Busemeyer & Trampusch, 2012), usually layering new fixes upon their own institutional legacy.

The targeted regional labour market and skill intelligence can play a crucial role in this change, as stressed in section 2.3 of the 2016 New skills agenda for Europe (COM(2016 381). This is instrumental for policymakers and education providers, but labour market information



and guidance tools are often designed to directly inform choices of general public, students and employers. There is ample and well documented use of such systems (Branka & Matouskova, 2014; European Centre for the Development of Vocational Training., 2016), in particular within the career guidance area. However, we still have scant evidence to what extent are changes in VET based on such evidence, that is, “about the way in which the system itself...responds to whatever signals it receives about demand” (European Centre for the Development of Vocational Training., 2018, p. 25)

This paper explores impact of a decade-long run of one such instrument on change in VET capacities and enrolment in Croatia. Faced with external shock of 2008 recession, a new mechanism was layered in with 2010 “Governmental decree on monitoring, analysis and forecasting of labour market needs for individual vocations”, which mandated the Croatian Employment Service (CES) to annually produce “Recommendations for enrolment and granting policy in education”. Schools, Counties and Ministry of Education are to consider those recommendations in their planning, but no compliance mechanism was mandated. While this policy instrument is exclusively based on provision of information content, with no legal, financial or organizational leverage (Howlett et al., 2020), it can be considered a shift in the logic of influence via change of dynamics within the state structure with increased influence of non-education sector. As well, the introduction of a tripartite, labour-market oriented intermediary institution in the skill production process is a feature of coordinated market economies (Busemeyer & Trampusch, 2012). The following analysis will assess whether it was effective in pivoting the VET capacity when applied consistently over a medium term.

## 2 Context and data

The recommendations are formulated and feed in the VET capacity adjustment process as follows. Each year, a list of programmes deemed to be in need of increased or decreased enrolment or grants is compiled for each of 21 counties (some broken in several sub-regions) by local CES labour market experts. In a typical county, list contains a few dozen VET programs with a simple recommendation to “increase” or “reduce”, whereas majority of programs remain untouched. When compiling the list, experts are due to consider broad range of quantitative and qualitative inputs such as existent planning, worker demand, employment outcomes, job mediation experience and existing education capacities. Following this mechanism, between 2010 and 2021 a total of 6183 county-level recommendations were issued for individual IVET programs, and the mechanism is still ongoing as of 2023. Recommendations are public but not widely published, and distributed to schools, counties and Ministry well before start of the capacity-determining process for the following school year. The actual number of places is formed in a vetted bottom-up fashion. Counties (which act as founders) in consultation with schools makes a plan for structure of courses and number of places, according to legal standards. Following that, the ministry in charge of education (which pays the wages) brings up the final plan and issues the decree, which initiates the enrolment process. In general, number of places in publicly funded schools is about one fifth greater than number of pupils in cohort, allowing students greater scope of choice. Yet, for this reason many vocational programs do not fill up to capacity due to pupils choosing more popular ones.

The dataset used here is a course-school-year panel of entry places and actual enrolments in publicly-funded VET in Croatia in 2013-2021 period, making up a total of 12942 observations in 283 schools over 8 years. For each case, a county-level recommendation is assigned, if one was given in the given year, as we observe change in the capacity (and enrolment) in the following year.

While scope, structure direction and change of recommendations is a subject discussed in detail elsewhere (Matković & Šabić, 2022, pp. 184–207), it will be presented here in briefest terms to provide some background. The recommendations show a considerable geographic and

temporal variation, reacting more to the business cycle and current employment challenges of certain profiles than to long-term projections or demographic limitations. Recommendations reached nadir in 2013, and turned towards pleading ever broader increase in VET programmes ever since. The increase recommendations are most often directed at short 3-year VET courses and in engineering and construction sectors, while decrease recommendations are more prevalent in four-year courses, in particular in field of economics, trade and business administration (cf. Matković & Buković, 2022 for more information on structure and development of Croatian IVET).

### 3 Results

The basic question in this effort is whether the observed changes in administratively defined places in VET courses are responsive to recommendations in force. That is, how often policymakers in education sector (schools, county governments and ministry of Education) do follow up those recommendations. Table 1 shows those developments on the intuitive level.

**Table 1**

Direction of change in number of places for IVET courses with respect to active recommendations in the current year. 2013-2021

Recommendation for change	Occurrences (number of courses to which the recommendation applies)	Number of places set for enrolment in the following year		
		Reduced or abolished	Retained	Increased
Reduce	2642	34.8%	56.4%	8.8%
No recommendation	7196	35.4%	53.1%	11.4%
Increase	3104	27.2%	56.8%	16.0%

N=12942, Chi2(4)=119,6, V=0,07

Observed outcomes indicate retention of number of places as being the most common outcome, regardless of the recommendation: number of places stayed the same in 55-57% of instances. In an environment of demographic contraction, decrease in number of places was second most common outcome, yet the prevalence of this outcome for courses with different recommendations varied only modestly. The number of places was reduced in 35% of cases where recommendation proposed so and where no recommendation was issued, and was only slightly less common (27% of cases) when recommendation was set to increase entry. Increase in number of admission places was the least prevalent outcome, and compliance with recommendations rather low: number of places grew in 9% of cases when recommendations proposed decrease, in 11% of cases with no recommendations set, and in modest 16% of cases where an increase was recommended. It is obvious that there was much change in number of places in courses over the observed period, yet this variation only weakly corresponds with the recommendations. When there was a recommendation (reduction or increase), it was adhered to in only 24.6% of cases, whereas education system acted counter to recommendations in 18.7% of cases.

**Table 2**

Fixed effects model: annual change in number of places

	(1)	(2)
Active recommendation: Increase	0,87*** (0,203)	0,54** (0,195)
Active recommendation: Reduce	-0,72** (0,245)	-0,55* (0,234)
Unfilled places (last year, per place)		-0,42***



Demographic change (county-level, percent)		(0,013) 0,28*** (0,043)
Intercept	-1,65*** (0,087)	0,08 (0,099)
Number of observations	12942	12942
Number of groups	2123	2123
R-squared for overall model	0,0080	0,0570
R-squared for between model	0,0204	0,0813
R-squared for within model	0,0027	0,0934

Moving into regression framework, when only recommendations are fitted on the panel data (model 1), the actual change in capacity seems to follow both reduction and increase recommendation in the expected direction, yet those account for just about 2% of variance in capacity change between courses. While in the expanded model (2) number of unfilled places in the previous year proves to be more robust predictor of capacity change, and demographic change matters in the expected direction, recommendations remain weakly but significantly associated with change in number of places. According to this model, recommendation at average contributes (or reduces) 0.5 places to the given programme in the given school in the given year, net of the effect of unfilled capacities in the prior year and demographic change. Such findings are consistent in several alternative specifications, such as when number of classes is examined, model omits cases where program is abolished (places set to 0), or general education programs are added.

The final analysis explores direct effect of recommendations on actual enrolment. As recommendations are easy to understand and readily available, they can be used as a labour market information tool in career guidance, in particular due to a strong role of CES in this field (European Centre for the Development of Vocational Training., 2016). As well, recommendations might affect grant availability, making selected courses more or less desirable, regardless of number of places available.

**Table 3**

Fixed effects model: annual change in number of students enrolled

	(3)	(4)
Active recommendation: Increase	1,03*** (0,228)	0,33 (0,195)
Active recommendation: Reduce	-0,62* (0,275)	0,11 (0,235)
Demographic change (county-level, percent)		0,60*** (0,042)
Capacity has decreased (per place reduced)		-0,53*** (0,016)
Capacity has increased (per place added)		0,71*** (0,018)
Intercept	-0,70*** (0,100)	-0,27** (0,091)
Number of observations	11815	11815
Number of groups	1857	1857
R-squared for overall model	0,0043	0,2855
R-squared for between model	0,0274	0,2097
R-squared for within model	0,0027	0,2796

When change in actual enrolment in VET is assessed only against active recommendations (3), a similar effect is identified as with respect to change in enrolment places, with more

pronounced effect of increase. However, when change in number of places available and demographic change are added to the model (both yielding solid relationship with subsequent change in enrolment), the effect of recommendations evaporates completely (4). This indicates no direct effect of recommendations on demand for enrolment, but indirect mechanism through the effect of recommendations on change in capacity (Table 2).

#### 4 Discussion and conclusion

The undisputable but arguably very weak effect of CES recommendation on change in school capacities instigated by education system authorities, coupled with absence of evidence about “market-based” mechanism where recommendations directly affect students’ demand is coherent with conclusion about Croatian skill production regime as statist with some concessions to corporatism at the margin (Buković, 2019). The education silo of the government for most part holding the reins of change, layering EU-originating innovations and coping with subsequent shocks in such a fashion not to endanger the core of the system (Buković, 2021; Matković & Buković, 2022).

The (modest) vector of institutional change portrayed here is top-down one (Tütlys et al., 2022, p. 55), driven by policies of (central) government, with very limited space for bottom-up agency, either from firms or individuals (though both later might vote with their feet). This bears resonance to pre-transition situation, where individual preferences had little influence on available educational options which were developed by planning agencies and their efforts (Noelke and Muller 2012:16), as the “school network”, a document determining availability of schools and sectors remains unchanged for the past decade.

As for the general contribution on very sparse literature about how the education system itself responds to signals it receives about demand via labour market information instruments, the finding about modest impact of purely informative recommendation mechanism provided by a stakeholder outside of the education system was not unexpected. The CEDEFOP study led by Jorg Markowitch offers a plausible mechanism for this: “The institutions responsible for VET supply will mediate between policy and behaviour by influencing or interpreting the intent of policy into a series of actions. These actions, however, may be more in alignment with their own interests than those of the policy-makers, and there will be ‘friction’ at each level” (2018, p. 25). Thus the outside change impulse loses its momentum. In a more cynical vein, there exists “the tendency for vocational schools to teach what they have the means to teach rather than meet the Labour market needs” (European Centre for the Development of Vocational Training., 2018, p. 7). However, a considerable sectoral change actually happened in overall structure of VET sectors over the past decade (Matković i Šabić, 2022), unrelated to recommendation mechanism.

Without going into discussion about validity of recommendations themselves (being as thorny as any forecasting-based exercise), their effect might be reinforced with some practical tweaks. The demand-side impact could be achieved by greater visibility to students (e.g. at the point of application for school entry, which is centralized via online system since 2013). The education system follow-through could be increased via introduction of compliance mechanism, such as requirement of justification for any change that runs counter to recommendations. This might as well make for another layer, as being in force for well over a decade, and not yet challenged with some fancy IT-based solution at the national level, this straightforward CES recommendation system might have become a part of institutional core of the Croatian skill production regime.

## References

- Branka, J., & Matouskova, Z. (2014). *Good Practice Synthesis Report. Achieving Regional and Local Impact through Labour Market Intelligence*. (EU Progress Project). [http://regionallabourmarketmonitoring.net/wp-content/uploads/2017/10/Synthesis-Report\\_Good-Practice\\_ARLI.pdf](http://regionallabourmarketmonitoring.net/wp-content/uploads/2017/10/Synthesis-Report_Good-Practice_ARLI.pdf)
- Buković, N. (2019). Razvoj institucionalnog ustroja hrvatske politike strukovnog obrazovanja [Institutional development of Croatian vocational education policy]. *Političke perspektive : časopis za istraživanje politike*, 9(2), 99–122. <https://doi.org/10.20901/pp.9.2.04>
- Buković, N. (2021). Institucionalni ustroj i formulacija politike srednjeg strukovnog obrazovanja u Hrvatskoj: Akteri, strategije i “promjena koja ništa ne mijenja” [Institutional framework and formulation of the upper secondary vocational education policy in Croatia: actors, strategies and the “change that changes nothing”]. *Politička Misao*, 58(3), 208–242. <https://doi.org/10.20901/pm.58.3.08>
- Busemeyer, R. M., & Trampusch, C. (2012). The comparative political economy of collective skill formation. In R. M. Busemeyer & C. Trampusch (Eds.), *The Political Economy of Collective Skill Formation* (pp. 3–38). Oxford University Press.
- European Centre for the Development of Vocational Training. (2016). *Labour market information and guidance*. (Cedefop research paper, Vol. 55). Publications Office of the European Union. <https://data.europa.eu/doi/10.2801/72440>
- European Centre for the Development of Vocational Training. (2018). *The changing nature and role of vocational education and training in Europe. Volume 3, The responsiveness of European VET systems to external change (1995-2015)*. (Cedefop research paper, Vol. 67). Publications Office of the European Union. <https://data.europa.eu/doi/10.2801/621137>
- Howlett, M., Ramesh, M., & Perl, and A. (2020). *Studying Public Policy: Principles and Processes* (Fourth Edition). Oxford University Press.
- Matković, T., & Buković, N. (2022). Croatia: Impact of Europeanization on Skill Formation. In V. Tütlys, J. Markowitsch, S. Pavlin, & J. Winterton (Eds.), *Skill formation in Central and Eastern Europe: A search for Patterns and Directions of Development*. Peter Lang.
- Matković, T., & Šabić, J. (2022). *Studija o stanju u području srednjoškolskog obrazovanja u svrhu povećanja obuhvata učenika gimnazijskim programima i smanjivanja broja suficitarnih programa u strukovnome obrazovanju [A comprehensive mapping of upper secondary education, providing evidence-base for future expansion of general education and reduction in vocational programs not in demand by the labour market]*. Ministarstvo znanosti i obrazovanja. <https://mzo.gov.hr/UserDocsImages/dokumenti/Obrazovanje/NacionalniPlan2021-2027/Studija-srednje-obrazovanje.pdf>
- Tütlys, V., Winterton, J., Markowitsch, J., & Pavlin, S. (2022). Skill formation in the post-communist CEE countries. In V. Tütlys, J. Markowitsch, S. Pavlin, & J. Winterton (Eds.), *Skill formation in Central and Eastern Europe: A search for Patterns and Directions of Development* (pp. 27–64). Peter Lang.

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## Social Partners' Conceptions of their Role in School-based Initial Vocational Training of Specialists

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### Abstract

School-based initial vocational education and training (IVET) prevails in some countries, as well as in Lithuania. Within this traditional school setting, companies and enterprises serve as suppliers of internships for school students. This study was aimed to explore the qualitatively different ways in which social partners on the ground (teachers and in-company trainers) experience and understand their roles on initial vocational training of students. A convenience sample of 14 stakeholders from several professional fields were interviewed and phenomenographic data analysis approach was applied. Three conceptions were constructed that described social partners' understanding of their roles in specialists' training. Three dimensions of variation marked the differences among the conceptions: responsibility, interest / benefit and expectations for collaboration. The social partners involved in the training of IVET students have qualitatively similar understating of their roles but unmet expectations about each other's roles and involvement. The results can provide new insights into how the IVET partnership could be designed.

### Keywords

social partners, initial vocational education and training, school-based VET, training of specialists

### 1 Introduction

School-based initial vocational education and training (IVET) prevails in some countries, as well as in Lithuania. Within the traditional school setting, companies and enterprises serve as suppliers of work-based training places – internships – while all regulatory functions – planning, management and control – are concentrated in the VET schools (Rauner & Wittig, 2013). Participation of employer organisations in work-based training process is treated as necessity (Sauli, 2021) leading to the success and accomplishments of the IVET programmes (Peliz et al., 2021; Bakker & Akkerman, 2019). Thus, together with the state and VET schools, employers and their organisations become an important player in the social partnership providing linkage to the labour market (Rauner & Wittig, 2013).

The range of social partners have their own roles, diversity of interests, views and expectations on how a specialist has to be trained for the labour market. The process of reconciliation such interests and views is complicated and challenging (Smak, 2022; Guthrie & Clayton, 2018; Peliz et al., 2021; Martínez-Morales & Marhuenda-Fluixá, 2020; Gîncu & Moldovanu, 2019; Gunbayi, 2015). Lack of mutual trust and differences in views and expectations between different social partners was established in several studies (Ruškus et al.,



2005; Kaminskienė, 2008; Winterton et al., 2008; Maurušaitienė, 2011; Cedefop, 2015; Vaitkute, 2022) usually by analysing IVET social partners' collaboration from the perspective of what is defined by the law. The current study contributes to the existing literature by exploring the perceptions of social partners' views from the "bottom-up" approach.

## 1.1 Objective

This study is aimed to gain an understanding of key social partners' conceptions of their role and expectations in training qualified specialists for the labour market. In order to contribute to the development of collaboration and social dialogue between social partners, it is important to investigate the qualitative different ways in which they conceptualise their roles in training specialists in IVET demonstrating the extent to which their role is pivotal. This will be done from the point of view of main stakeholders "on the ground": vocational teachers and in-company trainers. While this is not the first study to examine the roles and expectations of the different parties involved in the process, the study contributes to the scarce literature on the discourse of how these social partners conceptualise their roles in school-based IVET.

## 1.2 Conceptual framework

Role theory, and especially its functional perspective, was applied to explain how the various parties in IVET look at their roles and voice their expectations toward collaboration. According to Biddle (1986), various social structures can be viewed as collections of designated social positions, the shared norms of which govern differentiated behaviours of groups, organizations or communities and individuals belonging to them. "Some of the norms applying to a given position govern general conduct, but others govern only relationships between a focal position and a specific, counter position and among the latter, "roles" are those that apply to the accomplishment of specific functions" (Biddle, 1986, p.70). For example, for vocational schools, the "focal" role is to educate and teach, while, for companies and business organisations – to ensure productivity (Guthrie & Clayton, 2018). Their specific roles within specialist training VET system emerge in the following areas: policy formation, curriculum development and improvement, evaluation and accreditation (Maurušaitienė, 2011). Social partners should participate in all these areas on equal rights and equal shares (Pileičikienė, 2013). However, their roles can differ within each area as they present different possibilities and competences to solve IVET related questions. For example, within curriculum development and improvement area, employers are responsible for identification of present and promising qualification requirements (Gunbayi, 2015) and transferring these into relevant occupational standards. Teachers are responsible for the identification of relevant learning outcomes matching these standards, for the appropriate formulation of statements related to learning outcomes, for the alignment of study content, the share of theoretical and practical training, and other elements, such as infrastructure. Employers, to a greater extend, take responsibility for practical training of IVET students including development of their ethical behaviour, as claimed by Pogorzelska (2013) and Gunbayi (2015).

Roles may reflect normative expectations as well (Biddle, 2013). These can be interpreted as beliefs, preferences or attitudes. For example, some findings about the social partners' expectations show their desire to define their roles better, to facilitate collaboration between school and company (Sauli, 2021); the need for provision of preliminary and underpinning knowledge needed for the job tasks as well as about the contextual specificity of practices (Sappa et al., 2016; Choy & Sappa, 2016), or the preferences to more support learning in the work-based environment (Munangatire & McInerney, 2022; Sappa et al., 2016). As Biddle (1986) explains, each mode of expectation generates roles for somewhat different reasons. Therefore, it is meaningful to expose different role understanding of parties concerned in practical training of students and how these result in either contradictions or collaboration.

### 1.3 Context

In Lithuania, the role, responsibility, engagement, and importance of social partners and partnership in IVET changed at various stages of development. Historically, two important features have implications for stakeholders' situation in our days: a strong regulatory role of the state and lack of trust within post-totalitarian society (Winterton et al., 2008). In the market economy, the social partners' roles and relationships were defined in the Law on VET in Lithuania (1997) and their functions have been expanded over several years. Despite the social dialog or collaboration between social partners is enshrined in law, and formal rules have been established to ensure that it takes place, social partnership can take largely vary in Lithuanian IVET (Vaitkutė, 2022).

## 2 Methodology

### 2.1 Participants and Procedure

Social partners from seven vocational training centres/schools and seven business organizations in Kaunas city, who have experience in practical training of students, organization of practices, cooperation with social partners, participated in the study. Åkerlind (2005) suggests that a sample size in a phenomenography study should be between 10 and 30 participants with a maximum variation (age, gender, education, professional experience, etc.). In total, the sample comprised 14 persons from different occupational fields and different positions, as presented in Table 1. This included six females (VET teachers  $n=4$ ; in-company trainers  $n=2$ ) and 8 males (VET teachers  $n=3$ , in-company trainers  $n=5$ ). The duration of their performance as social partners ranged from 4 to 20 years (VET teachers  $M=15.3$  years; in-company trainers  $M=11.5$  years).

**Table 1**

Distribution of the study participants by role and vocational field

	B-admin.	Hospitality	Helth	Mechanics	Wood	Social service	Total
VET teacher	1	2				1	4
VET head of department			1	1			2
VET Deputy director			1				1
Master-trainer				1	1		2
Instructor			1				1
Personal manager	2						2
Head of the company		1		1			2
Total	3	3	3	3	1	1	14

The data were collected by means of individual semi-structured interviews on the voluntary basis. Due to the pandemic situation, interviews were conducted remotely using IT technology. The leading questions were:

- How do you define your role and responsibility in training a qualified specialist?
- In your opinion, what are or should be the role and responsibilities of the school / company in this process?

To encourage interviewers some other questions were added, for example, "Could you describe your experience in practical training of VET students / trainees? How is your experience in collaborating with partner-part?" All they were recorded and transcribed verbatim in its entirety.

## 2.2 Data analysis

The data analysis was conducted by adopting the phenomenographic procedure (Åkerlind, 2005) to respond to research question. According to Sappa & Aprea (2014), the main aim of this procedure is to light the qualitative differences in how people understand and experience a specific phenomenon. The main result of a phenomenographic analysis is a number of qualitatively different meanings or ways of experiencing the phenomenon (called “conceptions”) (Sappa & Aprea, 2014, p. 322). In this study, the phenomenon under experiencing was the role of social partners. The conceptions were organized in a hierarchical way moving from the most perceived and assumed role to the least one. Next, the ways of experiencing social partner role in terms of the aspects that appeared to be most important for both grouping together and distinguishing the varying ways of understanding was analysed. It has to be noted that what varies is not the expected roles of the social partners regarding practical training, but it is the way they experience these roles that vary (Munangaitire & McInerney, 2022). As Marton & Booth (1997, cited in Åkerlind, 2005) argue, that ways of experiencing represent a relationship between the experiencer and the phenomenon being experienced based on the critical (or “key”) aspects of the phenomena they are focusing on. In this study, the focus was on the role performance of each stakeholder: how the role of one stakeholder is related to that of others, how the role is related to practical training, and how the role ultimately contributes to the outcome of practical training. Thereafter these critical aspects were grouped into themes of variation, running through the conceptions. Consequently, a logically inclusive structure relating the different meanings as well as representing different ways of experiencing a phenomenon were thus seen as a set of categories (or so-called “outcome spaces”) that are hierarchically ordered in terms of complexity and on the basis of specific structural aspects (Sappa & Aprea, 2014).

## 3 Findings

The empirical data showed three conceptions of social partner role of specialists training in school-based IVET: 1) training of specialist in occupational field; 2) developing programmes; 3) training of teachers (Table 2). These qualitatively distinct conceptions were reflected through three themes of variations that illustrate analytical differences in conceptions. Further, a detailed description of each category, with special attention to the critical aspects, follows.

**Table 2**

Categories of understanding employers’ role in specialist training, described in terms of themes

Themes of variation	Conceptions			
	1. Training of specialists in occupational field		2. Developing IVET programmes	3. Teacher training
	1.1. Providing occupation related capabilities	1.2. Providing other capabilities		
Responsibility	Shared responsibility on knowledge and skills development	Shared responsibility: professional identity and general competencies	Greater responsibility on one part	Willingness to take responsibility from one side
Interest / Benefit	More benefits for one party		Distinct interests	Distinct interests
Expectations for collaboration	Unsatisfied		Unsatisfied	Uncertain

### *Conception 1: Training of specialists in occupational field*

The first conception shows full awareness of parties' role and acceptance of the responsibility in specialists training. This conception includes two sub-categories that distinguish between occupation related and other complementary capabilities. Each party involved acknowledges their role and that of others in the training process of student-specialist. VET teachers consider themselves as key in granting professional foundations and maximum theoretical knowledge of the subject and technology. While employers take responsibility to provide practical knowledge, such as acquaintance with the latest equipment, work environment, work tools, etc., and to provide practical skills by teaching refinements of the craft ("*various tricks of the craft*"). Share of responsibilities also occur in providing other capabilities, necessary for the occupation. The in-company trainers focus on the development of students' professional identity: "*we help to understand if this is the student's specialty, if s/he has a calling*". For VET teachers, the general (core) competencies that are inseparable from professional ones, such as *ability to well navigate the situation, organization, ability to work in a team as well as developing students' self-esteem, supporting and motivating them* – are more important.

Practical training of students becomes beneficial for employers in terms of new employees' search. During internships, they are looking for "*promising young people, who can create a value-added product for the company*". For that, employers express their willingness to invest in revealing new talents, what often means - to retrain students according to oneself. The main benefit for VET teachers - the desire that employers should provide "*what the school cannot provide*". These is the development of practical skills while working with new equipment, which schools do not usually have.

There was some kind of dissatisfaction between social partners. Employers are disappointed with school activities because during practice students "*lack communication skills, responsibility for their actions; students face with problems in performing individual and team tasks*". On the other hand, VET teachers express their beliefs that employers could be more involved in this process of practical training.

### *Conception 2: Development of VET programmes*

The second conception focuses on the development of VET programmes, as a prerequisite for practical training of students and an area for social partners' collaboration. They do not take this part of role as a shared responsibility; rather, one part assumes greater responsibility. VET teachers take care for designing programmes according to "*the needs and requirements of the labour market*". This involves designing theoretical knowledge, plans for practical training "*covering all the subjects*" so that students can try "*in a real workplace what they have learned at school*". The employers can offer the expert knowledge to update theoretical materials:

*"Sometimes we read programmes; it seems that you are reading about some ancient profession of your grandfather. What should it look like for a young person thinking about choosing this specialty? Will s/he be interested in it?"* (Master trainer, male, Mechanics sector)

Social parties benefit differently from the development of study programmes. For VET teachers, the programmes developed according to the *needs and requirements of the labour market* means greater popularity with all the consequences that follow. For employers, motivation and engagement of students into learning process through interesting and updated programmes is important.

There is a sense of miscommunication between partners. Employers expect to be invited and involved into teaching process, but do not see such a need on the part of schools. In turn, VET teachers feel too little participation of employers in this process.



*Conception 3: Professional training of teachers (Professional support for teachers)*

In this conception, the participants are in the periphery of the training of specialists with their role almost non-existent. The participants showed awareness that there is an urgent need for VET teachers' professional development, as a necessary precondition of specialists training. The idea of taking responsibility of this part of the role is more pronounced among employers. They would like VET teachers „to come to companies at least once every six months to share experience and gain practical skills“.

The employers see general benefit for the programme development and practical training of students:

*“I really see the need for teachers to improve their qualifications: when they have more knowledge from a practical, real situation in the field of business, it will be much easier for them to prepare and adjust programmes so that the knowledge provided is useful for future specialists” (Master trainer, male, Wood sector)*

Teachers see the benefit for themselves and for their students:

*“Teachers lack professional development, because the real teacher who teaches but does not work improves only as a teacher <...> but not all teachers improve in that practical sense ...” (VET teacher, male, Health sector)*

No consolidation is observed on the collaboration level. Business and enterprise representatives do not receive a response to their initiatives, and VET schools representatives see little opportunity to practise in companies. Discrepancies between teachers' expectations to have internships in companies and real possibilities were perceived as inevitable because of the motivational and financial aspects:

*“Business is not motivated to provide knowledge. First of all, the stakeholder must see the economic benefits of such cooperation and not just experience the costs” (VET teacher, female, Business administration sector)*

From this perspective, teachers' expectations and reflections on greater stakeholder involvement into training process are related to the financial promotion of this process, which is foreseen as some measures at the state that would encourage initiative. The employers' statements did not confirm this idea.

#### **4 Discussion and conclusions**

This study explored how social partners in school-based IVET conceptualise their roles and what they expect from the other-part in training qualified specialists. The two key players at the bottom of the chain – IVET teachers and in-company trainers – were brought in one study seeking to triangulate their conceptions regarding their role in the training process. By using a phenomenographic approach, the study exposed different levels of understanding and different expectations of social parts involved in specialist training and how this result in either contradictions or collaboration. The conceptions in this study could provide an explanation on why the collaboration among VET institutions and business organisations have not always been successful.

There is a shared perception of the traditional role regarding specialist training. The IVET teachers and in-company trainers provide knowledge and skills in the occupational field as well as develop other competencies needed in the labour market (Sauli, 2021; Gunbayi, 2015; Zoran & Elena, 2015; van der Sluis et al., 2014; Pogorzelska, 2013; Winterton et al., 2008; Ruškus et al., 2005). In providing knowledge, IVET teachers emphasise theoretical knowledge of the field, while in-company trainers feel more responsible for providing practical applicable

knowledge. Regarding other capabilities, their responsibilities are also slightly different: in-company trainers are concerned with developing a professional identity, whereas IVET teachers see a wider context and feel responsible for the development of general competences. In terms of benefits, the positions of the participating parties are not the same - employers benefit more than schools from this particular role-playing. Therefore, they have more interests towards practical training. Where the individual parties fully understand their own role and that of other parties, there are different expectations on how this role should be implemented by other party. The employers' dissatisfaction arises on that teachers do not prepare student, or in their words, unprepared students come to practice. The IVET teachers' dissatisfaction with collaboration is more uncertain, expressed by a vague desire for "greater involvement" of employers.

At a relatively perceived conception, the social partners see their roles as developing IVET programmes (Rauner & Wittig, 2013; Nielsen, 2011) that meet modern technological, environmental, social, etc. requirements. The school teachers are more aware and assume more responsibility of this role. The employers feel themselves as in a subordinate role when expert knowledge in the field is required from them. The conceptions in this study showed that the parties differently understand their roles playing. The employers' interest is to prepare attractive programs for students, while the teachers' interest is focused on compatibility of training programs with the requirements of the labour market. However, discrepancies between expectations on collaboration arise. The employers want to strengthen their role not only in providing the updated knowledge but also in teaching young people. Accordingly, the IVET teachers are not satisfied with employers' participation in programme development and expect more active expert role from them.

While the traditional roles of social partners in IVET were mentioned by other authors as well as regulated by the law, this study revealed one more role – training of IVET teachers. Employers expressed their readiness to take on this role because they see teacher training as a prerequisite for preparing better trainees-specialists. The teachers' point of view is more formal, coming from the imperative for continuous learning that is placed for all teachers. Discrepancies arise in social partners understanding how this role could be embedded on the practical level. Employers do not identify obstacles to this process, while teachers, on the contrary, see a lack of business motivation due to financial (dis)benefits. Thus, this role is more like as "desirable" (Sauli, 2021) than perceived and assumed responsibility.

Following the research aim, peculiarities of school-based IVET social partners' roles should be identified. The context description has shown that the roles of social partners in IVET are increasing and becoming more complex. The empirical analysis of this study showed that all parties involved in specialists' training accept and assume their role, moreover - in the training of specialists, they would like to take on a new role that is not formally assigned to them. But the parties have different understanding of performance of this role that creates unsatisfied expectations for the other party. In other words, one's role is fully understood, but the partner's role is viewed through the prism of one's field.

The findings of this study linked with literature from other settings showed that there are unsatisfactory in social partners' performance (Sappa, 2014; Sauli, 2021), lack of social partners' involvement into partnerships (Akomaning, et al., 2011; Rizzo et al., 2017; Munangatire & McInerney, 2022) in dual vocational training as well. In any form of IVET, social partnership faces some difficulties. These difficulties in school-based vocational training form could be interpreted as follows. Stagnant collaboration between partners have not changed for a long time. Perhaps, the inherited regulatory role of the state creates certain patterns of behaviour at the bottom of the chain. For example, this could be observed in the new role of teacher training: employers see an opportunity to collaborate, but VET teachers are reserved – they are waiting for the state's encouraging action.

Based on the results of this study, it seems that it is important to develop connective strategies among social partners. Paraphrasing Sappa et al. (2016), this entails that they need to broaden their knowledge on approaches and attitudes of other party by thus connecting different points of view.

Finally, this study has certain limitations. The study was conducted in the schools and enterprises of one city that make the findings contextual. It covered several occupational fields, what made the analysis more general and, potentially, vocational field specificities, which are important in the IVET, were not taken into account. Future studies could analyse social partners' roles among vocational fields, for example, production or service. This study explored the roles of social partners at a micro level without considering those at the meso (e.g., professional associations) and macro levels (e.g., state representatives) who also play a significant role in IVET partnerships. In future studies, it would be interesting to collect more specific data, including those obtained from social partners from various levels.

Perhaps, a certain bias could not be avoided during the research process. While the conceptions were based on the words of the participants, these words were influenced by researcher during data collection and the interpretation was driven by the philosophies and interest of researcher. As Munangatire and McInerney (2022) note, interpretations cannot be completely without bias of researchers as they are the once who construct the conceptions. Therefore, readers and other researchers are open to scrutinise the conceptions based on the data given and arrive at a different interpretation.

## References

- Åkerlind, G 2005. (2005). Learning about phenomenography: interviewing, data analysis and the qualitative research paradigm. In JA Bowden & P Green (eds.), *Doing developmental phenomenography*, RMIT University Press, Melbourne, pp. 63–73.
- Akomaning, E., Voogt, J. M., & Pieters, J. M. (2011). Internship in vocational education and training: Stakeholders' perceptions of its organisation. *Journal of Vocational Education & Training*, 63(4), 575-592.
- Bakker, A., & Akkerman, S. (2019). The learning potential of boundary crossing in the vocational curriculum. *The Wiley handbook of vocational education and training*, 349-372.
- Biddle, B. J. (1986). Recent development in role theory. *Annual review of sociology*, 12, 67-92. doi: 10.1146/annurev.so.12.080186.000435
- Biddle, B. J. (2013). *Role theory: Expectations, identities, and behaviors*. Academic press.
- Cedefop. (2015). Apprenticeship review: Lithuania: signposting the apprenticeship path in Lithuania. [https://www.cedefop.europa.eu/files/4140\\_en.pdf](https://www.cedefop.europa.eu/files/4140_en.pdf).
- Choy, S., & Sappa, V. (2016). Australian stakeholders' conceptions of connecting vocational learning at TAFE and workplaces. *International Journal of Training Research*, 14(2), 88-103.
- Gîncu, S., & Moldovanu, R. (2019). Implementation of dual vocational educational and training (VET) în Republic of Moldova. *Univers Pedagogic*, 63(3), 34-44.
- Gunbayi, I. (2015). The importance of social partnership in vocational and technical education and training. *International Journal of Vocational Education & Training*, 23(1).
- Guthrie, H., & Clayton, B. (2018). *VET policy: processes, stakeholders and issues*. LH Martin Institute, University of Melbourne, Melbourne, viewed 07 Aug 2022, <[https://web.archive.org/web/20220305123148/https://melbourne-cshe.unimelb.edu.au/\\_\\_data/assets/pdf\\_file/0004/2845777/Final\\_Guthrie-and-Clayton-paper\\_030818.pdf](https://web.archive.org/web/20220305123148/https://melbourne-cshe.unimelb.edu.au/__data/assets/pdf_file/0004/2845777/Final_Guthrie-and-Clayton-paper_030818.pdf)>.

- Kaminskienė, L. (2008). Socialinės partnerystės modelio, taikomo mokyklinėje profesinio rengimo sistemoje, parametrų vertinimas. *Profesinis rengimas: tyrimai ir realijos*, (16), 52-68.
- Martínez-Morales, I., & Marhuenda-Fluixá, F. (2020). Vocational education and training in Spain: Steady improvement and increasing value. *Journal of Vocational Education & Training*, 72(2), 209-227.
- Maurušaitienė, D. (2011). Socialinių dalininkų bendradarbiavimas: naujosios viešosios vadybos paradigma profesiniame rengime.
- Munangatire, T., & McInerney, P. (2022). A phenomenographic study exploring the conceptions of stakeholders on their teaching and learning roles in nursing education. *BMC Medical Education*, 22(1), 1-14.
- Nielsen, S. (2011). Introduction. EFT Year Book, Social partners in vocational education and training, 7-15, European Training Foundation
- Parliament of the republic of Lithuania (1997). *Law on vocational education*, Nr. VIII-450 (new wording on 14 December 2017, Nr. XIII-888). <https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/b0b6cda0eb0a11e7a5cea258c39305f6>
- Peliz, M., Boavida, N., Moniz, A. B., & Kuznetsova, Y. (2021, November). The role of social partners in the governance of Dual Vocational Education and Training System: The Portuguese case. In *Forum Sociológico. Série II* (No. 39). CESNOVA.
- Pileičikienė, N. (2011). Socialinių dalininkų bendradarbiavimas užtikrinant studijų programų kokybę: teorija ir praktika Lietuvoje. *Aukštojo mokslo kokybė*, (8), 132-157.
- Pogorzelska, A. (2013). Theoretical and practical areas of cooperation of vocational schools with employers. *Ed Tomaszewska, R., Professional education in the context of knowledge based economy*. Wydawnictwo Uniwersytetu Kazimierza Wielkiego Bydgoszcz.
- Rauner, F., & Wittig, W. (2013). Differences in the organisation of apprenticeship in Europe: Findings of a comparative evaluation study. In *The architecture of innovative apprenticeship* (pp. 243-255). Springer, Dordrecht.
- Rizzo, A., De Bono, S., & Kenely, D. (2017). Stakeholder Engagement and the Enhanced Entrepreneurship of VET Graduates. *MCAST Journal of Applied Research & Practice*, Issue, 4.
- Ruškus, J., Juozaitienė, L., & Tiškutė, S. (2005). Socialinė partnerystė profesinio rengimo procese: refleksijos analizė. *Profesinis rengimas: tyrimai ir realijos*, (9), 72-81.
- Sappa, V., & Aprea, C. (2014). Conceptions of connectivity: How Swiss teachers, trainers and apprentices perceive vocational learning and teaching across different learning sites. *Vocations and Learning*, 7(3), 263-287.
- Sappa, V., Choy, S., & Aprea, C. (2016). Stakeholders' conceptions of connecting learning at different sites in two national VET systems. *Journal of Vocational Education & Training*, 68(3), 283-301. DOI: 10.1080/13636820.2016.1201845.
- Sauli, F. (2021). The collaboration between Swiss initial vocational education and training partners: perceptions of apprentices, teachers, and in-company trainers. *Empirical Research in Vocational Education and Training*, 13(1), 1-22.
- Smak, M. (2022). Models of private sector involvement in vocational education and training. *European Journal of Teaching and Education*, 4(1), 37-47.
- Vaitkute, L. (2022). VET in the form of apprenticeship: Lithuania. *The European Centre for the Development of Vocational Training (Cedefop)*, 104.
- van der Sluis, M. E., Reezigt, G. J., & Borghans, L. (2014). Quantifying stakeholder values of VET provision in the Netherlands. *Vocations and learning*, 7(1), 1-19.
- Winterton, J., Bukantaitė, D., & Tūtlys, V. (2008). Historical development of vocational education and training in Lithuania and its implications for designing and

implementation of regional VET partnerships. *Profesinis rengimas: tyrimai ir realijos*, (16), 180-191.

Zoran, V., & Elena, R. (2015). Social dialogue and partnership in vocational education and training. *International Journal of Cognitive Research in Science, Engineering and Education*, 3(1), 81-88.

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## Defining Green Occupational Groups in the Spanish Vocational Education and Training System: An Emerging Approach

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### Abstract

**Purpose:** The aim of this paper is to propose a categorisation of green VET occupational groups within Spain's VET system that matches the growing workplace, socio-political and environmental demands. We hypothesize that the green component of Spanish VET is mainly present in core activities related to sectors linked to energy, the environment and environmental sustainability and shows room for improvement in comparison with other qualifications.

**Methods:** This paper conducts an in-depth literature review to analyse the treatment of green VET occupational groups at both the theoretical and empirical level. Quantitative research is also conducted by means of secondary source data analysis.

**Findings:** The research is still under way, but the initial results appear to confirm the main hypothesis: Spain's green VET can be framed and positioned within the VET supply system as a new grouping requiring formal identification and definition in order to be promoted and given broader scope.

**Conclusions:** This paper provides an initial outline of the scope of the green VET offering via those qualifications directly related to renewable energy and the environment. In the future, this initial approach will need to be extended to the other occupational groups in order to gain an understanding of the extent to which Spain's VET systems are ready for the green transition.

### Keywords

vocational education and training in Spain, environmental sustainability, green occupational groups



## 1 Introduction

### 1.1 The context

In the vocational education and training (VET) context, the environment has usually been viewed from an anthropocentric epistemological perspective as an economic resource or social determinant. From this standpoint, going green is a cost factor, not a purpose in itself. The conceptualisation of VET is rooted in the capitalist industrial revolution, systematisation and integration of which into education and training systems — as reflected in the productivist theories of human capital (Giddens, 1994; Rees, 1990) — took place in the 20th century. In this first iteration, VET's role was limited to providing skilled workers for a constantly growing and expanding industrial fabric in which the environment was perceived as a source of limitless resources. After the Second World War, and with the advance of the welfare state, education and vocational training systems started to also be considered drivers of well-being, inclusion and social equity, a shift reflected in the critical theories that emerged (realism, structuralism, feminism, etc.) (Suart, 2018) and in the concept of sustainable human development (with the focus on skills, equitable access, pathways into work, etc.) (Elder, 2015; Bonvin, 2018, McGrath et al., 2022). The environment, however, continued to be viewed as a background issue, albeit now from the perspective of limited resources and climate risk.

The second stage of environmental awareness in VET stems from the international agenda which, with the Brundtland Report, clearly set out the finite and limited nature of our planet when viewed from the perspective of human development (World Commission on Environment and Development, 1987). Under this framework, a new vision of the economy emerged that entailed a shift towards environmental protection and regulation and development of the green economy. In line with this, UNESCO began a move towards Education for Sustainable Development (ESD) and green VET (UNEVOC, 2017), in which greater emphasis is nevertheless placed on social aspects, equity and education quality than on the environment (Finlayson et al., 2021). Although the environment acquires new prominence, it is primarily formulated in terms of environmental protection and climate change mitigation combined with a focus on efficient use of resources and confidence in the ability of technology to address environmental challenges; a change of production and consumption model is not prioritised (Pavlova, 2009). This implied maintaining VET's role as a provider of skilled workers, though now in a context of resource scarcity, alongside a focus on sustainable human development, principally in terms of employability. In this regard, the German government was a pioneer in linking the green economy to the VET system (Fien & Wilson, 2005; UNPD, 2015) through creation of new employment opportunities: *‘in the context of an ecologically oriented transformation of the economy, occupational profiles and curricula need to be expanded and renewed with respect to the protection of the environment and resources as well as renewable energies’* (Mertineit, 2013, 16). The German case exemplifies the conceptual shift from provision of skilled workers to provision and assurance of the competences required by green industry (energy and environment) with the aim of fostering sustainable competitiveness (at regional, national and other levels) founded on the green economy. From the theoretical perspective of the political economy of skills, VET becomes a provider of competences to broader competence ecosystems as well as to the green economy. The logic behind this is that, by providing skilled workers and competences, the VET system contributes to reducing the mismatch between skills training and business demand, thereby fostering sustainable competitiveness (Lucas et al., 2018).

The third stage of awareness is related to environmental sustainability, which advocates decoupling VET from the economy (either traditional or green) and adopting a new ecology-centred ethos, thereby breaking with the anthropocentric epistemological tradition, an approach proposed, albeit timidly, in the literature (Anderson, 2009). Under this perspective, education

and learning would focus on the planet and the ecology, not on the productive sector or learners. Although there have been a few attempts to incorporate ecologism into education, the progress made in this regard has been limited (Pavlova, 2009).

It can therefore be affirmed that there is no well-established theoretical body of work on environmental sustainability in the field of vocational education and training (Goldney et al., 2007; McGrath & Powell, 2016).

## 1.2 Purpose of the research

This paper will analyse VET in Spain from the perspective of the green economy, examining the training available to both young people and adults in terms of green occupational profiles. The challenges of a circular and low-carbon economy are reflected in professional profiles and occupations in all sectors, given that all economic activities require resources and energy (Amanatidis & Laky, 2019). The European scenario of a decarbonised economy by 2050 entails changes in current occupational profiles (Cedefop, 2022), which requires a look at the structure of the current VET system itself.

The aim of this paper is to propose a categorisation of green VET occupational groups within Spain's VET system that matches the growing workplace, socio-political and environmental demands, addressing them from the perspective of the green economy. Unlike other classifications of occupational groups, either related to sectoral areas (e.g. industrial occupational groups) (Gamboa et al., 2021), technological ones (e.g. STEM) (STEAM Euskadi, 2018) or ICT (based on Calvino et al., 2018), there is currently a lack of conceptualisation and classification of green occupational groups in Spain's VET system.

The main hypothesis of this study, from the supply perspective, is the existence of green vocational occupational groups within the current VET offering in Spain deserving formal categorisation so as to enable their development and improvement in light of the aforementioned challenges. From a demand perspective, we hypothesize that the green component of Spanish VET is mainly present in core activities related to sectors linked to renewable energy, the environment and environmental sustainability and shows room for improvement in comparison with other qualifications.

Based on this approach, an analytical framework for understanding green occupational groups is presented in terms of the main sectors providing green services. Although green occupations and employment occupy cross-cutting positions in all value chains, the scope of this study is limited to economic activities and sectors that directly provide services involving natural and renewable energy resources and are considered drivers of the European economy's green transition as set out in the European Green Deal (Cedefop & OECD, 2022). Traditionally, in the Spanish context, economic activities associated with the environment were classified according to the sectors that provided services involved in the management of key environmental resources, and whose sectoral growth was closely associated with the environmental regulations set at European level. These classifications were heterogeneous and related to the management of the planet's main resources, e.g. waste management, resource efficiency (efficient manufacturing and eco-design), soil decontamination, the integrated water cycle, and air and ecosystems. However, since climate change became a key driver of the European agenda, the energy sector occupies a significant position as an active component of climate change, as stated in the European Green Deal (Amanatidis & Laky, 2019).

This study is therefore based on a proprietary working definition of the green occupational groups that spans a significant number of qualifications required by the activities that the ILO (2013) considers to forming part of the provision of environmental goods and services.

The relevance of this paper is twofold. On the one hand, it is part of the transition towards a green economy in which the VET system offers an almost untried lever for decarbonising the European and Spanish economy by 2050 (European Commission, Joint Research Centre, 2022)



based on more sustainable resource use, reducing dependency on energy imports and creating a circular economy. In this sense, understanding the structure of green occupational groups in Spain's VET system is key, as the EU's and Spain's success in becoming a climate-neutral economy by 2050 will be strongly tied to developing the skills of human capital. On the other hand, it is a topic barely studied in VET research.

## 2 Methods

The methodology used to define the green occupational groups within the Spanish VET system was developed in various stages.

First, the sectors of activity in which there is demand for green vocational qualifications were identified. To this end, a literature review was conducted, identifying two distinct classes of business activity that could be considered green (ILO, 2013): the classification of environmental protection activities (CEPA) and the classification of resource management activities (CReMA). These classifications contain the distinct activities described by Fernández Gómez and Larrea Basterra (2022) — 75 activities grouped into 9 categories in the case of the CEPA and 10 activities in the case of the CReMA.

Next, the vocational areas and qualifications currently taught in both Initial VET and Continuous VET, irrespective of occupational group and as listed by the Instituto Vasco de Conocimiento de la Formación Profesional (IVAC, 2022), were identified. From the overall group of vocational areas and qualifications, those that bore either a direct or indirect relationship to the CEPA and CReMA, and the occupational groups of which they form part, were selected. Direct relationships were identified via the name of the activity and the description of the content of the vocational qualifications listed by the Instituto Nacional de las Cualificaciones (INCUAL, 2023). Indirect relationships were identified in qualifications that referred to development of the skills necessary to perform activities requiring knowledge of environmental regulation or of techniques designed to protect the environment or minimise the risks to it.

Therefore, the basic unit of analysis used to identify the green occupational groups is the vocational qualification and its relationship to the activities involving environmental goods and services. These qualifications are defined as “*a set of standards of competence relevant to employment that can be acquired through modular or other types of training and work experience (Royal Decree 1128/2003 of 5 September 2003 regulating the national catalogue of vocational qualifications)*” (INCUAL, 2023).

## 3 Findings

The analysis performed has yielded a set of occupational groups that could be identified as green as they directly provide qualifications relevant to the performance of a high percentage of activities listed in the CEPA and CReMA. It can therefore be affirmed that they are a strong source of environmental qualifications. This set is made up of the Safety and Environment (SaE) group, which covers 66.7% of the CEPA via eight qualifications, and the Energy and Water (EaW) group, which covers 11% of the CEPA (via two qualifications) and 40% of the CReMA (via 13 qualifications).

A second set of occupational groups that constitute a medium-strength source of qualifications related to green goods and services has also been identified. This set comprises the Farming (covering 20% of the CReMA) and Equipment Installation and Maintenance (11% of the CEPA, 10% of the CReMA) occupational groups (Table 1). The occupational groups categorised as being a weak source of environmental qualifications have been excluded from this analysis because of their negligible impact.

**Table 1**

Occupational groups with strong or medium-strength links with the environmental goods and services sector, by number of qualifications available and CEPA and CReMA activities affected

<b>Strength of link</b>	<b>Occupational group</b>	<b>No of qualifications by type of CEPA or CReMA activity</b>	<b>% of CEPA or CReMA activities affected by the qualifications (as % of total CEPA or CReMA activities)</b>
Strong	Safety and Environment (SaE)	8 CEPA	66.7% of CEPA
Strong	Energy and Water (EaW)	2 CEPA 13 CReMA	11.1% of CEPA 40% of CReMA
Medium	Farming (FARM)	2 CReMA	20% of CReMA
Medium	Equipment Installation and Maintenance (EIaM)	1 CEPA 2 CReMA	11.1% of CEPA 10% of CReMA

Source: Compiled in-house from Fernández Gómez and Larrea Basterra (2022), IVAC (2022) and INCUAL (2023)

Tables 2 and 3 show a breakdown of the specific activities listed in the CEPA and CReMA and the VET qualifications, areas and occupational groups related to them.

**Table 2**

CEPA activities (1 digit) linked to the environmental goods and services sector and closely related qualifications and occupational groups

<b>Specific activity</b>	<b>Vocational qualification</b>	<b>Vocational area</b>	<b>Occupational group</b>
1. Protection of ambient air and climate	Control of air pollution	Environmental Management	SaE
2. Wastewater management	Operation of water treatment plants	Environmental Management	SaE
	Installation and maintenance of water networks	Water	EaW
	Management and monitoring of installation and maintenance of water and sewerage networks and facilities	Water	EaW
	Installation and maintenance of building water supply and drainage facilities	Electromechanical maintenance	EIaM
3. Waste management	Collection, sorting and initial storage of waste	Environmental Management	SaE
	Waste management	Environmental Management	SaE
4. Protection and remediation of soil, groundwater and surface water	Cleaning in open spaces and industrial facilities	Environmental Management	SaE
5. Noise and vibration abatement	Noise and vibration control and sound insulation	Environmental Management	SaE
6. Protection of	-	-	-

biodiversity and landscapes			
7. Protection against radiation	-	-	-
8. Environmental research and development	-	-	-
9. Other environmental protection activities	Environmental education and awareness-raising	Environmental Management	SaE
	Environmental Management	Environmental Management	SaE

Source: Compiled in-house from Fernández Gómez and Larrea Basterra (2022), IVAC (2022) and INCUAL (2023)

Note: Safety and Environment (SaE), Energy and Water (EaW), Equipment Installation and Maintenance (EIaM).

**Table 3**

CReMA activities linked to the environmental goods and services sector and closely related qualifications and occupational groups

Specific activity	Vocational qualification	Vocational area	Occupational group
10. Management of water	Management of efficient water use	Energy efficiency	EaW
11.A Management of forest areas	Management of afforestation and forestry practices	Forestry	FARM
11.B Minimisation of the intake of forest resources	Auxiliary woodland conservation and improvement activities	Forestry	FARM
12. Management of wild flora and fauna	-	-	-
13.A Production of energy from renewable resources	Auxiliary renewable energy plant installation and maintenance operations	Renewable energy	EaW
	Installation and maintenance of solar thermal plants	Renewable energy	EaW
	Installation and maintenance of solar photovoltaic plants	Renewable energy	EaW
	Installation and maintenance of closed-circuit geoechange systems	Renewable energy	EaW
	Management of installation and maintenance of wind farms	Renewable energy	EaW
	Planning and development of solar photovoltaic plants	Renewable energy	EaW
	Planning and development of solar thermal plants	Renewable energy	EaW
	Management of closed-circuit geoechange plants	Renewable energy	EaW
13.B Heat/energy saving and management	Building energy efficiency	Energy efficiency	EaW
	Energy auditing	Energy efficiency	EaW

	Installation of heat and sound insulation systems and of fire and radon protection in buildings	Installation and assembly	BaCW
	Installation and maintenance of heat and sound insulation systems and fire protection	Insulation systems	EIaM
	Management and supervision of installation and maintenance of heat and sound insulation systems and fire protection	Insulation systems	EIaM
13.C Minimisation of the use of fossil energy as raw materials	Planning and development of solar photovoltaic plants	Renewable energy	EaW
	Planning and development of solar thermal plants	Renewable energy	EaW
14. Management of minerals	-	-	-
15. Research and development activities for resource management	-	-	-
16. Other resource management activities	-	-	-

*Source: Compiled in-house from Fernández Gómez and Larrea Basterra (2022), IVAC (2022) and INCUAL (2023)*

*Note: Energy and Water (EaW), Farming (FARM), Building and Civil Works (BaCW), Installation and Maintenance (IaM). Codes 11 and 13 are not included in the table because it is understood that they are represented by 11.A, 11.B, 13.A, 13.B and 13.C.*

#### 4 Discussion

The research is still under way, but the initial results appear to confirm the main hypothesis: Spain's green VET can be framed and positioned within the VET supply system as a new grouping requiring formal identification and definition in order to be promoted and given broader scope.

The objective of this analysis was to propose a preliminary selection of green occupational groups found in Spain's VET system. To this end, the occupational groups associated with the qualifications required to perform activities in the environmental goods and services sector have been identified.

Although two occupational groups considered to be core to green employment (SaE and EaW) have been identified, the SaE group comprises two completely separate areas, one focused on the environment and the other on safety with no relation to the environment. Therefore, this occupational group's strong green emphasis is only found in one part of it (the environmental side). Conversely, while the EaW occupational group is largely devoted to environmental goods and services, it covers a smaller percentage of activities. Consequently, in addition to identifying the green occupational groups, the analysis needs to be broken down into specific training programmes and occupational certificates directly linked to this area.

Although it is clear that there should be a typology of specific core occupational groups developing the skills required by the environmental goods and services industry, there is

currently an intermediate layer of groups that offer fewer qualifications for the sectors covered by the CEPA and CReMA. The latter have the potential to be even greener and, in the future, could be rated as medium-strength and strong sources given their environmental importance (e.g. Building and Civil Works, and Farming).

In this regard, the analysis conducted indicates that the current range of qualifications does not cover all the activities in the CEPA and CReMA, which is striking given their relevance and, at the same time, opens a window of opportunity for VET. Therefore, an analysis of present and future demand for the activities could indicate the priorities for VET to address, their intensity and the gaps in supply. In this regard, the greater availability of information on workplace demand and the green economy than on the training available in this field is noteworthy.

Future research will require deeper analysis and the involvement of expert opinion on the occupational groups (supply) and activities involved (demand), as well as more detailed exploration of the other occupational groups, as there may be other less evident relationships not detected in this analysis.

## 5 Conclusion

This paper provides an initial outline of the scope of the green VET offering via those qualifications directly related to energy and the environment. In the future, this initial approach will need to be extended to the other occupational groups in order to gain an understanding of the extent to which Spain's VET systems are ready for the green transition.

## References

- Amanatidis, G., & Laky, Z. (2019). *Commitments made at the hearing of Frans Timmermans, Executive Vice-President-designate - European Green Deal* (PE 638.437). Policy Department for Economic, Scientific & Quality of Life Policies, European Parliament. [https://www.europarl.europa.eu/RegData/etudes/BRIE/2019/638437/IPOL\\_BRI\(2019\)638437\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2019/638437/IPOL_BRI(2019)638437_EN.pdf)
- Anderson, D. (2009). Productivism and Ecologism: Changing Discourses in TVET. In J. Fien, R., Maclean, & M.G. Park (Eds.) *Work, Learning and Sustainable Development. Technical and Vocational Education and Training: Issues, Concerns and Prospects* (vol 8, pp. 35-57). Springer. [https://doi.org/10.1007/978-1-4020-8194-1\\_3](https://doi.org/10.1007/978-1-4020-8194-1_3)
- Bonvin, J.M. (2018). Vocational Education and Training beyond Human Capital. In M. McGrath, J. Mulder, J. Papier, & R. Suart (Eds.). *Handbook of Vocational Education and Training* (pp. 273–290). Springer.
- Calvino, F., Criscuolo, C., Marcolin, L., & Squicciarini, M. (2018). *A taxonomy of digital intensive sectors* (n.º 2018/14). OECD Science, Technology and Industry Working Papers. OCDE Publishing. <https://doi.org/10.1787/f404736a-en>.
- Cedefop. (2022). *The green employment and skills transformation: insights from a European Green Deal skills forecast scenario*. Publications Office of the European Union. <http://data.europa.eu/doi/10.2801/112540>
- Cedefop & OECD. (2022). *Apprenticeships for greener economies and societies* (Cedefop reference series; No 122). Publications Office of the European Union. <http://data.europa.eu/doi/10.2801/62893>
- Elder, S. (2015). *What does NEETs mean and why is the concept so easily misinterpreted?* (Technical Brief 1). Work for Youth Programme, ILO. [https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms\\_343153.pdf](https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_343153.pdf)

- European Commission, Joint Research Centre. (2022). *GreenComp, the European sustainability competence framework*, Publications Office of the European Union. <https://data.europa.eu/doi/10.2760/13286>
- Fernández Gómez, J., & Larrea Basterra, M. (2022). *Empleo y capacidades verdes en la CAPV* (Cuadernos Orkestra, núm. 01/2022). Instituto Vasco de Competitividad - Fundación Deusto. <https://www.orquestra.deusto.es/es/investigacion/publicaciones/informes/cuadernos-orkestra/2333-220008-empleo-capacidades-verdes-capv>
- Fien, J., & Wilson, D. (2005). Promoting sustainable development in TVET: the Bonn Declaration. *Prospects*, 35(3), 273–288. <https://doi.org/10.1007/s11125-005-4265-1>
- Finlayson, A., Moso-Díez, M., & Orlovic Lovren, V. (2021). *Impact of COVID-19 on Education for Sustainable Development (ESD) in the context of twin transition* (EENEE report). Publications Office of the European Union. <https://doi.org/10.2766/05850>
- Gamboa-Navarro, J.P., Moso-Díez, M., Albizu-Echevarria, M., Blanco, L., Lafuente-Alonso, A., Mondaca-Soto, A., Murciego-Alonso, A., Navarro-Arancegui, M., and Ugalde-Zabala, E. (2021). *Observatorio de la Formación Profesional en España: informe 2021: La FP como clave de desarrollo y sostenibilidad*. CaixaBank Dualiza. <https://www.observatoriofp.com/downloads/2021/informe-completo-2021.pdf>
- Giddens, A. (1994). *Beyond left and right: the future of radical politics*. Polity Press.
- Goldney, D., Murphy, T., Fien, J., & Kent, J. (2007). *Finding the common ground: Is there a place for sustainability education in VET?* NCVER. <https://files.eric.ed.gov/fulltext/ED499704.pdf>
- ILO. (2013). *Guidelines concerning a statistical definition of employment in the environmental sector*. ILO. [https://www.ilo.org/global/statistics-and-databases/standards-and-guidelines/guidelines-adopted-by-international-conferences-of-labour-statisticians/WCMS\\_230736/lang--en/index.htm](https://www.ilo.org/global/statistics-and-databases/standards-and-guidelines/guidelines-adopted-by-international-conferences-of-labour-statisticians/WCMS_230736/lang--en/index.htm)
- INCUAL. (2023, February 2nd). *Familias profesionales*. Instituto Nacional de las Cualificaciones. [https://incual.educacion.gob.es/agraria\\_cualificaciones](https://incual.educacion.gob.es/agraria_cualificaciones)
- IVAC. (2022). *Cualificaciones Profesionales*. Instituto Vasco de Conocimiento de la Formación Profesional. [https://ivac-eei.eus/upload/fondos/documentos/7/libro\\_cua\\_catalogo\\_cncp.pdf](https://ivac-eei.eus/upload/fondos/documentos/7/libro_cua_catalogo_cncp.pdf)
- Lucas, H., Pinnington, S., & Cabeza, L.F. (2018). Education and training gaps in the renewable energy sector. *Solar Energy*, 173, 449–455. <https://doi.org/10.1016/j.solener.2018.07.061>
- McGrath, S. & Powell, L. (2016). Skills for Sustainable Development: Transforming vocational education and training beyond 2015. *International Journal of Educational Development*, 50, 12–19. <https://doi.org/10.1016/j.ijedudev.2016.05.006>
- McGrath, S., Powell, L., Alla-Mensah, J., Hilal, R., & Suart, R. (2022). New VET theories for new times: the critical capabilities approach to vocational education and training and its potential for theorising a transformed and transformational VET. *Journal of Vocational Education & Training*, 74(4), 575–596. <https://doi.org/10.1080/13636820.2020.1786440>
- Mertineit, K.D. (2013). *TVET for a Green Economy*. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. [https://www.enterprise-development.org/wp-content/uploads/TVET\\_Green\\_Economy.pdf](https://www.enterprise-development.org/wp-content/uploads/TVET_Green_Economy.pdf)
- Pavlova, M. (2009). *Technology and Vocational Education and Training for Sustainable Development. Empowering Individuals for the Future*. Springer. <https://doi.org/10.1007/978-1-4020-5279-8>.
- Rees, J. (1990). *Natural Resources: Allocation, Economics and Policy*. Routledge.
- STEAM Euskadi. (2018). *Estrategia de Educación STEAM Euskadi*. Gobierno Vasco,

Departamento de Educación

[https://www.irekia.euskadi.eus/uploads/attachments/11906/STEAM\\_Euskadi\\_aurkezp\\_ena\\_gazt.pdf?1529248652](https://www.irekia.euskadi.eus/uploads/attachments/11906/STEAM_Euskadi_aurkezp_ena_gazt.pdf?1529248652)

Suart, R. (2018). Gaining More than Just Vocational Skills. In S. McGrath, M. Mulder, J. Papier, & R. Suart (Eds.). *Handbook of Vocational Education and Training* (pp. 351-368). Springer.

UNEVOC. (2017). *Greening Technical and Vocational Education and Training*. UNESCO. <https://unevoc.unesco.org/up/gtg.pdf>

UNPD. (2015). *Human Development Report 2015: Work for Human Development*. UN. <https://hdr.undp.org/content/human-development-report-2015>

World Commission on Environment and Development. (1987). *Our common future*. WCED. <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>

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## Lecturer Industrial Attachment for TVET Teachers in Kenya: Access, Challenges, Opportunities

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### Abstract

This study investigated the use of Industrial Attachment for vocational teachers (LIA) as part of the professional development of vocational teachers in Kenya. Despite a positive view and a desire to participate in LIA, participation in LIA remains rare with majority of the respondents indicating that they have never participated in LIA or seen their colleagues participate in LIA. Challenges and barriers to LIA include: lack of awareness about LIA, lack of a formal policy to guide LIA, practical challenges such as lack of time and financial facilitation, and the lack of functional linkages between training institutions and industrial firms. Various recommendations to address the challenges are offered.

### Keywords

lecturer industrial attachment, continuing professional development (CPD), technical vocational education and training (TVET), vocational teachers, Kenya

## 1 Introduction

Industrial Attachment for vocational teachers constitutes an important pathway for the professional development of Technical and Vocational Education and Training (TVET) teachers. Often referred to as Lecturer Industrial Attachment (LIA) or Teaching Staff Industrial Attachment (TSIA), LIA offers TVET teachers a chance to keep-up-to date with modern work practices and industrial technology (Axmann et al., 2015; Choy & Haukka, 2009; Loveder, 2005). This is especially important in developing country contexts where TVET teachers do not always get a chance to learn and develop an extensive set of technical skills during their training (Grijpstra & Papier, 2015). However, due to limited research on the Continuing Professional Development (CPD) of TVET teachers in developing countries, it is not always clear what views vocational teachers hold about LIA, how frequently they participate in LIA, and what challenges they face in accessing LIA. Research focusing the use of LIA by TVET teachers in developing country contexts would therefore go a long way in supporting the professional development of TVET teachers in developing countries. This study therefore investigated participation in LIA by TVET teachers in Kenya.

As a developing country, Kenya places great emphasis on TVET as one of her solutions to youth unemployment and key to her transition to a manufacturing-based economy. However, a large number of Kenyan TVET teachers lack adequate experience and exposure to industry and modern technology (Ferej et al., 2012; Oketch & Peliwe, 2017; Sifuna, 2020). Recognizing





LIA as an important part of the CPD of TVET teachers, this study therefore investigated participation in LIA by TVET teachers in Kenya focusing on their views on LIA, frequency of participation and challenges faced in accessing LIA.

## 2 Methods

The study used interviews to supplement a survey on TVET teachers' participation in LIA. The interviews explored the views teachers have on LIA and the factors that hinder or support participation in LIA while the survey focused on how frequently TVET teachers have participated in LIA and their preferred frequency and duration of LIA. Data was collected from 16 interview participants and 170 survey respondents drawn from six vocational training institutes in the Nairobi Metropolitan Area. Thematic analysis of the interviews was then combined with descriptive analysis of the survey data.

## 3 Findings

Asked for their views on LIA, more than 90 per cent of the survey respondents agreed that LIA constitutes an important learning activity for TVET teachers. In line with this view, 87 per cent of the respondents wished to attend LIA. However, only 40 per cent of the respondents were willing to pay to attend LIA. The data is summarized in Table 1.

**Table 1**

Views on lecturer industrial attachment

Views on Lecturer Industrial Attachment	Disagree	Neutral	Agree
Industrial attachments are important for TVET teachers.	4.1%	5.3%	90.6%
I wish to attend an industrial attachment for TVET teachers.	4.1%	8.2%	87.6%
I am willing to pay to attend an industrial attachment.	34.7%	25.3%	40.0%

Interview participants also recognized the value of LIA. Benefits for LIA identified included increased confidence and awareness of modern industrial practices, learning new practical skills and improving theory by putting it into practice. Another benefit was the creation of new networks, at the personal, professional and institutional level.

However, despite this positive view and the desire to participate in LIA, LIA remains rare with majority of the respondents indicating that they have never participated in LIA or seen their colleagues participate in LIA. Results are summarized in Table 2.

**Table 2**

Participation in lecturer industrial attachment

Previous participation in LIA	Percentage of respondents (%)
Never	35.9
Once (one time)	29.4
Two or more times	34.7
Total	100

Interview discussions suggested that LIA could be even rarer. Some interview participants were not aware that they could and should attend LIA, while others were unable to distinguish between industrial attachment for students and industrial attachment for lecturers. Thus, some of the survey participants indicating that they had attended LIA may have in-fact been indicating that they had participated in industrial attachment for students or had visited industrial firms to assess their students who were out on industrial attachments.

One given for the low participation rates in LIA was the view that industrial attachment is for students. One teacher indicated as follows: *The thinking is who needs an attachment? The students, they are the ones we teach. For the others, the teacher can keep him or her self up to date by reading on the internet.* [MuTTi\_2].

Another reason given was the general of opportunities. Commenting on the fact that she has never participated on LIA and her desire to participate in LIA, one teacher made the following comment: *"I have never gone, but I wish to go. I want to go but there is no opportunity."* [KbTTi\_2].

The lack of opportunities to participate in LIA was further linked to the lack of industrial firms and work-places in the catchment areas of the vocational training institutes where teachers work. In addition, there is little or no corroboration between training institutes and industrial firms.

Another reason for the limited participation in LIA was the lack of a formal policy framework to guide LIA and limited facilitation for LIA. Other challenges identified are the lack of time due to heavy teaching work-loads and a school calendar that does not offer extended breaks from school work

With regard to duration and frequency for LIA, various options were given. The suggested frequencies for LIA ranged from once a year to once every three years and durations of one month to six months. From the survey, the most popular preference was once a year for four weeks. The cross-tabulation of the responses for the preferred duration with the preferred frequency is shown in Table 3.

**Table 3**  
Preferred frequency by duration of LIA

		Preferred duration (Number of respondents)				
		Two weeks	Four weeks	Six weeks	Eight weeks	Twelve weeks
Preferred Frequency (Number of respondents)	Every six months	3	7	4	1	0
	Once a year	8	33	8	6	9
	Once every two years	5	11	7	5	9
	Once every three years	2	10	4	5	7
	Once every five years	3	7	0	2	2
	Never	0	5	1	0	3

## 4 Discussion

The study found that despite viewing LIA as important and therefore wishing to attend LIA, TVET teachers in Kenya lack opportunities to participate in LIA. The study thus supports an earlier finding that TVET teachers in Kenya rarely have the opportunity to participate in Lecturer Industrial Attachment (Sang et al., 2012). This also agrees with prior research findings on TVET teachers elsewhere. For example, in Broad's (2016) study on the CPD practices by Further Education teachers in the UK, only ten per cent of the study participants indicated that they attended industrial placements.

Low participation in LIA was attributed to the view that industrial attachment is for students only, lack of time due to heavy teaching work-loads, and the lack of a framework to guide LIA. For training institutions located away from major industrial hubs, the lack of firms and work-places within reachable distance was a further hindrance. Moreover, the lack functional corroboration between the TVET institutes hinders LIA. This was in agreement with prior studies that have found that vocational training institutions in Kenya generally lack

linkages with industrial firms and other work-places (Kipkoge et al., 2020; Makworo et al., 2013; Wilberforce Manoah Jahonga et al., 2016). In the study by Makworo et al., (2013), linkages involving staff exchange, research collaboration, instructors' industrial experience, and equipment sharing were responded to as non-existent by the survey respondents. In their study on how enterprises support TVET teacher training programs in the western region of Kenya, Kipkoge et al. (2020) found only one firm that offered opportunities for teachers to take up internships.

However, while the lack of linkages may explain low participation in LIA, the lack of LIA may also explain the lack of linkages between firms and training institutions. That is, LIA may serve not just to support teacher learning, it may also serve to support the establishment linkages, both at a personal level and at an official level, between the firms and training institutions. Thus, another good reason to support LIA is to encourage and facilitate liaison between educational institutions and industry.

The barriers and challenges to LIA identified above further agree with findings by Clayton et al. (2005) in Choy & Haukka (2009). They identified resource constraints, such as lack of time and challenges in releasing and replacing teachers when they go professional development; practical challenges such as difficulties in finding workplaces that are willing to host teachers, lack of industries within the reachable distance, organisational impediments such as devaluing of the importance of technical skills, and lack of incentives and policy within the institutions; and dispositional challenges, such as lack of confidence, lack of motivation, and teachers' failure to recognize their own skill deficits.

## 5 Conclusions

Using a combination of interviews and a survey, this study investigated participation in LIA by TVET teachers in Kenya focusing on their views on LIA, frequency of participation and challenges faced in accessing LIA. TVET teachers in Kenya were found to have a positive view of LIA and a strong desire to participate in LIA, with some teachers willing to pay for LIA. However, despite the positive view, teachers were found to rarely attend LIA. Challenges and barriers to LIA include: lack of awareness about LIA, lack of a formal policy to guide LIA, and practical challenges such as lack of time and financial facilitation.

The very low rates of participation in Lecturer Industrial Attachment (LIA) put to risk the currency and up-to-datedness of TVET teachers' knowledge of modern technology and work processes. Thus, to ensure that TVET teachers in Kenya keep up to date with developments in industry and technology, TVET teachers should be encouraged and facilitated to go for LIA. Apart from visiting the firms for learning purposes, the firms can be avenues of innovation where teachers attempt to use their technical knowledge to solve the technical problems the firms face. Apart from supporting the professional development of TVET teachers, it is noted that LIA may also encourage the development of linkages between firms and training institutions.

The study findings also showed that the lack of functional linkages between the training institutions and industrial firms hinders LIA. It is therefore imperative that technical training institutes are supported to form functional linkages with industries where teachers can attend Lecturer Industrial Attachments. The linkages should be formed in such a way as to encourage collaboration at the level of the teacher, rather than at the level of the institute. Some of the interview participants hinted that the attempts to form such linkages fail because previous attempts have tended to focus at the institute, rather than at the teacher. Further research on this aspect is therefore called for.

Another finding was the lack of time for LIA, and therefore the need to create time for it. Apart from hiring additional teachers to lower the work-load individual teachers have, a reworking of the school calendar to create more time for teachers to participate in LIA and other

forms of CPD is therefore recommended. Since limited participation in LIA was attributed to the lack of a policy framework on LIA, it is recommended that such a policy is developed and implemented. The policy may require TVET teachers to attend LIA every year for four weeks as suggested by the majority of participants.

## References

- Axmann, M., Rhoades, A., & Nordstrum, L. (2015). *2015 Vocational teachers and trainers in a changing world: the imperative of high-quality teacher training systems*. [http://www.ilo.org/global/about-the-ilo/mission-and-objectives/WCMS\\_099766/lang--en/index.htm](http://www.ilo.org/global/about-the-ilo/mission-and-objectives/WCMS_099766/lang-en/index.htm)
- Broad, J. H. (2016). Vocational knowledge in motion: rethinking vocational knowledge through vocational teachers' professional development. *Journal of Vocational Education and Training*, 68(2), 143–160. <https://doi.org/10.1080/13636820.2015.1128962>
- Choy, S., & Haukka, S. (2009). Industrial Attachments for Instructors in TVET Delivery. In *International Handbook of Education for the Changing World of Work* (pp. 1367–1382). Springer Netherlands. [https://doi.org/10.1007/978-1-4020-5281-1\\_91](https://doi.org/10.1007/978-1-4020-5281-1_91)
- Clayton, B., Fisher, T., Hughes, E., National Centre for Vocational Education Research (Australia), & Australia. Department of Education, S. (2005). Sustaining the Skill Base of Technical and Further Education Institutes: TAFE Managers' Perspectives. *National Centre for Vocational Education Research (NCVER)*, 42. <http://www.ncver.edu.au>
- Ferej, A., Kitainge, K., & Ooko, Z. (2012). Reform of TVET Teacher Education in Kenya : Overcoming the Challenges of Quality and Relevance. *Triennale on Education and Training in Africa*, 1–23.
- GoK. (1999). *Report of the Inquiry into the Education System of Kenya (TI QET) Koech Report, Nairobi*.
- Grijpstra, D., & Papier, J. (2015). *TVET teacher education in Africa. Synthesis Report* (Vol. 23, Issue 09). [https://ockham-ips.nl/Portals/57/OpenContent/Files/4902/tvet\\_lecturer\\_education\\_Africa\\_2015\\_B028.pdf](https://ockham-ips.nl/Portals/57/OpenContent/Files/4902/tvet_lecturer_education_Africa_2015_B028.pdf)
- Kipkogei, K. J., Kanyiri, J. W., & Kiptoo, M. T. (2020). Contribution of Enterprises towards TVET Teacher Training Programs: A Case of Rift Valley and Western Kenya Regions. *IOSR Journal Of Humanities And Social Science (IOSR-JHSS)*, 25(6), 22–27. <https://doi.org/10.9790/0837-2506082227>
- Loveder, P. (2005). World trends in staff development: Implications on the performance of technical education institutions. *National Seminar on the Development of Technology and Technical-Vocational Education and Training in an Era of Globalization*, 23–24. [https://www.ncver.edu.au/\\_data/assets/file/0015/6315/tvet\\_aug05.pdf](https://www.ncver.edu.au/_data/assets/file/0015/6315/tvet_aug05.pdf)
- Makworo, E. O., Mwangi, S. M., & Wesonga, J. N. (2013). Linking TVET Institutions and Industry in Kenya: Where Are We? *International Journal of Economy, Management and Social Sciences*, 2(4), 91–96. <http://41.89.101.166:8080/handle/123456789/3197?show=full>
- Oketch, M., & Peliwe, L. (2017). Introduction Keynotes (Vocational Education and Training in Sub-Saharan Africa ). In F. Eicker, G. Haseloff, & B. Lennartz (Eds.), *Vocational Education and Training in Sub-Saharan Africa: Current Situation and Development*. W. Bertelsmann Verlag. <https://doi.org/10.3278/6004570w011>
- Sang, A. K., Muthaa, G. M., & Mbugua, Z. K. (2012). Challenges facing technical training in Kenya. *Creative Education*, 3(1), 109–113.
- Sifuna, D. N. (2020). The dilemma of technical and vocational education (TVET) in Kenya. *Journal of Popular Education in Africa*, 4(12), 4–22. <http://www.jopea.org/index.php/current-issue>

Wilberforce Manoah Jahonga, Bernadette Canute, Elizabeth J. Murey, Catherine Otunga, Catherine Kiprop, & Kosgey Z. (2016). Collaborative and Linkage Programs Between TVET Institutions and the Industry. A Case of TVET Institutions in North Rift Region, Kenya. *IOSR Journal of Economics and Finance*, 7(4).

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## **Innovation in Vocational Training: An Action Research Project**

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### **Abstract**

**Context:** Vocational and Educational Training (VET) innovation is crucial in the new social-economic context to address unskilled job profiles and provide students with necessary social and professional skills. VET innovation involves a renewed approach to teamwork, adjustments to career paths, teacher-led instruction, and technological advancements (Cedefop, 2015; Cedefop 2022b).

**Methods:** An action research project: Observing and analyzing the context, through semi-structured interviews, focus groups, and observations, to design educational interventions aimed at addressing critical issues within the VET system (Asquini, 2018; Callini, 2018).

**Findings:** The analysis revealed that professionals face challenges in defining roles and tasks, technical-professional teachers lack teaching competencies, participation in students' formative project is unbalanced, and there is an emphasis on developing student-centered teaching techniques.

**Conclusions:** Based on contextual analysis and needs assessments, professionals have expressed a demand for a customized training program that initiates the redefinition of roles and responsibilities.

### **Keywords**

lifelong learning, educational innovation, education and training needs, teacher training, VET in schools

## **1 Introduction**

The first section of this article aims to highlight the context of the research. Attention is focused on how institutions of vocational education and training are responding to the economic and training needs. In particular, this study intends to shed light on the new training needs that emerged after the recent socio-economic changes in the framework of the post-Covid, NRRP (National Recovery and Resilience Plan) and Agenda 2030. The second section of the article will explore the action/training research conducted in Bologna (Italy), in a vocational training institution. This study started with an investigation of the training context and the professional's formative needs, conducted with qualitative methods and tools such as focus groups, interviews, and observations. The results will be presented together with potential further actions.

## 2 Innovation in the context of VET

### 2.1 Context VET in Italy

In Italy, Vocational Educational Training (VET) schools are divided into three and four-year training courses leading to vocational qualifications (EQF3) and diplomas (EQF4) in specific professions (e.g., cooking, mechanics, electrics/electronics, sales, etc.). These training programs are carried out by training institutions accredited by the Regions (Regional Council Decision no. 1695 of 15/11/2010) and established in Emilia-Romagna by Regional Law n. 5 of 30/06/2011. The learning goals are focused on competences, knowledge, and skills related to the professions and requested for the fulfilment of compulsory education (Ministerial Decree 139/2007). The VET pathway involves young people in search of vocational training and tries to respond to their different needs. Indeed, the VET educational offer focuses on specific training needs characterised by inclusiveness, considering the large number of non-Italian students involved, as well as students certified with special needs (according to L. 104/92) and students coming from school failures (Cascioli, 2021). Vocational schools are institutions responsible for training youth, aiming both to improve students' abilities and to satisfy the demands of the labour market (Cedefop, 2018). Therefore, they play a significant role in the current socio-economic environment.

### 2.2 VET in the new socio-economic environment

Contemporary society is facing a multiplicity of challenges, including climate change, the far-reaching consequences of the COVID-19 pandemic, and the rapid advancement of technological innovations. These challenges are having a transformative impact on the socio-economic landscape, engendering a pressing need for new tools and skills that can be readily applied in the labour market (Cedefop, 2019). These changes lead companies to interface with a decline in the professional skills acquired by young workers. In fact, up to 25% of SMEs (small and medium enterprises) are handling professional profiles that are unskilled in the job market (Zagardo, 2020). According to these new needs, vocational schools are renovating themselves, improving forms of collaboration, and transforming the training pathways, teaching activities, and the use of technology. In fact, according to Cedefop (2015; 2022b), innovation in VET is driven by various factors. These include the usage of digital tools, the reskilling and upskilling of trainers and other professionals, innovative teaching and evaluation methodologies, advances in the labour market, and the importance given to the necessity of building new professional and cross-functional competences. The key to tackling the socio-economic and educational crisis in which we find ourselves, could be represented by continuing education (OECD, 2021). In fact, investments in the school landscape are supported by the National Recovery and Resilience Plan (NRRP) and Goal 4 of the 2030 Agenda. Indeed, as explained in Reform 2.2, included in Measure M4C1 of the NRRP, the set elements aim to "*build a high-quality training system for school staff, in line with European standards, which promotes continuous professional and professional development. The school will provide guidance and coordination for training activities*"<sup>30</sup>.

### 2.3 Role of teacher in the VET context

In the context of VET, both the learning environment and the interactions between professionals and students are fundamental for the development of students' consciousness and skills

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<sup>30</sup> M4C1 - Reform 2.2: "School of Higher Education and Compulsory Training for school leaders, teachers and technical and administrative staff" (Relazione sullo stato di attuazione del Piano Nazionale di Ripresa e Resilienza, 2022).

(Pellerey, 2006; Angotti & Fonzo, 2022). “*Teachers and trainers are at the forefront*” (Cedefop, 2022a, p.1) of educating young people. Teachers and trainers are responsible for transmitting the skills and the knowledge needed to prepare the students for the future world of work, as well as for conveying the key competences necessary to support their social responsibility, civic engagement, personal growth and human values (Cedefop, 2022a; OECD, 2019). Thus, “*It is essential that they (re)skill and upskill towards future-oriented competences, which they can then pass on to students*” (Cedefop, 2022b, p.1). Continuous training plays a fundamental role in responding to new educational needs. *Lifelong learning* puts the teachers and trainers in a perspective of continuous updating and learning. This reskilling is fundamental given the social complexity (Di Renzo 2013; Aleandri & Fiorentini, 2022) and professionals should be supported and equipped with the right tools to develop the required skills (Cedefop, 2022a; Foschi, 2021).

Within the context of VET, a close collaboration is evident amongst several professionals, including coordinators, tutors, educators, supporting teachers, and teachers. These professionals have different roles and levels of expertise, but their common goal is to prepare young people for the future profession while assuring their well-being (Angotti & Fonzo, 2022). Teachers are divided in the ones dealing with key competences (linguistics, mathematics, history, etc.) and the ones coming from the the work field and specialised in topics such as cooking, sales, mechanics, or other professions. However, VET requires them to master a dual set of competences, including both didactic and methodological competences, in addition to the professional skills required within their respective fields (Spadafora, 2022). The acquisition of transversal, digital, and technical skills is essential for professionals to effectively respond to daily challenges encountered in the workplace and to navigate the complexities of contemporary educational settings (Cedefop, 2022a). Additionally, they enable professionals to efficiently interact with students and to address the varied challenges that arise within the school context.

Teachers, trainers, and other educational professionals should be responsible for students' *significant learning* through structured and active teaching proposals (Pellerey, 2006). For this purpose, their ability to collaborate, cooperate, and improve their skills is important.

*Significant learning* strongly involves students, influencing cognitive, operational, and emotional dimensions. Thus, targeted courses based on a practical approach to learning are offered by VET institutions, whose reference models are in fact *Learning by doing* and *Work Based Learning* (WBL) (Dewey, 1916; Kolb & Fry, 1975; Alessandrini, 2017). The methodological concept is based on the following elements: experiential learning, learner involvement, personal and professional progress, attention to each student's interests, and support in their journey. Students can spend their training path alternating periods of internships with periods of regular attendance at school, which includes both laboratory and lectures. The goals are to make students more active in their educational pathway, experiencing practical activities and developing a sense of curiosity and exploration (Dewey, 1916; Kolb & Fry, 1975).

Considering the important roles of VET in this pedagogical and social-economic framework, and the roles of teachers in improving students' skills, the European strategy (Next Generation EU) invests in education and vocational training to reduce early school leaving, youth unemployment, and NEETs and to improve the learning of skills useful to new job market demands (Zagardo, 2020; PNRR, 2020; Agenda, 2030). Thus, the current action research project aims to define tools and methods for the innovation of co-design of VET learning and teaching context, on the basis of the competences required by the EU and their application to this field of education. Each professional can contribute to improving formative action and innovation with their resources, abilities, and way of acting (*Capability Approach*) (Alessandrini, 2014).



### 3 An action research project in Bologna (Italy)

The research, conducted in collaboration with VET organisation C.E.F.A.L. (European Consortium for Workers Teaching and Training) - dislocated in Bologna, Villa San Martino, and Faenza - aims primarily to explore and analyse this host vocational institution. The exploratory analysis of the context was conducted using qualitative analysis tools, such as focus groups and semi-structured interviews (Trinchero, 2002). During these focus groups and semi-structured interviews, the professionals involved in the educational activities of the C.E.F.A.L. were asked to identify the needs, problems, and strengths within the context, along with the aspects they wished to improve. All tutors and coordinators of the organisation were included; the teachers involved (approximately 10% of the total) were selected by subject in order to reach a representative sample, even if non-probabilistic.

In the first focus group crucial components, potential areas for improvement, and workplace strengths have been discussed with coordinators and tutors. This qualitative tool has given the opportunity to bring out the topics of relevance: the role of professionals, the students' vulnerability and competences, planning, programming, teaching strategies, the cross-cutting competences of teachers and students, and the "training company"<sup>31</sup> as a framework for the VET.

These themes have been deeply explored in semi-structured interviews, conducted online or on-site, with the coordinators (n = 6), tutors (n = 7), teachers (n = 15), and educators (n = 6). The topics were pre-determined, but the order in which they were addressed and the way the questions were phrased were defined as the interviews progressed, so as to allow the interviewee greater freedom of expression and the opportunity to raise issues that had not previously been considered (Corbetta, 2020; Viganò 2002). Once all the interviews had been conducted and recorded, an identification code was assigned to each interviewee. Data processing was made through careful transcription and subsequent content analysis, in order to highlight the emerging elements and to reveal which ones were common to different interviews. Afterward, a summary of the most recurring aspects was shared for reflection purposes with the educational institution, conveyed from a narrative perspective so as to avoid the alteration of the collected material (Corbetta, 2015; Clarke & Braun, 2022).

The content analysis highlighted specific themes and viewpoints, or "substantive responses", which were identified as categories or subcategories depending on the specificity and relevance (Clarke & Braun 2022). After the interviews and the context analysis, an observation phase started in the classrooms. The primary goal of the observation was to identify the didactic-pedagogical strategies used by the teachers, the tools, and the interactions between the different professionals involved in the pedagogical action. The observation was structured with an attempt to reduce the impact of the observer's presence in the classroom as much as possible, with the aim of not interfering with the dynamics (Coggi & Ricchiardi, 2020). The tool used in the first phase of observation is the logbook. It allowed the development of a systematic observation grid.

This research method is understood as *"the conduct of empirical research using differentiated research methods and the promotion of the professionalism of teachers (and of the pedagogical actors within school institutions and services for children) through the construction of common research pathways in the context of inter-institutional collaboration"* (Asquini 2018, p. 22, translated by the author). *"Research training is considered a*

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<sup>31</sup> The training company is an alternative and innovative model that allows one to learn real work processes through the simulation of a work context. It can be defined as a company within the school that allows students to combine study and practical experience from which to learn lessons. Within this enterprise, craftsmen and experienced technicians act as teachers." (CEFAL, 2021; CIOFS-FP,2023).

*methodological characterisation of research in schools and with teachers that is primarily and explicitly focused on the training/transformation of pedagogical and didactic action and the promotion of teacher reflexivity"* (Id., p. 43, translated by the author).

#### 4 Results and perspectives

The focus group data analysis highlighted some critical aspects that showed the need to train and update teachers' knowledge and skill, as well as to define a common didactic-methodological line to clarify their roles and tasks.

The most recurring topics were related to the necessity to develop some more effective teaching methods for groups of students with different degrees of knowledge and skills, and the use of the term "*fluid*" to define communication among professionals. This last one refers to the co-presence of tutors, educators, and teachers in the class group, which often leads to a misunderstanding of the roles and responsibilities of each professional. Indeed, according to the group of tutors and coordinators, it is necessary to create a balance amongst the professionals and increase the coherence in project design and teaching and learning organisation. "*What are we doing?*", "*Which path are we following?*", "*How can a student achieve his goals if his trainer is in difficulty?*" are the most frequent questions asked by professionals. Helping them to consider such uncertainties would be the first step to give them a common methodological line to follow.

Educational professions are becoming increasingly central and are evolving in response to changes in contemporary society. They have had to constantly rethink and redefine their roles at both educational and social levels, becoming more and more important and strategic over time (Cambi, Catarsi, Colicchi, Fratiniani and Muzi, 2014). This aspect is emphasised by the professionals involved in the educational activities of C.E.F.A.L., who recognize the need to redefine their roles within the educational context. Thus, the first goal of the research project was to define the various roles involved in the educational-pedagogical activity, including professionals, and improving the collaboration, cooperation, and the sharing of methodological lines. Through the discussion between professionals - during the focus group - communication and collaboration will be promoted for questioning, resizing, and reviewing the roles involved in the training action. Seeking a scientific model of education is intimately related to teachers' preparation, who, as declared by Dewey (1910, 1933) and Schön (1993), should be both an "*investigator*" and a reflexive person able to provide a suitable environment for training and learning. In this context, after this first exploratory step, one of the future perspectives is research training with coordinators, tutors, educators, and support teachers to build an effective educational environment. In the VET context, the concept of teachers as an "*investigator*" and a reflexive person will not only concern teachers, but all professionals working with students.

#### 5 Conclusions

This research explored, throughout the use of research-action/research training, critical aspects presented by the educational training context (Asquini, 2018). Focus groups, semi-structured interviews, and on-site observations are some of the qualitative instruments used to observe and analyse C.E.F.A.L. working environment. A pyramid of "priority interventions" was developed by analysing the data gathered during the first year. The initial element which was considered was the difficulty in defining the roles and responsibilities of professionals involved in educational interventions. Therefore, considering the training needs which were expressed during the focus group and interviews and taking into account the synergy between professionals, the first intervention seeks to redefine the roles inside this context through structured collaborative meetings. This meeting allowed for focused interactions between professionals with the goal of stimulating the co-construction of shared meanings about their roles, and strategies of intervention in the VET's context. In fact, roles should be defined both

to provide a solid framework for the training intervention targeted at learners, and to avoid potential misunderstanding during the didactic-pedagogical intervention. As a result, once the roles will be clarified and defined in collaboration with the professionals, it will be possible to intervene in other critical issues highlighted by the training participants: the teaching strategies used by teachers in the classroom. The research will be conducted in accordance with the design of a formative training program on cooperative and mutual learning for all educational professionals involved, with the aim of exchanging good practices, ideas, and intervention strategies.

## References

- Aleandri, G., & Fiorentini, C. (2022). Pedagogical research skills for lifelong and continuing education. *Formazione, lavoro, persona*, 37, 35-55.
- Alessandrini, G. (2014). *La "pedagogia" di Martha Nussbaum. Approccio alle capacità e sfide educative*. Milano: Franco Angeli.
- Alessandrini, G. (Ed.). (2017). *Atlante di Pedagogia del lavoro*. Milano: FrancoAngeli.
- Angotti, R. & Fonzo, C. (2022). *Teachers and trainers in a changing world – Italy: Building up competences for inclusive, green and digitalised vocational education and training (VET)*. Cedefop ReferNet thematic perspectives series. Luxembourg: Publications Office. Cedefop research paper, No 86. Retrieved from: <http://data.europa.eu/doi/10.2801/53769>
- Asquini (2018). *La Ricerca – Formazione: temi, esperienze e prospettive*. Milano: Franco Angeli.
- Cambi, F., Catarsi, E., Colicchi E., Fratini C. and Muzi M. (2014). *Le professionalità educative. Tipologie, interpretazione e modello*. Roma: Carocci Editore.
- Callini, D. (2018). Tecniche immaginative per la ricerca-formazione degli educatori. *Iusv Education*, 11, 43-54.
- Cascioli, R., (2021), *Ciclo di audizioni sul tema della dispersione scolastica*. Audizione dell'Istituto nazionale di statistica, Roma, ISTAT. Retrieved from: [https://www.istat.it/it/files/2021/07/Istat-Audizione-Dispersione-scolastica\\_18-giugno-2021.pdf](https://www.istat.it/it/files/2021/07/Istat-Audizione-Dispersione-scolastica_18-giugno-2021.pdf)
- Cedefop (2022a). *Empowering teachers and trainers to manage change*. Cedefop briefing note, Retrieved from <https://www.cedefop.europa.eu/en/publications/9177#group-details>
- Cedefop (2022b). *Teachers and trainers in a changing world Building up competences for inclusive, green and digitalised vocational education and training (VET), Synthesis report*, Luxembourg: Publications Office, No 86. Retrieved from: <http://data.europa.eu/doi/10.2801/53769>
- Cedefop (2019a). *The changing nature and role of vocational education and training in Europe*, Volume 7: VET from a lifelong learning perspective: continuing VET concepts. Luxembourg: Publications Office. No 74. Retrieved from: <http://data.europa.eu/doi/10.2801/357>
- Cedefop (2019b). *Artificial or human intelligence?*. Briefing note, Retrieved from: <http://data.europa.eu/doi/10.2801/164782>
- Cedefop (2018). *What is the future of vocational education and training in Europe?*. Briefing note. Retrieved from: <http://data.europa.eu/doi/10.2801/827182>
- Cedefop (2015). *Innovation and training: partners in change*, briefing note, Retrieved from: <https://www.cedefop.europa.eu/en/publications/9103#group-details>.
- Coggi, C., & Ricchiardi, P. (2020). *Progettare la ricerca empirica in educazione*. Milano: Carrocci Editore.
- Cochran-Smith, M. (2004a). The problem of teacher training. *Journal of Teacher Education*, 55(4), 295- 299.

- Corbetta, P., (2015). *La ricerca sociale: metodologia e tecniche*. Vol. 3, le tecniche qualitative. Il Mulino.
- Corbetta, P., (2020). *Metodologia tecniche della ricerca sociale. Seconda edizione*. Il Mulino.
- Clarke, V., & Braun, V., (2022). *Thematic analysis: a practical guide*. SAGE.
- Delibera di Giunta comunale n.1695 del 15/11/2010. (n.d.). Regione Emilia-Romagna. Retrieved from: <https://formazionelavoro.regione.emilia-romagna.it/qualifiche/approfondimenti/srq> ;  
<https://www.istruzione.it/archivio/web/istruzione/dg-ifts/area-iefp.1.html>
- Dewey, J. (1910). *How we think*, D.C. Heath and Company. Retrieved from: URN:oclc:record:969478223
- Dewey, J. (1933). *How we think a restatement of the relation of reflective thinking to the educative process*. MA: D.C. Heath & Co Publishers.
- Dewey, J. (1938). *Experience and Education*. New York: Macmillan Company.
- Dewey, J. (1916). *Democracy and education: An introduction to the philosophy of education*. New York: MacMillan.
- Decreto Ministeriale n. 139/ 2007. (n.d.). Archivio Pubblica Istruzione. Retrieved from [https://archivio.pubblica.istruzione.it/normativa/2007/dm139\\_07.shtml](https://archivio.pubblica.istruzione.it/normativa/2007/dm139_07.shtml)
- Foschi, L.C. (2021). Teachers' Continuous Professional Development in Italy: an analysis of the results of the Teaching and Learning International Survey TALIS. *Italian Journal of Educational Research*, XIV (27), 52-64.
- Di Rienzo, P. (2013). Lifelong learning e Università. Saperi taciti e nuove transizioni in età adulta. *Annali online della Didattica e della Formazione Docente*, 5(5), 122-131.
- Legge 5 febbraio 1992, n. 104. Gazzetta Ufficiale. Retrieved from: <https://www.gazzettaufficiale.it/eli/id/1992/02/17/092G0108/sg>
- Kolb, D. A., & Fry, R. (1975). Toward an Applied Theory of Experiential Learning. In G. Cooper (Ed.), *Theories of Group Processes* (pp. 33-57). New York: Wiley.
- Ministero dell'istruzione e della ricerca. PON, *Strategia Nazionale di Specializzazione intelligente*. Retrieved from: [http://www.ponricerca.gov.it/media/387008/strategia\\_nazionale\\_di\\_specializzazione\\_intelligente\\_italia.pdf](http://www.ponricerca.gov.it/media/387008/strategia_nazionale_di_specializzazione_intelligente_italia.pdf)
- Ministero del lavoro e delle politiche sociali, Formazione professionale iniziale e diritto-dovere <https://www.lavoro.gov.it/temi-e-priorita/orientamento-e-formazione/focus-on/Formazione/Pagine/formazione-professionale-iniziale-e-diritto-dovere.aspx>
- OECD. (2021). *Education at a Glance 2021: OECD Indicators*. Paris: OECD. Retrieved from: <https://doi.org/10.1787/b35a14e5-en>
- OECD. (2019). *OECD future of education and skills 2030: OECD learning compass 2030*.
- Pellerey, M. (2006). *Dirigere il proprio apprendimento. Autodeterminazione e autoregolazione nei processi di apprendimento*. La Scuola.
- PNRR. (2021). *Piano Nazionale di Ripresa e Resilienza, Next generation Italia*. Retrieved from: [https://www.governo.it/sites/governo.it/files/PNRR\\_0.pdf](https://www.governo.it/sites/governo.it/files/PNRR_0.pdf)
- Relazione sullo stato di attuazione del Piano Nazionale di Ripresa e Resilienza. (2022). Retrieved from: [https://www.governo.it/sites/governo.it/files/2022\\_RelazionePARLAMENTO\\_Seiz\\_II.pdf](https://www.governo.it/sites/governo.it/files/2022_RelazionePARLAMENTO_Seiz_II.pdf)
- Schön, D. (1993). *Il professionista riflessivo* (trad. it). Bari: Dedalo.
- Trinchero, R. (2002). *Manuale di ricerca educativa*. Milano: Franco Angeli.
- Viganò, R. (2002). *Pedagogia e sperimentazione. Metodi e strumenti per la ricerca educativa*. Milano: Vita e Pensiero.
- Zammuner, V. L. (2020). *Tecniche dell'intervista e del questionario*. Il Mulino.

- Zagardo, G. (2020). *La IeFP nelle Regioni Una risposta all'Europa ai tempi del Covid*. CNOS. Retrieved from: <https://www.cnos-fap.it/sites/default/files/pubblicazioni/quaderni10-2020.pdf>
- Zaramella, S. (2001). *Dal corso al percorso: la formazione professionale verso un modello di personalizzazione nell'obbligo formativo* presentazione di Beatrice Draghetti. Bologna, Assessorato Politiche Scolastiche Formative e dell'Orientamento.

### Sitography:

- Agenda 2030. (n.d.). Agenda 2030 per lo sviluppo sostenibile - Agenzia per la coesione territoriale. Retrieved February 15, 2023, from <https://www.agenziacoesione.gov.it/it/aggiornamenti/news/tutte-le-news/5344-agenda-2030-per-lo-sviluppo-sostenibile.html>
- Imprese Formative - CEFAL. (2021). Emilia Romagna. Retrieved February 23, 2023, from <https://www.cefal.it/imprese-formative>
- Impresa Formativa - CIOFS-FS. (n.d.). Retrieved February 23, 2023, from <https://www.ciofs-fp.org/impresa-formativa/>

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## Instructional Technologies and Training Models in Industry 4.0: An Explorative Literature Review

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### Abstract

**Context:** Due to the constant development of technologies, the concept and the characteristics of the fourth industrial revolution are still being defined, because the future evolution of the phenomenon and its implications are not clear yet. Consequently, it is important for VET systems to stay up-to-date on this phenomenon so that they can keep the trainers' teaching practices and the students' curricula in line with technological evolutions. The present contribution aims at collecting and systematizing useful information to better profile the set of direct and indirect consequences of the industry 4.0 phenomenon on training processes, training methods and training contexts.

**Method:** The study consists of an exploratory literature review performed on 3 wide databases, following the guidelines proposed by Petticrew & Roberts, (2006) for systematic review.

**Findings:** According to the provisional results, a propensity to integrate continuous training models and practices in order to foster experiential learning was found in most of the contributions. Furthermore, a set of frequently used teaching methods, models and industry 4.0 technologies were identified.

**Conclusion:** According to the preliminary results, experiential methodologies enhanced by the use of ad-hoc technologies are at the centre of the contributions analysed. Research, both in the technological and educational spheres, thus seems to have high expectations of the potential of technological innovation to support learning processes.

### Keywords

Industry 4.0, vocational education and training, continuous learning, literature review, technologies for training

### 1 Introduction

According to the World Economic Forum report entitled "Changes in the world of work", the ongoing transformations in the labour market due to the fourth industrial revolution will end in 2030 when this will have involved and transform every kind of new or already existing job (WEF, 2019). Regardless of the plausibility of these forecasts, it is undeniable that the growing technological innovation which characterizes this phenomenon brought substantial changes both in productive and, consequently, social contexts. Due to the constant evolution of the



technologies involved, the concept and the characteristics of the fourth industrial revolution are still being defined, because the future evolution of the phenomenon and its implications are not clear yet (Sangmeister et al., 2018; Winterton & Turner, 2019). Consequently, it is important for VET systems to stay up-to-date on the evolution of this phenomenon so that they can keep their students' curricula up-to-date. At the same time, however, it is crucial that VET trainers are also aware of the evolving teaching methodologies and learning support technologies that are emerging within Industry 4.0. So, which are the new technologies used for training purposes that are spreading, or that could spread, in industry 4.0 companies and organizations? How are the new training technologies used? Which learning models do they refer to? The present contribution aims at collecting and systematizing useful information to better profile the set of direct and indirect consequences of the industry 4.0 phenomenon on training processes, training methods and training contexts. Furthermore, the purpose of this study is to collect and systematize useful information to better profile the set of direct and indirect consequences of the Industry 4.0 phenomenon on training processes, training methods and training contexts, to make useful information available to VET stakeholders and policymakers.

## 2 Methodology

The explorative literature review was conducted following the methodological guidelines suggested by (Petticrew & Roberts, 2006) for the systematic review in social sciences. This stepwise process allows checking the literature according to specific criteria for searching and selecting the studies. Given the exploratory intent of the present study, these guidelines were applied to a restricted database group. 375 studies were identified by querying the databases Web of Sciences, Eric and GoogleScholar via the string 'training AND industry 4.0'. Of these, 41 passed the following selection criteria and were analysed:

- the study is explicitly contextualized in the Industry 4.0 phenomenon;
- the study proposes, tests, or describes the use of strategies, methodological frameworks, or technologies employed or to be employed for training in the context of Industry 4.0 (all contributions presenting tools that are not used for training purposes are excluded);
- the paper is written in English or Italian;
- the study was published after 2015.

Given the intention to study what training paradigms and technologies are used and for what purposes, no exclusion criteria were applied concerning journals from subject areas other than education and vocational training. The selected documents were analysed to extract the following information: type of publication, research methodology used, training context, training methodological approach adopted directly or indirectly, training technologies covered, training topic and study nationality.

## 3 Provisional results

By cross-referencing the selected document's metadata, it was possible to make some initial considerations. Of the  $n=41$  texts analysed  $n=31$  are articles,  $n=8$  are part of conference proceedings and  $n=2$  are book chapters. All of the contributions are in English even though the geographical areas of origin differ: more than half were produced in the European Union area ( $n=25$ ), while the remainder in Asia ( $n=1$ ), Colombia ( $n=1$ ), India ( $n=2$ ), Mexico ( $n=2$ ), Russia ( $n=5$ ), Saudi Arabia ( $n=2$ ), Turkey ( $n=1$ ), South Africa ( $n=1$ ) and the UK ( $n=1$ ). The studies were conducted using different research methods; specifically,  $n=15$  studies using quantitative methods,  $n=11$  case studies,  $n=10$  theoretical contributions,  $n=3$  qualitative studies and  $n=2$  literature reviews. These initial elements suggest that the topic of Industry 4.0 training is also a subject of interest outside the European Union, which promotes various aspects of Industry 4.0

both through directives and through the national plans of member countries. Furthermore, the presence of case studies and theoretical articles through which prototypes of new technologies are proposed to support training and production processes could depend on Industry 4.0 technology for training is still in an experimental phase, and at least part of the technologies that characterise it is still imperfect. Another particularly interesting piece of information that emerged when analysing the metadata of the examined publications is their publishing provenance and, consequently, the audience to which they are addressed. Only  $n=9$  of the selected  $n=41$  studies were published in journals about the education and training sector, while the majority came from journals, books and proceedings dealing with engineering, computer science, robotics, design, economics and applied sciences. This suggests that the Industry 4.0 technologies for training are subject of interest both for the educational sector and different disciplinary fields, which are in some way representative of the respective production sectors involved in the industry 4.0 phenomenon.

The following tables synthesize what emerged from the analysis by grouping the information according to the models and methods used for training (Table 1) and the technologies used to support training (Table 2). Both tables show in the left column the main elements that emerged, while the right column shows the references of the studies where the respective elements are named.

**Table 1**

Training methods and models for Industry 4.0

Training methods and models	References
Simulation	Beloglazov et al., (2020) Strubelt et al., (2019) Zawadzki et al., (2020) Pérez et al., (2019)
Gamification	Tsourma et al., (2019)
Project-based learning, practical learning e-learning by doing	López et al., (2020) Salah et al., (2019) Luque-Vega et al., (2019) Sackey et al., (2020)
Training on the job	Roldán et al., (2019) Abidi et al., (2019) Kravčík et al., (2017)
Virtual factory	(Kaasinen et al., (2020)
Collaborative Learning	Koren & Klamma, (2018) Luis et al., (2019) Burritt & Christ, (2016)
Learning Factory	Abele et al., (2017) Schallock et al., (2018) Caldarola et al., (2018)
Mixed methodologies	Cantú-Ortiz et al., (2020) Chong et al., (2018) Fernández-Caramés & Fraga-Lamas, (2020) Azevedo & Almeida, (2021)
Experiential learning	De Vin et al., (2019)



**Table 2**  
Technologies 4.0 for training

Technologies	References
Virtual and augmented reality	Abidi et al., (2019) Pérez et al., (2019) Roldán et al., (2019) Salah et al., (2019) Tsourma et al., (2019) Zawadzki et al., (2020) Schroeder et al., (2017b) Tran et al., (2019) Vidal-Balea et al., (2020) Marino et al., (2021) Tzimas et al., (2019) Longo et al., (2017)
Artificial Intelligence and Chatbot	Cantú-Ortiz et al., (2020) Casillo et al., (2021)
3D technologies	Bushmeleva et al., (2020)
Internet of Things	Koren & Klamma, (2018) Kravčík et al., (2017)
Web-based application	Moldovan, (2020) Gurjanov et al., (2021) Tsourma et al., (2019)

To answer the research questions is also useful to know the topics of training processes proposed in the contributions analysed. This information has been extracted and categorised in Table 3.

**Table 3**  
Training topics

Category	Specific topic
Industry 4.0	<ul style="list-style-type: none"> <li>• AI technologies</li> <li>• Automation</li> <li>• Characteristics of industry 4.0 for VET providers</li> <li>• Digital competencies for industry 4,0</li> <li>• Industrial cybersecurity</li> <li>• Industrial Internet of Things (IIoT)</li> <li>• Industry 4.0 technologies</li> </ul>
Operating in manufacturing	<ul style="list-style-type: none"> <li>• Additive manufacturing</li> <li>• Assembly</li> <li>• Complex Manufacturing Tasks</li> <li>• Computer Integrated Manufacturing</li> <li>• Manufacturing</li> <li>• Manufacturing assembly</li> <li>• manufacturing execution"</li> <li>• Manufacturing process</li> <li>• Manufacturing production stations activities</li> <li>• Manufacturing production stations activities</li> <li>• Manufacturing related areas</li> <li>• Processing sector industry</li> <li>• Production line tasks</li> <li>• Skills for manufacturing companies</li> </ul>

	<ul style="list-style-type: none"> <li>• Supporting factory workers</li> </ul>
Engineering and design	<ul style="list-style-type: none"> <li>• The design process of biomedical products.</li> <li>• Development of high-order thinking processes in the engineering field</li> <li>• Engineering</li> <li>• Engineers at the workplace</li> <li>• Graphic engineering</li> <li>• Industrial engineering</li> <li>• Integrating Industry 4.0 into engineering teaching (in particular 3d modelling)</li> </ul>
Transversal skills	<ul style="list-style-type: none"> <li>• Decision making</li> <li>• English course</li> <li>• Human resources management</li> <li>• Infrastructure that accumulates knowledge in demand by the intellectual industry</li> <li>• Innovative training solutions in high-tech workplace settings</li> <li>• Knowledge sharing</li> <li>• Lean Production</li> <li>• Management of emergencies</li> <li>• Organizing apprenticeship</li> <li>• Problem-solving</li> <li>• Skills enrichment in general</li> <li>• Work-based-learning design</li> <li>• Workplace learning and training on the way towards Industry 4.0</li> </ul>
Specific technological skills	<ul style="list-style-type: none"> <li>• Digital Transition in Small and Medium Enterprises</li> <li>• Electronic and Electrical Equipment Repair</li> <li>• Fusion 360 software</li> <li>• Machine tool setup</li> <li>• Mechatronic</li> <li>• PLC programming</li> <li>• Robot controlling</li> <li>• Smart operators skills</li> </ul>
More ...	<ul style="list-style-type: none"> <li>• Energy resource planning</li> <li>• Finance</li> <li>• Marketing</li> <li>• mineral mining</li> <li>• Political science</li> <li>• Sociology</li> </ul>

Table 3 shows the preponderance of technical subjects, especially in engineering and manufacturing, both high-profile and operator-oriented. Another category particularly present is that of transversal skills, understood in the broadest sense of the term. The manufacturing and engineering sector is, in most cases, the focus of interest in training 4.0. In this regard, Mingaleva & Vukovic, (2020) propose a methodological approach for the training of new engineers for Industry 4.0, in an attempt to establish conformity between educational products and labour market needs by providing training for specialised professionals required by specific employers.

#### 4 Discussion and conclusion

The results of the review show that, when investigating the context of Industry 4.0, the use of technology and its characteristics also play a central role in continuous training. In particular, the category of technologies that is most often proposed and studied as support for training processes is that which includes virtual and augmented reality. These technologies, of course, are not new in the educational and training sphere, but probably, the drive of technological innovation sees in these a great deal of potential for development, as well as opportunities both concerning the efficiency of learning processes and, in turn, allowing an advantage in economic terms. Indeed, virtual reality makes it possible to greatly reduce the costs of experience-based training. These technologies are not only used to create immersive learning experiences that simulate or enrich work experiences but also to enable greater sharing of corporate know-how, as well as communication with experts inside and outside the company and then make them available in the most user-friendly way possible to learners. As already mentioned, concerning methodological approaches, what emerges is the massive presence of experiential approaches, ranging from simulation to work-based learning to blended methodologies.

In conclusion, according to the preliminary results, experiential methodologies enhanced by the use of ad-hoc technologies are at the centre of the contributions analysed. Research, both in the technological and educational spheres, thus seems to have high expectations of the potential of technological innovation to support learning processes. It is deemed necessary to further deepen the analysis of the contributions to better answer the research questions and to outline a provisional draft curriculum of competencies for VET teachers that takes into account the development of the Industry 4.0 phenomenon. It will then be possible to compare already formalised frameworks, e.g. the DigiCompEdu (Bocconi et al., 2018) or the multidisciplinary digital competencies model by Roll & Ifenthaler, (2021) with what has emerged.

#### References

- Abele, E., Chryssolouris, G., Sihn, W., Metternich, J., ElMaraghy, H., Seliger, G., Sivard, G., ElMaraghy, W., Hummel, V., Tisch, M., & Seifermann, S. (2017). Learning factories for future oriented research and education in manufacturing. *CIRP Annals - Manufacturing Technology*, 66(2), 803–826. <https://doi.org/10.1016/j.cirp.2017.05.005>
- Abidi, M. H., Al-Ahmari, A., Ahmad, A., Ameen, W., & Alkhalefah, H. (2019). Assessment of virtual reality-based manufacturing assembly training system. *International Journal of Advanced Manufacturing Technology*, 105(9), 3743–3759. <https://doi.org/10.1007/s00170-019-03801-3>
- Azevedo, A., & Almeida, A. H. (2021). Grasp the challenge of digital transition in smes—a training course geared towards decision-makers. *Education Sciences*, 11(4), 1–20. <https://doi.org/10.3390/educsci11040151>
- Beloglazov, I. I., Petrov, P. A., & Bazhin, V. Y. (2020). The concept of digital twins for tech operator training simulator design for mining and processing industry. *Eurasian Mining*, 2020(2), 50–54. <https://doi.org/10.17580/em.2020.02.12>
- Burritt, R., & Christ, K. (2016). Industry 4.0 and environmental accounting: a new revolution? *Asian Journal of Sustainability and Social Responsibility*, 1(1), 23–38. <https://doi.org/10.1186/s41180-016-0007-y>
- Bushmeleva, N. A., Isupova, N. I., Mamaeva, E. A., & Kharunzheva, E. V. (2020). Peculiarities of engineering thinking formation using 3D technology. *European Journal of Contemporary Education*, 9(3), 529–545. <https://doi.org/10.13187/ejced.2020.3.529>
- Caldarola, E. G., Modoni, G. E., & Sacco, M. (2018). Manulearning: A knowledge-based system to enable the continuous training of workers in the manufacturing field. *MCCSIS 2018 - Multi Conference on Computer Science and Information Systems; Proceedings of the International Conferences on e-Learning 2018, 2018-July*, 73–80.

- Cantú-Ortiz, F. J., Galeano Sánchez, N., Garrido, L., Terashima-Marin, H., & Brena, R. F. (2020). An artificial intelligence educational strategy for the digital transformation. *International Journal on Interactive Design and Manufacturing*, 14(4), 1195–1209. <https://doi.org/10.1007/s12008-020-00702-8>
- Casillo, M., Colace, F., De Santo, M., Lombardi, M., & Santaniello, D. (2021). A Chatbot for Training Employees in Industry 4.0. In A. Visvizi, M. D. Lytras, & N. R. Aljohani (Eds.), *Research and Innovation Forum 2020: Disruptive Technologies in Times of Change* (pp. 397–409). Springer International Publishing. [https://doi.org/10.1007/978-3-030-62066-0\\_30](https://doi.org/10.1007/978-3-030-62066-0_30)
- Chong, S., Pan, G. T., Chin, J., Show, P. L., Yang, T. C. K., & Huang, C. M. (2018). Integration of 3D printing and industry 4.0 into engineering teaching. *Sustainability (Switzerland)*, 10(11). <https://doi.org/10.3390/su10113960>
- De Vin, L. J., Jacobsson, L., & Odhe, J. (2019). Simulator-assisted lean production training. *Production and Manufacturing Research*, 7(1), 433–447. <https://doi.org/10.1080/21693277.2019.1644248>
- Fernández-Caramés, T. M., & Fraga-Lamas, P. (2020). Use case based blended teaching of IIoT cybersecurity in the industry 4.0 era. *Applied Sciences (Switzerland)*, 10(16). <https://doi.org/10.3390/app10165607>
- Gurjanov, A. V., Zakoldaev, D. A., Zharinov, I. O., & Zharinov, O. O. (2021). Online information service for training in Industry 4.0 technologies. *IOP Conference Series: Materials Science and Engineering*, 1047(1), 0–6. <https://doi.org/10.1088/1757-899X/1047/1/012143>
- Kaasinen, E., Schmalfuß, F., Öztürk, C., Aromaa, S., Boubekur, M., Heilala, J., Heikkilä, P., Kuula, T., Liinasuo, M., Mach, S., Mehta, R., Petäjä, E., & Walter, T. (2020). Empowering and engaging industrial workers with Operator 4.0 solutions. *Computers and Industrial Engineering*, 139(January 2019), 105678. <https://doi.org/10.1016/j.cie.2019.01.052>
- Koren, I., & Klamma, R. (2018). Enabling visual community learning analytics with Internet of Things devices. *Computers in Human Behavior*, 89(February), 385–394. <https://doi.org/10.1016/j.chb.2018.07.036>
- Kravčík, M., Ullrich, C., & Igel, C. (2017). Towards industry 4.0: leveraging the internet of things for workplace learning and training. *Proceedings of the Workshop on European TEL for Workplace Learning and Professional Development, Greenfield 2009*, 1–8.
- Longo, F., Nicoletti, L., & Padovano, A. (2017). Smart operators in industry 4.0: A human-centered approach to enhance operators' capabilities and competencies within the new smart factory context. *Computers and Industrial Engineering*, 113, 144–159. <https://doi.org/10.1016/j.cie.2017.09.016>
- López, C. I., Bautista, L. E., & Mantilla, C. (2020). A novel approach to learning virtual engineering in the medical devices process. *Education and Information Technologies*, 25(6), 5703–5729. <https://doi.org/10.1007/s10639-020-10236-x>
- Luis, S. J., De laTorre-Cantero, J., Díaz, D. M., & López-Chao, V. (2019). Cloud-Based Collaborative 3D Modeling to Train Engineers for the Industry 4.0 José. *Applied Sciences*, 0. <http://www.mdpi.com/2076-3417/9/21/4559/s1>, Table
- Luque-Vega, L. F., Lopez-Neri, E., Santoyo, A., Ruíz-Duarte, J., & Farrera-Vázquez, N. (2019). Educational methodology based on active learning for mechatronics engineering students: Towards educational mechatronics. *Computacion y Sistemas*, 23(2), 325–333. <https://doi.org/10.13053/CyS-23-2-3196>
- Marino, E., Barbieri, L., Colacino, B., Fleri, A. K., & Bruno, F. (2021). An Augmented Reality inspection tool to support workers in Industry 4.0 environments. *Computers in Industry*, 127, 103412. <https://doi.org/10.1016/j.compind.2021.103412>
- Mingaleva, Z. A., & Vukovic, N. A. (2020). Development of engineering students

- competencies based on cognitive technologies in conditions of industry 4.0. *International Journal of Cognitive Research in Science, Engineering and Education*, 8(Special Issue 1), 93–101. <https://doi.org/10.23947/2334-8496-2020-8-SI-93-101>
- Moldovan, L. (2020). An Innovative Guide to Work-Based Learning in the Field of Industry 4.0. *Proceedings*, 63(1), 58. <https://doi.org/10.3390/proceedings2020063058>
- Pérez, L., Diez, E., Usamentiaga, R., & García, D. F. (2019). Industrial robot control and operator training using virtual reality interfaces. *Computers in Industry*, 109, 114–120. <https://doi.org/10.1016/j.compind.2019.05.001>
- Roldán, J. J., Crespo, E., Martín-Barrio, A., Peña-Tapia, E., & Barrientos, A. (2019). A training system for Industry 4.0 operators in complex assemblies based on virtual reality and process mining. *Robotics and Computer-Integrated Manufacturing*, 59(July 2018), 305–316. <https://doi.org/10.1016/j.rcim.2019.05.004>
- Sackey, S. M., Bester, A., & Adams, D. Q. (2020). A framework for an industrial engineering learning facility paradigm toward industry 4.0. *South African Journal of Industrial Engineering*, 31(1), 122–132. <https://doi.org/10.7166/31-1-1796>
- Salah, B., Abidi, M. H., Mian, S. H., Krid, M., Alkhalefah, H., & Abdo, A. (2019). Virtual reality-based engineering education to enhance manufacturing sustainability in industry 4.0. *Sustainability (Switzerland)*, 11(5), 1–19. <https://doi.org/10.3390/su11051477>
- Schallock, B., Rybski, C., Jochem, R., & Kohl, H. (2018). Learning Factory for Industry 4.0 to provide future skills beyond technical training. *Procedia Manufacturing*, 23(2017), 27–32. <https://doi.org/10.1016/j.promfg.2018.03.156>
- Schroeder, H., Friedewald, A., Kahlefeldt, C., & Lödding, H. (2017). *Virtual Reality for the Training of Operators in Industry 4.0 BT - Advances in Production Management Systems. The Path to Intelligent, Collaborative and Sustainable Manufacturing* (H. Lödding, R. Riedel, K.-D. Thoben, G. von Cieminski, & D. Kiritsis (eds.); pp. 330–337). Springer International Publishing. [https://doi.org/10.1007/978-3-319-66923-6\\_39](https://doi.org/10.1007/978-3-319-66923-6_39)
- Strubelt, H., Trojahn, S., & Lang, S. (2019). Transparency and Training in Manufacturing and Logistics Processes in Times of Industry 4.0 for Smes. *Proceedings - Winter Simulation Conference, 2019-Decem*(January 2021), 2013–2024. <https://doi.org/10.1109/WSC40007.2019.9004939>
- Tran, T. K., Yahoui, H., & Siauve, N. (2019). An interactive approach to teach automation in the training of the industry 4.0. *2019 13th International Conference on Software, Knowledge, Information Management and Applications, SKIMA 2019*, 2019–2022. <https://doi.org/10.1109/SKIMA47702.2019.8982491>
- Tsourma, M., Zikos, S., Albanis, G., Apostolakis, K. C., Lithoxoidou, E. E., Drosou, A., Zarpalas, D., Daras, P., & Tzovaras, D. (2019). Gamification concepts for leveraging knowledge sharing in Industry 4.0. *International Journal of Serious Games*, 6(2), 75–87. <https://doi.org/10.17083/ijsg.v6i2.273>
- Tzimas, E., Vosniakos, G. C., & Matsas, E. (2019). Machine tool setup instructions in the smart factory using augmented reality: a system construction perspective. *International Journal on Interactive Design and Manufacturing*, 13(1), 121–136. <https://doi.org/10.1007/s12008-018-0470-z>
- Vidal-Balea, A., Blanco-Novoa, O., Fraga-Lamas, P., Vilar-Montesinos, M., & Fernández-Caramés, T. M. (2020). Creating collaborative augmented reality experiences for industry 4.0 training and assistance applications: Performance evaluation in the shipyard of the future. *Applied Sciences (Switzerland)*, 10(24), 1–23. <https://doi.org/10.3390/app10249073>
- Zawadzki, P., Zywicki, K., Bun, P., & Gorski, F. (2020). Employee Training in an Intelligent Factory Using Virtual Reality. *IEEE Access*, 8, 135110–135117. <https://doi.org/10.1109/ACCESS.2020.3010439>

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Peters, S. & Meyne, L. (2023). Motivation in international VET cooperation: VET providers and their engagement in transfer. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 349–354). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7822041>

## Motivation in International VET Cooperation: VET Providers and their Engagement in Transfer

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### Abstract

This paper represents a first contribution in the context of international vocational training research on the side of German VET providers who want to transfer their VET services from Germany as the origin country to another target country and asks about the motivation to become active in this regard. Case studies are applied that involve German VET providers, sampled from a German funding line. In-depth expert interviews with six project actors are conducted to identify the perspectives and approaches for the motivation of transfer. Theoretical assumptions on motives and motivation of the Relationships Motivation Theory by Deci and Ryan, as well as the motives for policy transfer by Pilz and Li offer the analytical framework for this study. Although motives variate in many facets, two main motivations of the revenue-oriented motivation of transfer and the personal concerns motivation can be found according to the analysed data. Concluding, there are rather intuitive and interest-driven motives for engaging in transfer on the side of the analysed VET providers, which is why further research in this area would be desirable.

### Keywords

transfer in VET, transfer in international vocational education and training, motivation for transfer, internationalization of VET, German VET provider

### 1 Context

In the context of international comparative Vocational Education and Training research, drivers and barriers to policy implementation are discussed as well as factors that significantly influence transfer processes at the level of political decision making. The existing state of research on the topic of VET transfer has so far been largely located at the macro level, although information on individual projects is useful in order to develop a better understanding of transfer, as their understanding in turn shapes the entire transfer work in the sector of VET. Therefore, we ask for the motivation to engage in transfer of vocational education and training service providers in internationalization projects.

Within the concomitant research of the funding line "Internationalization of Vocational Education and Training" (IBB) by the German federal ministry of education and research, we



accompanied 16<sup>32</sup> projects that aim at business model development of vocational education and training services as well as testing the implementation of these services in new markets. For example, one project of the funding cluster aims to sell welding certificates on the Brazilian market; another one intends to sell mechatronics courses to companies in Serbia. In this context, our research focuses on conducting qualitative interviews and quantitative surveys during different phases of the projects' funding as well as after project funding has ended. Therefore, in the context of this contribution, transfer is understood as educational transfer, meaning the transfer of VET structures, processes, contents and practices from an origin context to a target context (Frommberger & Baumann, 2019; Gessler, 2019). Gessler (2019) points out that in the context of VET transfer, several levels are always involved at the same time, more precisely those of "individuals, teams, institutions and systems" (p. 233). In the course of this study, the level of individuals (representing their organizations) is considered with regard to the concrete understanding of transfer in the cases analyzed. Our research question is: *How can the motivation regarding the transfer of VET providers participating in international projects for the development of business models for VET services be characterized?* Our analysis takes up results regarding the understanding of transfer and different levels of transfer (see Meyne & Peters, 2022) and has been part of the same research design and data collection.

## 2 Theoretical framework

Toepper et al. (2021) describe that "the role of individuals and the competence of instructors as well as other decision-makers is an important influencing factor" (Dowling et al., 2008; as cited in Toepper et al., 2021, p. 150) regarding VET transfer. Theoretical assumptions on motives and motivation (Deci & Ryan, 2008) offer the analytical framework for this context:

"In this way, it is clear that the policy lending approach is not a simple change in perspective from the receiving country to the transferring country. Instead, a distinction must also be made here between the motives for the transfer and the degree of voluntariness"

(Pilz & Li, 2021, p. 7)

Deci and Ryan (2014) describe in their Relationships Motivation Theory (RMT) the relation between the quality of relationships and motivational dynamics. They state that those relationships are of high quality in which both partners experience autonomy. So, to what extent are motivation and voluntariness related to transfer? Deci & Ryan (1993, p. 225) state, "Self-determined and controlled behavior thus define the endpoints of a continuum that establishes the 'quality' or 'orientation' of a motivated action". We want to explore if the autonomy of project actors also has an influence on the outcome in project work. Here, it is important to see that we capture individual perspectives, not organizational ones.

## 3 Methods and sample

We use case studies that involve German VET providers, sampled from the German funding line "IBB". In total, the IBB funding line comprises 27 project proposals, including the concomitant research project of the entire funding line. Six projects from the funding cluster c "demand-oriented development and model implementation of education and training services for international markets" were analysed in the context of this study. The perspectives regarding the approaches to transfer are being collected in in-depth interviews with VET project actors.

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<sup>32</sup> Those are projects from funding cluster c. The other two funding priorities relate to (a) 'bilateral exploratory projects on the prerequisites and topics of vocational training cooperation' and (b) 'measures to support and implement bilateral vocational training cooperation on a model basis', the IBB funding line comprises 27 projects in total.



The sample of our study was selected based on the most-different-system design, so that the projects analysed can be clearly distinguished from each other in addition to the commonality of the funding line (Millis et al., 2010). With regard to the target countries of the IBB funding line programmes, the countries Kazakhstan (I\_1), Iran (I\_2, I\_4), China (I\_3), Serbia (I\_5) and South Korea (I\_6) are addressed. Furthermore, the vocational training programmes of the analysed projects include one project, which offers initial training (I\_2) and five projects, which offer further vocational training (I\_1, I\_3, I\_4, I\_5, I\_6). With regard to the economic sectors, different areas are addressed by the projects, so that sometimes even several sectors are addressed at the same time by one project. The projects thus address the following sectors: The automotive industry (I\_4, I\_6), metal and electrical engineering (I\_5, I\_6), tourism and gastronomy (I\_5), environmental and energy technology (I\_1), logistics and transport (I\_1, I\_5), Refrigeration and air-conditioning technology (I\_2) and the industrial enterprises and manufacturing industry (I\_3, I\_5).

In total, four interviews were conducted in the area of practice-based research in the context of (international) vocational education and training research and service development with experts from four IBB projects, while interviews were conducted with experts from private vocational training companies in two other IBB projects. In our study, qualitative content analysis according to Kuckartz (2018) is used to analyse the results of the qualitative expert interviews. Our qualitative data are supplemented with quantitative data from an online survey completed 6 months after the end of the projects by the project participants.

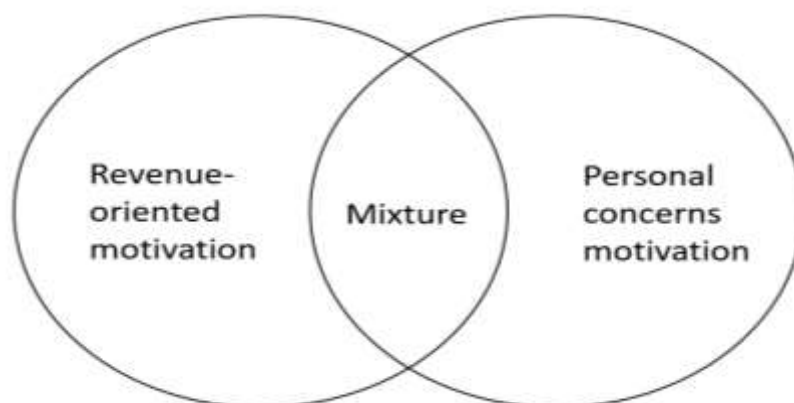
#### 4 Results and discussion

We found that the motivation varies from project to project, still, we see that the impulse to transfer or the motivation to become internationally active in the context of vocational education and training is related to the goals that the projects are primarily pursuing, which may provide initial indications of the underlying understanding of transfer of the projects (Meyne & Peters, 2022).

Although motives variate in many facets, we found two main motivations in our data (see Figure 1). Firstly, the revenue-oriented motivation of transfer can be emphasized in some projects: "We want to bring licenses to the market" (I\_3, 9); "Yes, it is always about making money" (I\_4, 105); coming along with a strategic corporate interest (such as cooperation and funding opportunities): "We've been doing international projects for many years, whether it's in China, in Vietnam, in Saudi Arabia, so from that point of view it's kind of corporate DNA" (I\_6, 4). Secondly, we found the personal concerns motivation of transfer. For example, personal commitment was mentioned in a post-soviet project (I\_1). Here, as well as in other projects, the actors' own personal employment- and educational biography plays a role to become active regarding the transfer of VET services: "So for me it was always clear, or I would say the red line in my professional biography is actually the occupation with other cultures, other countries, other approaches (...)" (I\_2, 10). Following on from this, the subsequent question arises: Is there a perceived proximity (towards the target region or towards the field of educational transfer)? This is the main motivation in some other projects. Additional, in one project we found a mixture of both: The need to define segments to grow in (in international markets) combined with the management board's personal preference for a region (I\_5).

**Figure 1**

Motivation to be active in transfer (own compilation)



Regarding the Relationships Motivation Theory by Deci and Ryan (2014), we find in the data that there is a connection between the *motivation* and the two aspects of *autonomy* and *competence* (see Deci & Ryan, 2014, p. 54) regarding transfer. So, missing autonomy is a disadvantage: "We were not dealing with private individuals, but with public institutions, which of course also depend on the government to a certain extent and cannot act in the way they might otherwise" (I\_2, 17). In another context, if autonomy was given, the project succeeds to get further: "We have then acted independently of the project, because it was too cumbersome for us in parts or the self-interest is not so tangible within the project" (I\_3, 24). If self-reliant, competent decisions are made in the target countries, this counts as a success as well: "They have sat in a very decisive position and also, so to speak, helped to make decisions or perhaps even made them independently" (I\_2, 16). However, an open task for further research is to operationalize autonomy and competence in the context of the present study.

In Pilz and Li (2021, p. 19), the authors "revealed four main motives for the policy transfer: Donor aid, state capacity-building, company capacity-building, and trainer capacity-building". Here, we can see the main difference between policy transfer and the projects' transfer approaches: In the latter's motivation, all four main motives from Pilz and Li can be found within single projects and still, the motivation of transfer is to be reduced to two categories (revenue-oriented motivation and personal concerns motivation) regarding VET service providers at the micro level. Hence, the motivation shaped the definition of transfer, so that a connection between these two categories can be expected. The revenue-oriented definition means transfer to be "transfer as business model development" as well as "transfer as orientation towards customers and markets". As a normative leading motive to be active in transfer, all projects mention this as a subsidiary goal, they aim to be supportive: "We want to make sure that people are qualified and that they receive high-quality education" (I\_5, 8).

Also, there is a tangible and conscious understanding of transfer, but still, there are rather intuitive and interest-driven motives for engaging in transfer on the part of internationally active VET providers. As we saw in our data, the project actors do have an understanding of transfer. Still, summing up, there is an understanding of transfer (How should it happen? With whom? When?) but an intuitive, interest-driven, unconscious development of this transfer takes place within learning processes during the project's phases. This finding underpins Barkirci and Pilz (2019), stating that international VET experts do not yet have a concrete understanding of the profession yet. In general, reflection on transferability and the target countries' needs always plays a role in this process.

## 5 Limitations and prospects

This paper represents a first contribution in the context of international vocational education and training research on the side of German VET providers who want to transfer their VET services from Germany as the origin country to another target country and asks about the motivation to become active in this regard. Although motives variate in many facets, the two main motivations of the revenue-oriented motivation of transfer and the personal concerns motivation can be found according to the analyzed data. Furthermore, it should be noted that there are rather intuitive and interest-driven motives for engaging in transfer on the side of the VET providers, which is why further research in this area would be desirable. Limitations of the present contribution result from the very special sample and the German perspective of the actors. Motivation, voluntariness and relationships were analyzed here by individuals of the respective IBB projects. Capturing the organizational level is a research desideratum for the future. Furthermore, the topic of the success of the transfer process as an outlook exists in combination with the understanding and motivation of the transfer. What if projects have a specific understanding of transfer and motivation to transfer that affect their project, so that a successful implementation is made more difficult or projects even have to be cancelled? Also, to be considered for future research projects would be the connection of motivation and legitimation in the context of funded projects, since at this point it can be expected that the framework conditions of externally funded projects have an impact on the articulation of underlying motivations for the implementation of the funded projects. This aspect is not expressed in the interviews and should therefore be addressed in the course of future research.

## References

- Deci, E. L., & Ryan, R. M. (1993). Die Selbstbestimmungstheorie der Motivation und ihre Bedeutung für die Pädagogik. *Zeitschrift für Pädagogik*, 39(2), 223–238. <https://doi.org/10.25656/01:11173>
- Deci, Edward L., & Ryan, R. M. (2008). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian Psychology/Psychologie Canadienne*, 49(3), 182–185. <https://doi.org/10.1037/a0012801>
- Deci, E. L., & Ryan, R. M. (2014). Autonomy and need satisfaction in close relationships: Relationships motivation theory. In N. Weinstein (Ed.), *Human motivation and interpersonal relationships* (p. 53–73). Springer. [https://doi.org/10.1007/978-94-017-8542-6\\_3](https://doi.org/10.1007/978-94-017-8542-6_3)
- Dolowitz, D. P., & Marsh, D. (2000). Learning from abroad: The role of policy transfer in contemporary policy-making'. *Governance: An International Journal of Policy and Administration*, 13(1), 5–24. <https://doi.org/10.1111/0952-1895.00121>
- Kühn, I. K. (2021). Geschäftsmodellentwicklung, Dienstleistungsentwicklung und Dienstleistungstransfer: Lessons learned für die Internationalisierung der Berufsbildung. In D. Frommberger & M. Gessler (Eds.), *wb-ibb Working Papers* 2/2021. Universität Osnabrück and Universität Bremen. <https://doi.org/10.5281/zenodo.4943476>
- Kuckartz, U. (2018). *Qualitative Inhaltsanalyse. Methoden, Praxis, Computerunterstützung* (4th Ed.). Beltz Juventa.
- Li, J., & Pilz, M. (2021). International transfer of vocational education and training: A literature review. *Journal of Vocational Education & Training*. <https://doi.org/10.1080/13636820.2020.1847566>
- Meyne, L. & Peters, S. (2022). Transfer in international VET cooperation: Development of a typology. <https://doi.org/10.1111/ijtd.12289>
- Millis, A. J, Durepos, G., & Wiebe, E. (2010). *Encyclopedia of case study research*. SAGE Publications.

Toepper, M., Zlatkin-Troitschanskaia, O., & Kühling-Thees, C. (2021). Research in international transfer of vocational education and training – A systematic literature review. *International Journal for Research in Vocational Education and Training*, 8(4), 138–169. <https://doi.org/10.13152/IJRVET.8.4.7>

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## VET, Patience and the Wealth of Nations

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### Abstract

**Context:** Behavioral economics describe how preferences, experience, and individual characteristics relate to learning and choices and therefore determine economic behavior. According to (economic) choice theories, patience is a key driving factor behind economic development as it affects economic behavior, as visible in health, crime, etc. Dohmen et al. set up the relationship between *patience* and economic developments. It becomes clear that patience is strongly correlated to parameters like years of schooling, innovation, risk preferences and GDP per capita. We are interested in a connection between patience and the investment in initial and continuing vocational education and training (VET) by the state and by enterprises in different European countries. Our thesis is that the more patient a society is, the more exists a willingness of firms and of the state to invest in apprenticeships.

**Approach:** We use a sample of European countries and correlate their values of patience (from the Global Preference Survey) with the public investment in vocational training, with the firm participation in vocational education and training and with the enterprise expenditures on CVT. **Findings:** It is likely that there is a relationship between patience and the companies' participation in training. So, patience-oriented societies foster firm investment in education. We cannot prove a relationship between patience and the public investment in vocational training or patience and the companies' expenditures on CVT.

**Conclusions:** From an education theory perspective, we reinforce our result: Patience-oriented societies – and their companies – tend to place a strong emphasis on education as education is a means to promote social mobility and reduce inequality, as it provides individuals with the opportunity to improve their economic prospects and social status. Also, education is a means to promote innovation and economic growth, as it helps to develop the human capital needed to drive technological progress and improve productivity.

### Keywords

vocational education and training (VET), patience, company engagement in VET, Europe

### 1 Context and research approach

In the discipline of *behavioral economics*, we find a construct named *patience*, referring to intertemporal choices (effects of a decision will take place in a different time than the decision

itself). We use this construct to examine a possible interrelation between patience and education with a special regard to vocational education and training.

Behavioral economics describe how preferences, experience, and individual characteristics relate to learning and choices – and therefore determine economic behavior. This influence of individual conditions on visible effects can be related to learning theories in educational science: In contrast to behaviorism, where learning is a matter of stimulus-response within a black box, and constructivism, which does not define any truth and relates to the own personal experience (see e.g., Neubert et al. 2001), in social-cognitive learning theory by Bandura (1977) decisions and their emergence are central. Social cognitive theory can be used when explaining, predicting, and influencing behavior.

According to (economic) choice theories, patience is a key driving factor behind economic development as it affects economic behavior, as visible in health, crime, etc. (e.g., Chabris et al., 2008; Sutter et al., 2013; Courtemanche et al., 2014). The research debate calls patience to be the ultimate reason for variations in living standards around the globe and emphasize the crucial role of the so-called “proximate determinants” of development, i.e., the accumulation of physical capital, human capital, and productivity (Dohmen et al., 2016). In other words, the more patient a society is, the higher accumulation of human capital and knowledge is probable. The stocks of these resources differ vastly across countries, as empirical evidence suggests. This observation leads to the research scope of explaining how differences in these stocks arise and how developments of corresponding determinants can be conceptualized (ibid.). Concepts of path dependency show how characteristics like culture, history, or geography determine economic development.

Dohmen et al. (2016) proved in a first systematic investigation the relationship between patience and economic development. They titled their research “Patience and the wealth of nations” referring to Adam Smith’s *Wealth of Nations* (2008<sup>33</sup>) and signaling the importance of patience regarding consumption and savings<sup>34</sup>. They correlate patience with parameters like the countries’ years of schooling, with R&D expenditures, innovation indices, risk preferences, and GDP per capita. It becomes clear that patience is strongly correlated to all these mentioned parameters (Dohmen, 2019).

Sunde et al. (2021) identify the links between patience and education as a research desiderate. Therefore, we verify if there is a connection between patience and the investment in initial and continuing vocational education and training (VET) by the state and by enterprises in different European countries. Referring to the above-mentioned research results of patience, our thesis is that the more patient a society (on the country level) is, the more exists a willingness of firms and of the state to invest in apprenticeships. There is research on the costs of initial and continuing VET and their distribution among companies, private individuals and the public sector (e.g., OECD, 2022; Dohmen & Cordes, 2019), but no relation to the construct of patience is existing so far.

## 2 Methods

We use a sample of European countries because the European Union (EU) is one economic world region with close economic and political interrelations. Especially regarding education, the vision of the European Education Area (to be achieved by 2025) is supposed to enrich the quality, inclusiveness and digital and green dimension of Member State education systems (European Commission, 2020). We use N=17 representing Austria, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Lithuania, Netherlands, Poland, Portugal,

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<sup>33</sup> First edit in 1776.

<sup>34</sup> “Savings” here relate to household savings as well as to gross (public) savings.

Romania, Spain, Sweden, Switzerland, Turkey, United Kingdom (due to different availability of data, some countries are not included in all correlations).

Our basic dataset is the Global Preference Survey (Falk et al., 2015; 2018; Briq Institute, 2018) for patience and control variables. So, in the data analysis, the independent variable is *patience*, the dependent variables are: 1) the public investment in vocational training (*PublicExpend*; IVET public expenditure as percentage of GDP; Eurostat, 2022a), 2) the firm involvement/engagement in vocational education and training (*TrainSupport*; percentage of enterprises providing any type of vocational training to their employees; Eurostat, 2022b) and 3) the company involvement in continuing vocational training (*ExpenCVT*; enterprise expenditure on CVT courses; Eurostat, 2022c). We choose these variables referring to Busemeyer & Iversen (2011) who use them to analyse youth unemployment, wage bargaining and labour market stratification. Thus, our hypotheses are:

H<sub>0</sub>: There is no statistical correlation between *patience* and *TrainSupport*, *ExpenCVT* and *PublicExpend*.

H<sub>1</sub>: There is a statistical correlation between *patience* and single variables.

Using SPSS, we correlate *patience* to *TrainSupport*, *ExpenCVT* and *PublicExpend*, using partial correlations in a further step to measure the strength of a relationship between patience and single variables, while controlling for the effect of the other variables. Running a regression for the described model shows that the model is statistically significant.

### 3 Findings

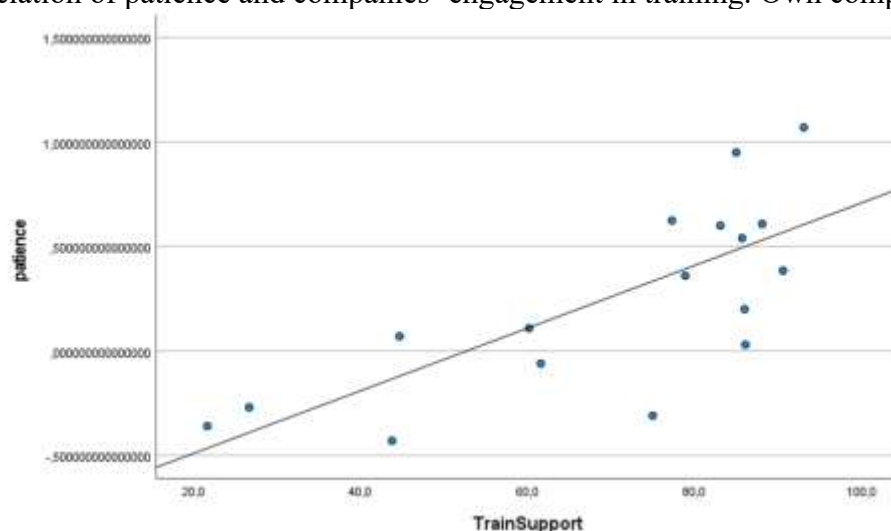
We expected to find a correlation between the patience and the willingness to invest in vocational education. As a first indicator, the regression model is significant ( $r=0.842$  and  $r\text{-squared}=0.679$  with a standard error of 0.29).

When correlating patience to *TrainSupport*, *ExpenCVT* and *PublicExpend*, we see that the Pearson's  $r$  is significant for *TrainSupport* (0.743 with a significance level of 0.01 (2-tailed), so the relationship is highly significant) and for *PublicExpend* (0.503 with a significance level of 0.05 (2-tailed), so the relationship is rather weak but significant). *ExpenCVT* is not statistically related to patience (Pearson's  $r$  is 0.219).

By adding partial correlations (*patience* and *TrainSupport* as well as *patience* and *PublicExpend*) we find out that the correlation of *patience* and *PublicExpend* is a spurious correlation ( $r=0.281$ ), while the correlation of *patience* and *TrainSupport* remains significant ( $r=0.725$ ). Figure 1 shows the scatter plot of the linear regression model: It is likely that there is a relationship between patience and the companies' engagement in training in the population as well as the sample.

**Figure 1**

Correlation of patience and companies' engagement in training. Own compilation



#### 4 Discussion and limitations of the research

In social-cognitive learning theory, we construct when problem-solving and choose in the way that we have been shaped and socialized. This leads to individual preferences, and a set of preferences (like within a geographic region) leads to economic developments. Economic developments are responsible for people's income, employability, and therefore for their well-being. In this context, VET is also important and can contribute to a society's well-being. When merging VET and the idea of patience, we can see a positive correlation for patience and the companies' participation in vocational education and training.

What can we learn from the patience-excursus in VET? Patience-oriented societies foster firm investment in education. We reject the null hypothesis and confirm  $H_1$ . From an education theory perspective, we can reinforce this result: There are several reasons why patience-oriented societies – and the companies within them – tend to place a strong emphasis on education. First, education is seen as a means to promote social mobility and reduce inequality, as it provides individuals with the opportunity to improve their economic prospects and social status. Second, education is viewed as a means to promote innovation and economic growth, as it helps to develop the human capital needed to drive technological progress and improve productivity.

For a critical evaluation of the results, we want to focus on the construct of patience. The idea of patience is to indicate in how far time preference relates to future-oriented behaviors, resulting for example in economic variables like income. Therefore, we take a closer look at how the data has been collected. For the determination of the patience value, respondents were asked whether they would prefer to receive 100 euros today or 154 euros in 12 months from now. Following this logic, respondents decided to receive payments now or later within four more questions according to these choice questions. We can see that the patience value is collected via a monetary assessment of the participants. This is a comprehensible approach but does not take into account the monetary stability (or individual's perception of the stability), so to gain precise (inflation-adjusted) patience values, we would have expected to have this factor included in the survey in a direct way.<sup>35</sup> To address this challenge, we could add control

<sup>35</sup> In the questionnaire, it reads: "Please assume there is no inflation"; still, this does not include explicitly the expected monetary stability.



variables for inflation and interest rates, but we assume it makes a difference within the questioning already.

There are limitations in the research design such as we use the *individual-level* patience measures and *collective-level* financial (investment; expenditure) measures. Furthermore, a small sample (N=17) leads to the question in how far our results are representative. Though, the data comes from valid and representative statistics/surveys and in this case, a small sample with a significant model is an indicator for an actual relationship between patience and the companies' engagement in training in the population as well. Nevertheless, our approach could be extended and used for a regression with more countries around the world as the Global Preference Survey is available for 76 countries. Also, private educational expenditures by educational level could be included in a model. Beyond a continuation of this research approach, we consider further research to be useful, e.g., regarding the question whether educational institutions can change patience. Dohmen (2019) argues that programs that are helping and supporting developing countries would work if they would foster patient behavior, e.g., if institutions create a certain and stable environment.

## References

- Bandura, A. (1977). *Social learning theory*. Prentice Hall.
- Briq Institute (2018). Global preference survey. Downloads. <https://www.briq-institute.org/global-preferences/downloads>
- Busemeyer, M.R., & Iversen, T. (2012). Collective Skill Systems, Wage Bargaining, and Labor Market Stratification. In: Marius R. Busemeyer & Christine Trampusch (Eds.): *The Political Economy of Collective Skill Formation*, p. 205–233. <https://doi.org/10.1093/acprof:oso/9780199599431.003.0008>
- Chabris, C.F., Laibson, D., Morris, C.L., Schuldt, J.P., & Taubinsky, D. (2008). *Individual laboratory-measured discount rates predict field behaviour*. NBER Working Paper Series. <http://www.nber.org/papers/w14270>
- Courtemanche, C., Heutel, G., & McAlvanah, P. (2014). Impatience, Incentives and Obesity. *The Economic Journal* 125(582), 1–31. <https://doi.org/10.1111/eoj.12124>
- Dohmen, T.; Enke, B., Falk, A., Huffman, D., & Sunde, U. (2016). *Patience and the Wealth of Nations*. Working Paper Series: Economics Research Center, Chicago.
- Dohmen, T. (2019). *Patience and Skill Accumulation*. Presentation: BIBB Conference on the Economics of VET. Siegburg, Germany: 07.11.2019.
- Dohmen, D., & Cordes, M. (2019). Costs of continuing education in Germany - Distribution of financial burdens among enterprises, private individuals and the public sector [*Kosten der Weiterbildung in Deutschland - Verteilung der Finanzlasten auf Unternehmen, Privatpersonen, öffentliche Hand*], FiBS-Forum, No. 61. <https://www.econstor.eu/handle/10419/196922>
- European Commission (2020). Achieving a European Education Area by 2025 and resetting education and training for the digital age. [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_20\\_1743](https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1743)
- Eurostat (2022a). Public expenditure on education by education level and programme orientation. [https://ec.europa.eu/eurostat/databrowser/view/EDUC\\_UOE\\_FINE08/default/table?lang=en&category=educ.educ\\_uoe\\_fin.educ\\_uoe\\_fine](https://ec.europa.eu/eurostat/databrowser/view/EDUC_UOE_FINE08/default/table?lang=en&category=educ.educ_uoe_fin.educ_uoe_fine)
- Eurostat (2022b). Enterprises employing IVT participants – % of all enterprises. [https://ec.europa.eu/eurostat/databrowser/view/trng\\_cvt\\_34s/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/trng_cvt_34s/default/table?lang=en)
- Eurostat (2022c). Cost of CVT courses - % of total labour cost. [https://ec.europa.eu/eurostat/databrowser/explore/all/popul?lang=en&subtheme=educ.educ\\_part.trng\\_cvt&display=list&sort=category&extractionId=TRNG\\_CVT\\_34S](https://ec.europa.eu/eurostat/databrowser/explore/all/popul?lang=en&subtheme=educ.educ_part.trng_cvt&display=list&sort=category&extractionId=TRNG_CVT_34S)

- Falk, A., Becker, A., Dohmen, T., Enke, B., Sunde, U., & Huffman, D. (2015). *The Nature of Human Preferences: Global Evidence*. Working Paper.
- Falk, A., Becker, A., Dohmen, T., Enke, B., Huffman, D., & Sunde, U. (2018). Global evidence on economic preferences. In *The Quarterly Journal of Economics*, 133(4), 1645–1692. <https://doi.org/10.1093/qje/qjy013>
- Neubert, S., Reich, K., & Voß, R. (2001). Lernen als konstruktiver Prozess. In: Hug, T. (Hg.): *Die Wissenschaft und ihr Wissen*. Baltmannsweiler.
- Organisation for Economic Cooperation and Development (OECD) (2022). Education at a Glance. <https://www.oecd.org/education/education-at-a-glance/>
- Smith, A. (2008). *An inquiry into the nature and causes of the wealth of nations*. Oxford University Press.
- Sutter, M., Kocher, M.G., Rützler, D., & Trautmann, S.T. (2010). *Impatience and Uncertainty: Experimental Decisions Predict Adolescents' Field Behavior*. IZA Discussion Paper No. 5404.
- Sunde, U., Dohmen, T., Enke, B., Falk, A., Huffman, D., & Meyerheim, G. (2021). Patience and Comparative Development. *Review of Economic Studies* 0, 1–38. <https://doi.org/10.1093/restud/rdaa002>

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## Study Success in Course of TVET- Results of a Mixed-Methods study

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### Abstract

The shortage of vocational school teachers in the industrial-technical sector is glaring in Germany. This is a long-term problem. One way to address this problem is to analyze the success of TVET studies with the aim of deriving measures and mechanisms to increase success. This problem is addressed with a mixed-method design in order to quantitatively and qualitatively analyze factors influencing academic success. Particular attention is paid to the motives for choosing a course of study and subject, and to study behavior. It turns out that these are interrelated. The majority of First Generations students study with the clear professional goal of becoming vocational school teachers and show a strong goal orientation in their choice of studies as well as in their study behavior.

### Keywords

study success, TVET studies, study behavior, study choice decision, mixed-methods design

### 1 Context

Calculating the numbers of teachers needed in Germany in the coming years shows an undersupply to be expected especially in industrial-technical subjects (Klemm 2018). Which measures could contribute to reduce the expected undersupply? Firstly, the reported low attractiveness of the study program and the profession have to be improved. Secondly, the high numbers of dropouts of students need to be addressed. While dropouts have been in the focus of research for several years, the success rates in study programs for Technical Vocational Education and Training (TVET) need to be examined in more detail. For example, Heinze (2018) shows that academic success is a process that is characterized not only by hard but also by multiple soft factors. That is, a bundle of factors during the process influence student success. Hard factors are, for instance, the study grades or the duration of study, as shown in the table below (Bornkessel 2018). According to Heinze (2018), soft factors include study satisfaction, the tendency to drop out and the increase in competence. Furthermore, the own participation in university or social peer groups play a role.

**Table 2**

Process model of study success (own representation according to Heinze 2018)

		<b>Process Level:</b> Course of Studies	<b>Results Level:</b> Study Degree
Success Criteria	<b>Hard Facts</b>	Grades of individual exams	Degree
		Number of exams (not) passed	Study Grade
		Number of achieved credit points	Duration of Study
	<b>Soft Facts</b>	Tendency of Dropout	Increase in competence
		Tendency of Change the Course	Personality Development
			Social / university commitment
		Study Satisfaction	

Similar to the case of dropping out, numerous factors have an impact on academic success. These include, for example, age, own academic background, and the academic background of the parents. Thus Döppers (2022) assumes that students who have acquired their university entrance qualification at a vocational school have a lower cultural capital in the field of the university. They have to make a high adaptation performance in order to acquire appropriate cultural capital and to integrate themselves academically. Financing also has an influence on academic success. Financial uncertainties have a negative effect, as does a high workload. But Isleib and Woisch (2018) show that employment can have a positive impact if it is closely related to the subject of study. Study success is moreover influenced by the perception of the study conditions and the student's own ability to study. With reference to the clientele, study ability is seen as a multidimensional process, which is characterized by content-related, personal, social and organizational perspectives (Brutzer et al. 2022).

Ziegler (2014) already describes the students of the vocational school teaching profession as a heterogeneous group, which is characterized by upheavals in their educational biography. However, Döppers (2022) describes that the students themselves see the various decisions as a continuum or logical consequence of their previous education. It is generally agreed that students begin their studies with very different prerequisites. Wyrwall and Zinn (2018) identified a high proportion of students have completed vocational training beforehand and often come from a non-academic background and can thus be classified as First Generation Students (Grunau & Petzold-Rudolph 2021). In addition, the average age at the start of the program is three years higher than for traditional students (Döppers 2022). As a result, the students are often in different life situations. In this context it was issued that the students are strongly connected to their local area and thus often accept a longer commute (Wyrwall & Zinn 2018). These are factors that inhibit academic and social integration and thus have a negative impact on academic success. However, Döppers (2022) shows that the non-traditional students in particular benefit from their socialization in the vocational school in the TVET study program. The students' cultural capital from vocational school led to significantly better results, especially in the practical phases. Parts of their professional knowledge are transferable to university. Nevertheless, Wyrwall and Zinn (2018) among others show that students often have performance problems in mathematics. Sonntag (2018) attribute this to the time span between the acquisition of the university entrance qualification and the start of studies, as well as the lower study ability of students without a general university entrance qualification. In addition, the students not only have less cultural knowledge of the field of higher education (Döpper 2022), but also start their studies uninformed compared to students of the general teaching

profession or refer to information from third parties instead of using official information channels (Wyrwal & Zinn 2018). As a result, this group of students have very different prerequisites and correspondingly different needs for their studies. Fundamental for this group is the need for support and guidance. This results from a lower cultural capital and the socialization in educational institutions, which are very closely managed in contrast to university.

## 2 Approach

The path to academic success can be seen as a process jointly influenced by student- and university-related factors. This case study – trying to identify factors reducing dropouts and increasing academic success in the study program TVET Metal & Electrical Engineering at the University of Kassel – is focusing on two research questions:

1. Which factors influence the success of the course of studies in TVET program?
2. Which measures can increase the success of the course of studies on the part of the university?

To capture the specifics of the hard and soft factors of academic success as well as their interplay, a mixed-methods design was elaborated consisting of a document analysis (N=150) (Hoffmann 2018), problem-centered interviews (PCI) (n=18) (Witzel & Reiter 2022) and socio-demographic questionnaires (n=18). The focus is on the holistic recording of study success. The analysis is based on the content analysis according to Mayring (2015). Quantitative content analysis was used for the document analysis and summary content analysis was used for the interviews and questionnaires.

## 3 Results

Of the 150 individuals in the document analysis, 20 individuals were determined to be successful (Pletscher 2022). Of those, 18 agreed to be interviewed. Of these 18 people, only five have a high school diploma and the others have a subject-related university entrance qualification. All but three completed vocational training before beginning their studies. Only two reported that one parent had an academic degree. This shows that TEVT is studied primarily by people without academic background. However, the paths into the program are very heterogeneous. Some of the students started their TVET studies directly after obtaining their university entrance qualification. Others have tried out other courses of study or worked in business before starting their TVET program.

When asked why they (n=18) chose the TVET program, all students said that they were at a crossroads and had to make an educational decision. On the basis of their own teaching experiences, which they had made e.g. in training or professional practice, and in comparison, with other educational and professional options (e.g. further training as a technician), the decision to study TVET for them was a logical consequence of their previous education. Thus, the vocational training was not 'in vain'. In addition, almost all expressed that extrinsic factors (tenure, salary, regular work hours) also played a role in their decision to pursue TVET, often in comparison with the working conditions of their professions. Although they have chosen a new educational path, only three out of eighteen have attended an information session. Many said that they had talked to their teachers instead or with persons in their peer.

For example, all students (n=18) express that they set a short study time as a goal, but the numbers show that only three students met the standard study time. The results of the PCI indicated that the students proceed according to plan to the greatest possible extent. On the other hand, students also expressed that they have little knowledge about university cultures and this has presented them with problems. Likewise, all persons described problem in social integration and difficulties in arriving at the university.

Based on their experiences in vocational school, the majority of students attribute low importance to academic education. The reason is that, based on their own experience as students at vocational training, they do not see any added value in dealing with subject content at university level because they see that the level is not corresponding with the level they used to deal with in vocational school. Some even express that they only want to earn the certificate of completion or teaching credential or become an academic.

If you look at the statistics on the occupancy of the minors, you can already see that they influence the academic success differently (Pletscher 2022). In the PCI, it becomes clear that the motives for choice of minors have a considerable role. For example, some individuals cited ease of passing the courses as a reason for choosing them. While others cited professional or personal interest as a motive for choice. But no person found out about the minors in advance. Thus, the information on which the minor decision is based is often subjective and has never been tested for its truthfulness, and no one has been informed about the study conditions of his or her minor.

#### 4 Conclusion

The student body is very heterogeneous and starting conditions vary greatly. This also coincides with findings by Wyrwal & Zinn (2018) and Ziegler (2014). It can be stated that the cultural capital and social and academic integration at university are important factors for reaching academic success. Factors such as educational attainment, study ability, prior information and the aforementioned problems with arriving at the university play a role here. In addition, there are the chosen major and minor subjects and the corresponding motives for taking them, which in turn are influenced by previous education. It is striking that the decision to study represents a concrete career choice for all of them.

Many problems, such as social and academic integration, as well as professional deficits, could be identified and remedied early if students received closer supervision. This is also in line with the findings of Wyrwal and Zinn (2018), who show that TVET students would like closer supervision. In addition, it would make sense to tailor the course more closely to the students and their needs. Döppers (2022) demonstrates that especially in projects with reference to professional and school practice, the prior knowledge of non-traditional students is connectable. If the teaching were to respond more strongly to these preconditions, professional deficits and a high number of failed exams could be avoided and the experience of competence could be strengthened.

#### References

- Bornkessel, P. (Eds.). (2018). *Erfolg im Studium*. wbv Media. <https://doi.org/10.3278/6004654w>
- Brutzer, A., Stärk, M., & Buck, P. (2022). Kompetenzorientierte Begleitung der Studierenden im Lehramt unter Berücksichtigung heterogener Eingangsvoraussetzungen. In J. Klusmeyer & D. Bosse (Eds.), *Konzepte reflexiver Praxisstudien in der Lehrerinnenbildung* (pp. 175–206). Springer Fachmedien Wiesbaden. [https://doi.org/10.1007/978-3-658-35483-1\\_7](https://doi.org/10.1007/978-3-658-35483-1_7)
- Döppers, T. (2022). Berufsausbildung vor dem Studium – Chance oder Nachteil für Studierende des beruflichen Lehramts? *bwp@ Berufs- und Wirtschaftspädagogik – online*, 42, 1-23. <https://www.bwpat.de/ausgabe42/doepfersbwpat42.pdf> (30.06.2022).
- Grunau, J./Petzold-Rudolph, K. (2021). First Generation Students in den Studiengängen des Lehramts an berufsbildenden Schulen. *bwp@ Berufs- und Wirtschaftspädagogik – online*, 1-23. <https://www.bwpat.de/spezial18/grunaupetzold-rudolphspezial18.pdf> (22.02.2021).

- Heinze, D. (2018). *Die Bedeutung der Volition für den Studienerfolg*. Springer Fachmedien Wiesbaden. <https://doi.org/10.1007/978-3-658-19403-1>
- Hoffmann, N. (2018). *Dokumentenanalyse in der Bildungs- und Sozialforschung: Überblick und Einführung (1. Auflage)*. Beltz Juventa.
- Isleib, S. & Woisch, A. (2018). Studienerfolg jenseits gymnasialer Zugangswege zum Studium. In Bornkessel, P. (Eds). (2018). *Erfolg im Studium*. (pp 29-58) wbv Media. <https://doi.org/10.3278/6004654w>
- Klemm, K. & Bertelsmann Stiftung. (2018). Dringend gesucht: Berufsschullehrer: Die Entwicklung des Einstellungsbedarfs in den beruflichen Schulen in Deutschland zwischen 2016 und 2035. <https://doi.org/10.11586/2018042>
- Mayring, P. (2015). *Qualitative inhaltsanalyse: Grundlagen und techniken (12., überarbeitete Auflage)*. Beltz.
- Sonntag, G. (2016). *Studienerfolg ohne allgemeine Hochschulreife? Wie Herkunft, Bildungsweg und Wahlmotive den Studienerfolg beeinflussen*. Tectum Verlag.
- Witzel, A., & Reiter, H. (2022). *Das problemzentrierte Interview – eine praxisorientierte Einführung (1. Auflage)*. Beltz Juventa.
- Wyrwal, M. & Zinn, B. (2018). Vorbildung, Studienmotivation und Gründe eines Studienabbruchs von Studierenden im Lehramt an berufsbildenden Schulen. *Journal of Technical Education (JOTED)*, 6(2), 9–23.
- Ziegler, B. (2014). Nach der Reform ist vor der Reform! *Insider – Zeitschrift der GEW-Fachgruppe Berufsbildende Schule*, 25(4), 24–27.

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## Italian Higher Technical Education: Reactive or Proactive Institution in the Skill Ecosystem?

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### Abstract

Through an empirical inquiry based on semi-structured interviews with 9 Italian higher technical education providers, this paper tries to show how and to what extent Italian short cycle tertiary education support innovation. The collected results debunk the idea that TVET is fully market-driven, being a rather reactive actor in the interplay with companies. On the contrary, at least in some of the cases reported, it appears to take a proactive role inside skills ecosystems, promoting, within certain limits, the development of new professional profiles.

### Keywords

short cycle tertiary education, Italy, innovation, skills' ecosystems, empirical inquiry

## 1 Context

Higher Technical Education is one of the Italian Recovery and Resilience Plan's main targets. Traditionally marginal within Italy's educational system<sup>36</sup>, the so-called *Istruzione tecnologica superiore* (ITS) will receive 1.5 bln € with the explicit aim to double the number of enrolments within 2025<sup>37</sup>. The government's hope is to facilitate the development of the skills required to promote innovation and boost Italian economy, which has been suffering since decades from low productivity rate.

Considering the size of this public investment, it's legitimated to ask: First, if and in which extent Italian ITS has supported innovation so far<sup>38</sup>; second, whether it is a totally market-

<sup>36</sup> Born in 2008, today they offer 823 courses, having only 21.224 students all around Italy (source: National Institute for Documentation, Innovation and Educational Research).

<sup>37</sup> Cfr. Governo Italiano. Presidenza del Consiglio dei Ministri, *Piano italiano di ripresa e resilienza*. <https://www.governo.it/sites/governo.it/files/PNRR.pdf>.

<sup>38</sup> Italian ITS has been reformed very recently (Law n. 99 15 July 2022), but essential characteristics have not changed.





driven institution<sup>39</sup>, influenced only by businesses skill's needs and powerful interest groups, or a proactive actor which contributes to the definition of novel professional profiles. Although geographically limited, this inquiry could shed light on the role of short-cycle tertiary education within skills ecosystems also in other countries.

Through an empirical inquiry we will try to clarify these points using the conceptual device of “innovation”.

## **2 Theoretical framework**

### **2.1 Innovation as circular, iterative, and distributed process**

While literature on academic research describe the creation of new knowledge as an iterative and circular process which cannot be conceived without a specific application context (Gibbons, 1994; Etzkowitz & Leydesdorff, 2000; Chesbrough, 2006), studies on Marshallian industrial districts underline the fact that another type of innovation occur through informal sharing of tacit knowledge normally embedded in companies and workers (Amin & Thrift, 1992; Lundvall & Johnson, 1994).

Both these well-known research lines suggest that innovation may happen only within “systems” (Edquist & Johnson, 1997) or “ecosystems” (Finegold, 1999) of interdependent actors, including firms and educational institutions.

### **2.2 The skills ecosystem model applied to VET**

The authors cited above focus on the relationship between the world of work and academia (universities and research centers), whereas the impact of technical and vocational education and training providers on innovation hasn't found as much attention in the literature. However, the skill-ecosystem model, elaborated by Finegold studying high-tech companies, has been adopted in some Australian and British studies to provide a new way of thinking about and reforming middle skills VET (Dalziel, 2015; Buchanan et al., 2020; Hodgson & Spours, 2016).

The fundamental idea behind the use of this model in the VET policies and research is the following: “The nature of labour demand is far from self-evident. The challenge is not so much to predict specific skill sets which will be needed but rather what capacities and capabilities are best developed now to ensure the country has the capacity to adapt rapidly as circumstances change and, where possible, shape the way jobs are defined” (Buchanan et al, 2017, p. 450). Education should not provide firms the skills they ask for but make firms searching for the right skills.

### **2.3 The role of educational institutions**

To better understand how higher technical education institutions, such Italian ITS foundations, can accomplish this task, it may be useful to consider Vona and Consoli's (2017) reflections on innovation and skill dynamics. As these authors have pointed out, at early stages of technological development knowledge transfer is reliant on the mobility of a few talented individuals. New knowledge is still tacit. Only the purposeful and explicit absorption of practical know-how in the formal education, enhances a process of “knowledge systematization” which helps firms to improve contents and assignments of work tasks and smooths the adoption of technological and organisational innovations. Since novel and mostly tacit knowledge is not well known, educational institutions must take a proactive role in

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<sup>39</sup> ITS providers are foundations participated by companies, whose teaching activities must be held at least for 60% by staff recruited among professionals and internships cannot take less than 35% of the total amount of learning hours (cf. Law n. 99 15 July 2022). Courses take normally four semesters (in few cases six).

identifying innovations and incorporating them into their curricula to “open up new opportunities by facilitating the translation of that technology to unforeseen contexts of use” (Vona & Consoli, 2017, p. 1408).

In this sense, the “fine-tuning” of existing training and educational programs not only would facilitate the diffusion of skills already identified on the labour market, but also create the demand itself of new skills, which otherwise would remain the subjective property of single talented workers. Equipped with these innovative skills “upper intermediate-skilled” (those typically trained by short-cycle tertiary education) should enhance – we might argue – “incremental innovation”, the gradual improvements of existing work processes and technologies (Toner, 2011, p. 48)<sup>40</sup>, and the “realised absorptive capacity” of their company, firm’s ability to transform and exploit acquired external knowledge (Mason et alii, 2017, p. 8; Zahra & George, 2002, p. 191)<sup>41</sup>.

### 3 Empirical inquiry – methodology

Through a first explorative inquiry we have tried to check how and in which extent Italian ITS support innovation. According to our theoretical premises, we have considered the involvement of ITS institutions in the process of “knowledge systematization” and spreading.

Semi-structured interviews have been conducted with key collaborators (teachers, managers, directors, or consultants) of nine Italian ITS foundations, covering almost every technological area currently provided for by the Italian legislation on technical higher education<sup>42</sup>. All interviews will be audio-recorded, fully transcribed and thematic analyzed (Bryman et alii, 2021, pp. 537-541) using MAXQDATA. Before interviewing, study plans have been checked.

Our hope is to make clearer the actual or possible role played within skills ecosystems by higher technical education providers in general and by the Italian ITS foundations in particular, institutions still neglected by Italian scholars, in order to gather useful insights for future education policies not only in Italy but also in other countries (Magni, 2021).

### 4 Results

Among the cases considered there are three patterns of interaction between ITS foundations and companies in the use of new knowledge and its dissemination. Some institutions take a generally reactive role, simply shaping their courses according to the emerging skills needed by businesses. Others take a more proactive role, participating in the design of professional profiles of those technicians that companies should hire to foster “incremental innovation”.

Close to the first type are three ITS foundations (Biotechnology, Mechanical industry, and Smart mobility) whose courses are designed according to business needs, within the frame of a constant information exchange between companies and educational institutions due to surveys and focus groups periodically conducted among partner enterprises and ongoing communication between enterprises and foundations’ staff (teachers, internships tutors, course managers). “Our course managers ... are constantly in contact with the training managers of some leading company ... this reciprocal exchange is exactly what leads all the things forward, if we find something new and interesting we communicate it to our partners and vice versa, if there is something new in the company environment, which is not a production secret, it is

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<sup>40</sup> The conceptual distinction between “radical” and “incremental innovation” is due to the historian of technology Nathan Rosenberg (1994).

<sup>41</sup> “Potential absorptive capacity”, instead, makes firm receptive to acquiring and assimilating external knowledge (*ibid.*).

<sup>42</sup> Biotechnology, Construction, Energy efficiency, Fashion, Food industry, ICT, Mechanical industry, Smart mobility, Tourism. We didn’t manage to interview any foundations active in the area Business services.

communicated to us and we adapt and then use it from an educational point of view” (Smart mobility). Although dependent on the knowledge provided by some leading companies regarding technological and process innovations, also in this model ITS institutions may transfer new knowledge to businesses, especially small ones.

At least in one case (Energy efficiency), even if courses’ design is based on surveys and focus groups among partner enterprises, new skills trends have been identified and acknowledged first through consultation with experts (research centers, University, professionals) who are not employed by any companies. It should be noticed that the foundations here mentioned also provides learning units on biofuels and hydrogen, two technologies not yet established, whose applicability is still controversial.

Two ITS foundations seem to be active promoter of business innovation. One through the provision of specific learning units for the spread of new knowledge and skills. The other even foster what we can call a “systematization” of new knowledge and skills linked to emerging job profiles. In the first case, one institution which provide a course for marketing and internationalization of wooden furniture helps partner companies (usually SMEs) to renovate their business approach: “To digitize the whole aspect of communication but also marketing through e-commerce platforms ... How did we do that? We recruited experienced freelance professionals keen on social media, multichannel marketing, and communication to teach in our course ... our students ... bring to the companies the knowledge they really need but are not able to acquire alone” (Construction).

In the second case, a new course to become “digital fashion designer” was launched few years ago. This profile didn’t exist yet on the job market. But, after the first edition of the course some companies, that turned to the ITS foundation asking for “traditional” fashion designers, decided to hire these new figures to change their business towards digital modeling. It was not the companies that asked the school to modify its training offer based on a predetermined professional profile, but the opposite. The school anticipated them, having realized the opportunities offered by some cutting-edge technologies: A new 3D clothes modeling software, a special scanner to transfer fabrics characteristics (shine, grain, etc.) to digital models and an application to create avatars of costumers wearing virtual clothes. Considering the possible applications of these new technologies, the study plan was designed collecting the results of a survey conducted among companies and suggestions coming from some consultants. For example, the photography teacher, an established photographer in the fashion industry who has been working for major brands, suggested how to conceive the digital photography teaching unit, because «Using Photoshop to retouch photos for a traditional catalog is one thing, but using it to create realistic 3D renderings is another...» (Fashion).

In all cases taken into considerations, teachers recruited among professionals seem to be key figures in the interplay between the world of work and educational institutions, especially as long as innovation is concerned: “Yesterday I was in Bologna at the national flexography conference. New procedures for managing customer-supplier information exchange through packaging were presented. Currently, nobody applies these procedures, but ISO standards already exist, and they will spread in the coming years. I convey all this knowledge in advance to my students who are now attending the course to become Packaging Specialist” (ICT).

## 5 Discussion

In the production sectors (Aeronautics, Mechanics, Chemistry), where the use of new technologies directly impacts work processes, ITS curricula’s design appears heavily influenced by the skills needs expressed by some leading companies. In the service sector (Marketing, Hospitality, Fashion design), where the use of new technologies has an indirect

impact on work processes, ITS foundations play a more proactive role in defining new job profiles.

In any case, teachers recruited from the world of work are crucial. These hybrid figures act as “bridges” between the production or service sector and ITS foundations for the acquisition of new knowledge, its integration and sometimes its original re-elaboration into study plans, as well as its dissemination among companies which are often not able (or even) to use it.

## 6 Conclusion

According to the collected data the relation between Italian higher technical education and the world of work is more complex than the simple supply-demand pattern. ITS foundations do not always play a merely passive role in the vocational education and training of future technicians but contribute (with different scale of intensity among institutions) to the definition of innovative professional profiles. In other words, they are active players in the skills ecosystems.

However, the research would certainly require additional investigations, especially into the governance mechanisms of ITS foundations. These institutions have strong interest in preparing employable technicians (the ministerial funding which supports them depends on the employment rate of their graduates), as well as companies have strong interest in hiring people trained according to their immediate needs. In our inquiry we could only rely on interviews which understandably report the most successful examples of synergy between education and job market. We cannot say how relevant these positive examples are in the overall activity of the institutions investigated.

Finally, further studies are also needed to check whether innovation strategies deployed in the Italian ITS are oriented not only to maximizing companies' performance through the preparation of high skilled technicians but also to fostering personal growth of the students involved. According to a broader pedagogical perspective – close to the capability approach developed by A. Sen and M. Nussbaum (Costa, 2013, p. 2018), the best guarantee for economic success is the enhancement of every worker, with his/her own intentionality, creativity and responsibility (Potestio, 2020; Bertagna, 2006).

## References

- Amin, A., Thrift, N. (1992). Neo-Marshallian Nodes in Global Networks. *International Journal of Urban and Regional Research*, 16(4), 159-175. <https://doi.org/10.1111/j.1468-2427.1992.tb00197.x>
- Bertagna, G. (2006). *Pensiero manuale. La scommessa di un sistema educativo di istruzione e di formazione di pari dignità*. Rubettino.
- Bryman, C, Bryman, A, & Clark, T. (2021). *Bryman's Social Research Methods*. Oxford UP.
- Buchanan, J., Anderson, P., Power, G. (2017). Skill Ecosystems. In J. Buchanan, D. Finegold, K. Mayhew, C. Warhurst (Eds.), *The Oxford handbook of skills and training* (pp. 444–464). Oxford UP.
- Buchanan, J., et Alii (2020). *Enabling renewal: Further education and building better citizenship, occupations and business communities in Wales*. CollegesWales. <https://orca.cardiff.ac.uk/id/eprint/139414/1/Enabling%20Renewal%20-%20FE.pdf>
- Chesbrough, H. W. (2006). Open Innovation: a New Paradigm for Understanding Industrial Innovation. In H. W. Chesbrough, W. Vanhaverbeke & J. West (Eds.), *Open Innovation Researching a New Paradigm* (pp. 1-12). Oxford UP. <https://doi.org/10.1111/j.1467-8691.2008.00502.x>
- Costa, M. (2013): Pedagogia e contesti di innovazione. *Prospettiva EP*, 2, 71-82.
- Costa, M. (2018). Formatività e innovazione: un nuovo legame per industry 4.0. In G. Alessandrini (Ed.), *Atlante di pedagogia del lavoro* (pp. 219-236). Franco Angeli.

- Dalziel, P. (2015). Regional skill ecosystems to assist young people making education employment linkages in transition from school to work. *Local economy*, 30(1), 54-66.
- Edquist, C., Johnson, B. (1997). Institutions and organizations in systems of innovation. In C. Edquist (Ed.), *System of Innovation. Technologies, Institutions and Organizations* (pp. 41-63). Pinter.
- Etzkowitz, H., Leydesdorff, L. (2000). The Dynamics of Innovation: From National Systems and “Mode 2” to a Triple Helix of University-Industry-Government Relations. *Research Policy*, 29(2), 109-123. [https://doi.org/10.1016/S0048-7333\(99\)00055-4](https://doi.org/10.1016/S0048-7333(99)00055-4)
- Finegold, D. (1999). High-Skill Ecosystems. *Oxford Review of Economic Policy*, 15(1), 60-81. <https://doi.org/10.1093/oxrep/15.1.60>
- Hodgson, A., Spours, K. (2016). *The evolution of social ecosystem thinking: its relevance for education, economic development and localities*. Working paper Ecosystem Seminar - 22 June 2016. UCL Institute of Education. <https://discovery.ucl.ac.uk/id/eprint/1537510/>
- Gibbons, M. (Ed.). (1994). *The new production of knowledge: The dynamics of science and research in contemporary societies*. Sage.
- Governo Italiano. Presidenza del Consiglio dei Ministri. *Piano italiano di ripresa e resilienza*. Available at: <https://www.governo.it/sites/governo.it/files/PNRR.pdf>
- Lundvall, B.-Å., Johnson, B. (1994). The Learning Economy. *Journal of Industry Studies*, 1(2), 23-42. <https://doi.org/10.1080/13662719400000002>.
- Magni, F. (2021). L’università tra paradigmi del passato e sfide attuali. In F. Magni, A. Potestio, A. Schiedi & F. Togni (Eds), *Pedagogia generale. Linee attuali di ricerca* (pp. 139-174) Studium.
- Mason, G., Rincon-Aznar A., & Venturini, F. (2017). *Which Skills Contribute Most to Absorptive Capacity, Innovation, And Productivity Performance? Evidence from the US and Western Europe*. LLAKES Research Paper 60. Available at: [https://www.llakes.ac.uk/wp-content/uploads/2021/03/RP-60.-Mason-et-al-final\\_0.pdf](https://www.llakes.ac.uk/wp-content/uploads/2021/03/RP-60.-Mason-et-al-final_0.pdf)
- Potestio, A. (2020). *Alternanza formativa. Radici storiche e attualità di un principio pedagogico*. Studium.
- Rosenberg, N. (1994). *Exploring the Black Box: Technology and Economics*. Cambridge University Press.
- Toner, P. (2011). *Workforce Skills and Innovation: An Overview of Major Themes in the Literature*. OECD. Available at: <http://www.oecd.org/innovation/inno/46970941.pdf>. Accessed 13th October 2013
- Tether, B., Mina A., Consoli D. & Gagliardi D. (2005). *A Literature Review on Skills and Innovation. How does Successful Innovation Impact on the Demand for Skills and How do Skills Drive Innovation?* ESRC Centre for Research on Innovation and Competition. Available at: <https://webarchive.nationalarchives.gov.uk/ukgwa/+/http://www.berr.gov.uk/files/file11008.pdf>
- Vona, F., Consoli, D. (2015). Innovation and skill dynamics: a life-cycle approach. *Industrial and Corporate Change*, 24(6), 1393–1415. <https://doi.org/10.1093/icc/dtu028>
- Zahra, S. & George G. (2002). Absorptive Capacity: A Review, Reconceptualization, and Extension. *Academy of Management Review*. 27(2). 185-203. <https://doi.org/10.2307/4134351>

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## **Co-creation and Indirect Approach as a Methodology to Improve Student Engagement in Initial and Continuing VET**

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### **Abstract**

This contribution intends to discuss the first results of the implementation of COSI.ed methodology in the improvement of students' motivation and aspirations, the relations of students and teachers, and student engagement in the context of VET centres managed by third-sector entities. For this purpose, 23 in-depth interviews were carried out to record the itineraries prior to entering VET, as well as their perceptions of the training received in VET. At the same time, the influence of VET centres' intervention on the perception of training and on youth aspirations and future expectations was analysed.

The results indicate that the training and attention received in VET have had an influence on greater confidence in educational institutions and in their possibilities and abilities, highlighting the positive influence of the relationship with teachers in this process. In addition, the results show a clarification of youth future expectations, both professional and personal.

### **Keywords**

co-creation, indirect approach, youth at risk, VET



## 1 Introduction

The European strategic framework for education and training 2030 aims to reduce Early Leaving from Education and Training (ELET) to 9% (Council of the European Union, 2021). Spain is one of the countries in the European Union with one of the highest ELET standing at 13.3% in 2021, compared to the EU average of 9.7% (Eurostat, 2022)

In this context, many research studies highlight the strategic role of vocational education and training (VET) in reducing ELET (Cedefop, 2020; Marhuenda-Fluixá, 2019). This requires the development of innovative educational interventions and policies that allow for the development and transformation of the Spanish VET system, offering a more comprehensive range of training adapted both to the student's needs and to the demands of the labour market, and improving academic and vocational guidance.

In this paper, we present the first results of the project "CO-created Education through social inclusion (COSI.ed)"<sup>43</sup>, an Erasmus+ project (KA3) funded by the European Commission and composed of a total of 11 partners and whose implementation period is 2021-2024. The main objective of the project is to reduce ELET by implementing an innovative socio-educational intervention methodology in different educational and geographical contexts through the application of Equal Literacy, Co-creation and Indirect Approach.

## 2 Theoretical framework and literature review

COSI.ed intervention model promotes a rethinking of the teaching and learning processes by situating students who have dropped out or are at risk of dropping out, at the centre, based on their own experiences and knowledge to promote the development of skills and competencies to contribute to the further development of their sense of self-efficacy. In turn, the project aims to improve the relations between teachers and students as an instrument to increase student's engagement with the educational centre.

To this end, three key theoretical pillars are taken into consideration in the intervention methodology: Equal Literacy, Indirect Approach, and Co-creation (Gravesen et al., 2021).

*Equal Literacy* refers to the theoretical construct that allows us to understand the pathways and processes followed by young people, taking into consideration the macro, meso and micro-structural elements that intervene in their configuration. This process allows us to understand the individuality of the pathways of young people at risk or in a situation of social exclusion, eliminating prejudices and stereotypes. In this way, we would take into account six interrelated factors of influence: the pre-existing context, the personal experiences lived, the positioning of others (how others perceive our trajectories), the technologies of oppression/liberation (mechanisms of reproduction of stereotypes and prejudices, the absence of these leads to liberation), the positioning of oneself (an attitude that the individual adopts towards the position in which society places him/her: victimhood, conformity, rebelliousness) and the impact of all the above elements on young people's pathways (Stuart et al., 2020).

A second pillar is *Indirect Approach*, a qualitative methodological approach that allows teachers to understand and capture students' processes, pathways and prior educational experiences through the use of unstructured interviews. Thus, a key element of the approach is the interviewer's indirect way of approaching the participant's life world, making sure not to introduce ideas, concepts or notions into the conversation that have not first been presented by the participant. In this way, the learner takes on the role of the narrator of his/her own story and guides the topics of the conversation at all times (Moshuus and Eide, 2016; Stuart et al., 2020).

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In this way, we achieve a global apprehension of the fact studied, adopting the point of view of the social actors, referring us to a concrete socio-structural reality, in which objective (caused by the environment) and subjective (caused by the actor subject) events occur that mark and modify the biographical itineraries, modifications produced not only by the event itself but also by the consciousness and the way in which the individual perceives and experiences them as well as his/her reaction to these events (Ryan and Lőrinc, 2018).

Finally, *Co-creation* is a methodological strategy consisting of the configuration of new knowledge, resulting from the interaction and integration of joint work between different actors. It is based on a process of analysis and open debate, transmultidisciplinary, based on the construction from the common factors that lie at the intersection of different approaches to an object, as opposed to interdisciplinary approaches that seek more the contribution to the whole, based on the inputs that each one brings from their own discipline; we do not speak therefore of "a puzzle" but of the integration of participation and mutual learning (Klein, 2013). The significance of one or other lines of intervention or key themes of the knowledge that is to be elaborated, integrated and shared must emerge from this work. The process implies a leading role of the participants, the intrinsic motivation to contribute imaginative and creative ideas directed at the core of the question, giving a role to the flexibility of the process itself, which can vary all the elements, until reaching the concretion of a participatory, shared and integrated knowledge. In the case of transdisciplinary research, three dimensions are considered: the consensus of shared interest, group cohesion to co-create knowledge and, finally, the result of a strengthened and socially integrated theoretical knowledge (Van Veen et al., 2013).

### 3 Methodology and framework of the research

This paper presents the first results obtained in Spain by the COSI.ed intervention model. Concretely, in the case of Mallorca (Balearic Islands, Spain), this initiative is applied in the field of VET centres managed by third-sector entities with extensive experience in offering Initial and Continuing VET aimed at young people over 16 years of age who have dropped out of the education system to offer training adapted to the needs of this profile of young people to improve both their professional qualification and their chances of finding employment. We consider testing this methodology in VET centres relevant as most of the students who arrive at these centres have experienced previous erratic educational itineraries, generally in compulsory secondary education. These seem to be the reasons which have led them to low confidence in the school institution, poor motivation towards training, and a loss of belief in their possibilities and potential.

We want to answer the following research questions: 1) What is the profile of the young people who attend these centres? 2) What are the characteristics of their previous educational pathways? 3) What are their motivations for attending these centres? 4) What aspects do they value of the training and attention received in these training centres? 5) What are their future expectations regarding training and labour market insertion?

Methodologically, in-depth interviews were conducted with 23 young people who started their training in the 2021-22 academic year in two VET centres: (1) Sociedad Cooperativa Jovent (or Jovent), and (2) Naüm Proyecto Socioeducativo (or Naüm). Both centres are located in the Balearic Islands, one of the Spanish regions with the highest early school leaving rates (Salvà-Mut *et al.*, 2014). Besides, we evaluated items related to student engagement, like academic performance and school assistance, at the beginning and the end of VET training.

The qualitative analysis of the participants' discourses was performed with the NVivo software by coding themes around: (1) students' profiles and life stories; (2) perception of their previous educational pathways; (3) academic and professional motivations and interests; (4) perception of their learning processes at VET centres; (5) and their perception and knowledge around their future professional and educational expectations.

The subsequent sections will feature pseudonyms in place of the participants' quotes to keep all the data anonymous and safeguard any personal information.

## 4 Results

### *Students' profiles and life stories*

Notably, 23 students (14 from Jovent centre, in a Dual VET of Nautical Mechanics, and nine from Naüm centre in an Initial VET of Plumbing) have been interviewed, 22 men and one woman, aged between 16 and 28, and at-risk of social exclusion. It is particularly relevant to students' life stories and countries of origin to understand why they started at their VET centres.

In Jovent's case, six students (out of 14) emigrated from their home countries for socioeconomic reasons. They are from Argentina, Venezuela, Bolivia, Colombia, and Brazil. Both of them, Francisco and Cesar, have university degrees in their countries. However, their migration status forces them to start a new requalification process in Spain. Cesar's case is exceptional. He is 28 years old and finished a Business Administration Bachelor's Degree in Venezuela. However, even though Cesar emigrated to Spain to improve their professional and personal socioeconomic situation, he had tremendous difficulties finding a job in Mallorca, which led him to pursue Dual VET training in Jovent.

Carlos and Eduardo emigrate after obtaining their Secondary School certificate to improve their professional possibilities. However, both point out that they were subjected to racist discrimination by their peers when they tried to finish Secondary School in Mallorca.

Finally, Aitor and Alex interrupted their Secondary School in Venezuela and Colombia to emigrate with their families to Spain. In both cases, they end up at Jovent because of their economic needs and the facilities that Dual Training provides.

On the other hand, eight students (out of 14) of Jovent are from Mallorca. If we compare their life stories and educational pathways, we can deduce that their education (and personal) situation is significantly better: only two drop out of school during Secondary School. Four have a Secondary School certificate, and two have Upper Secondary School. The main reasons to drop out in their cases are focused on bad experiences with school teachers. All participants (except Pablo) considered these bad experiences with teachers as a source of a lack of motivation and bad academic results. Only Pablo highlights peer-to-peer issues as a cause of dropping out.

In Naüm's case, six students (out of 9) emigrated from their home countries for socioeconomic reasons, particularly Guinea Conakry, Morocco, and Algeria. However, unlike the Jovent students, they emigrated alone and as minors in situations of extreme vulnerability. For this reason, all of them live in juvenile centres, and they started in Naüm because of the referral and orientation they received from their respective juvenile centres. The remaining three students from Naüm are in similar situations to the young Mallorcans from Jovent. All three dropped out of secondary education because of poor relationships and experiences with teachers, linked to a significant lack of motivation and poor academic results.

Given the above, we can deduce that the life histories of these young people are determinant in their school experiences, that is, in their educational levels and future professional possibilities.

### *Educational pathways: perceptions and reflections on their passage through the educational system*

Youth assessments of their school experiences before they arrived at VET centres were primarily negative. Exceptionally, two participants, Cesar and Amath, were satisfied and even nostalgic about their memories of their educational experiences. While Cesar was grateful for

the knowledge he gained from attending university in Venezuela, Amath was delighted and nostalgic, recalling his childhood in Guinea Conakry. The rest of the participants (21 out of 23 total) highlight negative aspects that mainly relate to teachers' excessive authority. Some of them link this authority to a lack of empathy and poor accompaniment by teachers.

The passage below shows Joel's dissatisfaction with his school experience. He mainly links his (general) demotivation to a bad relationship with the school, which is rigorous and supposedly biased towards individual student profiles like his.

*Joel: The school was very rigid, I would ask to go to the bathroom, and they would expel me. One day I drank a bottle of water, I drank it, and they expelled me for a week, (...) that was in the first year of Secondary Education (...). They were very jealous of us, (...) although I didn't listen to them much either; if they didn't care about us, why should I listen to them?*

In addition, five participants also criticise the excessive amount of theory and link it to extreme difficulty, translating into student demotivation. The passage below shows the demotivation and the bad memory that Asa has of his high school experience.

*Asa: I remember the teachers and having a lot of homework always. I had no free time, and I said, "I don't want to be here; I want to leave". (...) They explained everything as very boring.*

The results show that the youth educational pathways have been affected by certain shortcomings of the current educational system. Some of these shortcomings are the rigidity of the teaching staff and the universalisation of theoretical and traditional teaching as the only valid teaching option. This seems to generate low levels of motivation, which together with a significant lack of guidance from the educational centres, ends up causing early school dropouts.

Finally, it is worth noting the impact of COVID. Specifically, four students commented that the loss of "presence" at school meant a before and after in their academic concentration and motivation levels. In addition, during the interviews, two of them pointed out that they had problems with the Internet connection and even with the computer itself, making it difficult for them to interact and learn during the pandemic. This fact highlights that the digital divide has affected some students during the pandemic; for instance, certain structural inequalities have surfaced, such as the lack of digital devices and Internet connection. Those digital inequalities have made it difficult for them to adapt to the new virtual reality and have, therefore, negatively impacted their learning levels (Selwyn *et al.*, 2001).

### ***Reasons to start at VET centres: how students arrived***

As we have explained in the previous section, the socioeconomic and family context of the participants in this study has been a determining factor in their educational trajectories. Knowing this, it is also interesting to analyse how the young people have arrived at their respective VET centres. We distinguish five ways: (1) orientation by the youth centre, (2) recommendation by a close friend or relative, (3) by their interest and motivation, (4) orientation by the Balearic Islands Employment Service (SOIB), and (5) orientation by the educational centre.

The most repeated reason among the participants is the orientation through the centre for minors and the motivation and orientation by the circle of friends and family. Significantly, the last two positions are occupied by guidance from the school and the SOIB. This shows that the educational system needs to improve concerning early school leaving and the lack of advice

and support for students who drop out. These structural deficiencies reproduce class inequalities and significantly impact socially vulnerable groups, such as young people who do not receive or do not have close social and family support.

### ***VET centres: opinions and students' perception***

All participants were delighted with the VET training. They enjoy the theoretical and practical sessions and have good relationships with teachers and peers. These factors of improvement seem to have a positive impact on their motivation levels and self-esteem. All these positive perceptions are opposed to their past school experiences (except, in Cesar's case, the university graduate participant). There, “doing in school” changes in a significative positive way, becoming (even in Cesar’s case) an opportunity to learn and share a space with “good people”. Both passages below exemplify that participants, with any exceptions, have a reasonable opinion of what they do in VET centres and how they will take professional and personal advantage of their experiences and the relationships that they have created during the process:

*Alex: Jovent is progress in my life; it is a big opportunity, at least for me*

*Cesar: for me, Jovent make a real difference in my life, with a before' and an after' (...), I'm taking emotions and learning. It's good to learn from my friends and teachers and study a field that was new for me, (...) so I have grown in terms of learning but also as a person*

All the participants emphasise the motivation for the practical activities they carry out at the centre and the human touch they receive from all the centre staff. In addition, the guidance and student support processes applied with the Indirect Approach have resulted in trusting relationships between students and teachers:

*Cristian: If you ask them [teachers] for help, they give it to you, you know? In high school, you asked for help, and no one came to help you...*

As a result, the youth attendance levels at VET have improved significantly compared to school attendance levels. In addition, there is a noticeable improvement in the academic results of all participants and, consequently, in youth self-esteem:

*Luis: Not only that you trust what you are doing, but also that you trust the people who are teaching you.*

With these results, we can deduce that the intervention methodology of the COSI.ed, has had a positive impact on the students' level of motivation and performance, and also, as shown in the following section, on their imaginary future and professional expectations.

### ***Imaginary future and professional expectations***

All the participants had confused educational aspirations before starting in Jovent and Naüm centres. However, their motivation levels were high after VET, and their professional and academic expectations for their future considerably improved. Therefore, we can distinguish between three different profiles according to their imaginary futures and intentions: workers, trainees, and learners.

Firstly, the main profile (11 out of 23) is the student that prefers working after the VET course. This profile distinguishes those who prefer to work in a company and those with entrepreneurial aspirations. Practically all of them have the basic knowledge to achieve their goals and have discussed it with the professionals in their respective VET centres. Of the five

participants who intend to start their own business shortly, only one is aware of and claims to have the initial investment required for his business idea.

The second most common profile among students (7 out of 23) is those we have categorised as "trainees". They want to continue Training: working, and learning simultaneously to improve their qualifications and professional experiences. They intend to follow in the same sector, enhancing their educational merits and improving their future employment situation. In these cases, it seems that the Dual training structure has been a success for them, and they want to extend their experience with a view to the future.

The following passage is an example of the future aspirations of one of the students we have categorised as a trainee:

*Amath: I want to work in a company and, at the same time, continue studying. When I finish in June, I will go for two weeks to do an internship in a company, and when I have my diploma, I would like to continue my Training.*

The third profile is the minority; only five of the 23 students want to dedicate their next years exclusively to training. Therefore, we have categorised them as "learners". In this case, the students consider that the training provided by VET centres is insufficient to get what they consider a good job. Therefore, their commitment is to focus on improving their training and finding a qualified job in the future. It is encouraging that all profiles, without distinction, have significantly improved their self-esteem and motivation concerning their future. This improvement has been accompanied by a personalised orientation that has allowed them to share and discuss options about their expectations and career choices with teachers from VET. The results suggest that the VET experience has positively changed the students' self-image as learners and the educational alternatives that VET has provided them with.

## 5 Conclusions

The young people expressed in the interviews a strong disaffection with the school institution (especially throughout compulsory secondary education). They highly value the work carried out in the VET centres and especially emphasised the practicality of the training as well as the relationship established with their trainers, on many occasions stating that previously no one had been concerned about their state of mind, well-being or had received any kind of academic or professional guidance. Youth particularly value the role of teachers perceiving them as "colleagues" who support them in training and employment matters and on personal and family aspects.

Youth experience in VET seems to have marked a turning point in their perception of their training and professional possibilities. In this sense, the significant improvement in communication between the participants and teachers throughout the course is striking, thanks to the implementation of the Indirect Approach, which seems to have a direct impact on the students' motivation levels. Motivation also appears to be a decisive factor in the improvement of the participants' academic results and attendance levels. Therefore, we can conclude that the students' experience in VET has been a determining factor in their future professional expectations, as well as in their self-esteem.

Although this research shows certain limitations, as it is developed in a very specific context such as VETcentres in the Balearic Islands, the results obtained demonstrate the effectiveness of the methodology used in improving teacher-student relations, a fact that directly influences the students' increased confidence in their possibilities and abilities and in the definition of their future projects. This is why we believe that Co-creation and Indirect Approach could be included in VET policies and applied in similar geographical and educational contexts.

## References

- Cedefop (2020). *Vocational Education and Training in Europe, 1995-2035: Scenarios for European Vocational Education and Training in the 21st Century. No 114*. Publications Office of the European Union. Cedefop reference series. <http://data.europa.eu/doi/10.2801/794471>
- EUROSTAT (2022). *Database. Early leavers from education and Training by sex and labour status*. [https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=edat\\_lfse\\_14&lang=en](https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=edat_lfse_14&lang=en)
- Gravesen, D. T., Stuart, K., Bunting, M., Mikkelsen, S. H., & Frostholt, P. H. (Eds.). (2021). *Combating marginalisation by co-creating education: methods, theories and practices from the perspectives of young people*. Emerald Group Publishing.
- Klein, J.T. (2013). The Transdisciplinary Moment(um). *Integral Review*, 9(2), 189-199.
- Marhuenda-Fluixá, F. (Ed.) (2019). *The School-Based Vocational Education and Training System in Spain: Achievements and Controversies. Vol. 32*. Springer. doi:10.1007/978-981-13-8475-2.
- Moshuus, G. H. & Eide, K. (2016). The indirect approach: How to discover context when studying marginal youth. *International journal of qualitative methods*, 15(1), 1-10.
- Ryan, L. & Lórin, M. (2018). Perceptions, prejudices and possibilities: young people narrating apprenticeship experiences. *British Journal of Sociology of Education*, 39(6), 762-777. <https://doi.org/10.1080/01425692.2017.1417821>.
- Salvà-Mut, F., Oliver-Trobat, M.F., & Comas-Forgas, R. (2014). Abandono escolar y desvinculación de la escuela: perspectiva del alumnado. *Magis, Revista Internacional de Investigación en Educación*, 6(13), 129-142.
- Selwyn, N., Gorard, S., & Williams, S. (2001). Digital Divide or Digital Opportunity? The Role of Technology in Overcoming Social Exclusion in U.S. Education. *Educational Policy*, 15(2), 258– 277. <https://doi.org/10.1177/0895904801015002002>
- Stuart, K., Bunting, M., Boyd, P., Cammack, P., Hornbæk Frostholt, P., Thore Gravesen, D., Hølvig Mikkelsen, S., Moshuus, G., & Walker, S. (2020). Developing an equalities literacy for practitioners working with children, young people and families through action research. *Educational Action Research*, 28(3), 362-382.
- Van Veen, S.C., Bunders, J.F.G., & Regeer, B.J. (2013). Mutual learning for knowledge co-creation about disability inclusive development: experiences with a community of practice. *Knowledge Management for Development Journal*, 9(2) 105-124.

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## **Framing an Environment and Sustainability Lens on Vocational Education and Training (VET): A Laminated System Analysis**

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### **Abstract**

With evidence of global climate change and ongoing ecological degradation, there is an urgent need to give more attention to sustainability within VET. This will ensure that VET does not remain complicit in reproducing the unjust and unsustainable trajectories of current economic and development pathways. While some progress has been made in policy and practice related to the ‘greening’ of VET, our analysis shows that much of the current response within VET to the environmental challenge reflects a minimalist reformist approach, characterised by ‘bolt-ons’ (Sterling, 2004) to existing institutional structures and curricula. This leaves the fundamental beliefs in productivism, industrialisation and growth in place, which, as argued by researchers working on green economy (e.g. Death, 2014), are oftentimes complicit in co-creation of the environmental crisis. As this has become obvious, new discourses to guide VET in response to the environmental crisis are emerging, with the most prominent being ‘just transitions’. In this paper, we consider the meaning(s) of these shifts in policy discourse in relation to evidence of movement in the VET system towards green economy and just transitions more broadly, for these movements cannot emerge without adequate attention to skills development, including in the VET system. We argue that the shift towards global sustainability, the greening of work, and the emergence of just transitions towards sustainability have implications for framing new approaches to learning vocationally.

### **Keywords**

vocational education and training (VET), sustainability, UNESCO, just transitions, sustainability transitions, green economy.

### **1 Orientation and methodology**

To offer grounded case examples of these trends in order to iteratively consider their implication. We draw on examples of VET policy and practice from Africa and from South Africa in particular, as this is where most of our empirical work is grounded. In noting this,





however, we emphasise here that our account is not primarily empirical, rather it is meta-reflective offering a ‘landscape view’ of the field as it is emerging.

We begin by offering an immanent critique of the state of VET discourse, policy and practice from the vantage point of VET and sustainability. This is followed by a deliberation on the shifts in political economy discourse as it shifts via encounters with ecological dynamics and debates around green economy, just transitioning and sustainability more broadly. We then consider how these discourses are also related to educational thinking, with a view to developing a mechanism for reviewing the greening of VET over time. While the paper overall is not an empirical paper, to develop insight into some of the shifts in the greening of VET we draw on data that is drawn primarily from two projects carried out with others for UNESCO and the ILO in which VET policies from across Africa were reviewed and stakeholders interviewed and/or surveyed. Beyond this, we also draw on insights from two recent major research projects in which we were all involved (one on South Africa; the other on South Africa and Uganda). Our analysis shows that VET is being shaped by an emerging political-economy-ecology lens that ultimately requires a whole systems approach to understanding the sustainability transition within VET if it is to be meaningfully embraced with a commitment to radical transformation and social and ecological justice. We offer this as a contribution to the VET literature, which, overall, has been slow to engage with the question of what skills are needed (and how will they be developed) for sustainable futures.

## **2 A brief immanent critique of VET: Why a shift is needed to embrace sustainability**

The beginning of industrialisation in Europe is crucial to how we understand VET. In transitioning to a more industrialised economy, the previous vocational learning approaches were transformed into ‘modern’ forms, often linked to public vocational providers (the archetypal VET institutions) through day or block release schemes, and sometimes grounded in tripartite agreements between state, employer and trade unions (e.g., Fuller and Unwin, 2009; Deissinger and Gonon, 2021). Whilst the Germanic and Anglophone traditions, for instance, are very different, they share a common core of preparing (predominantly male) youth for the world of work. This world of work was shaped by the wider process of industrialisation and had a particular focus on preparation for key industrial sectors such as mining, metals and motors. In the colonised south, the development of formal VET initially was heavily conditioned by the feasibility of large-scale colonisation. Formal VET programmes developed most rapidly where climate conditions allowed for large-scale white settlement, leading to a form of “settler VET” (McGrath and Russon, 2022). This saw growing local white populations receive training to replace imported white labour with indigenous populations excluded from access to certain trades and occupations. For instance, South Africa’s model of ‘racial Fordism’ (Gelb, 1991) led to massive investments in parastatal industries such as steel and railways, as well as the arrival of automobile production in 1923, with a concomitant growth in public VET (Badroodien, 2004; Gamble, 2021). Similar strong development of formal VET can be found in the Latin American experience of import substitution (Castro, 1998).

Elsewhere in the colonised territories, climate and disease mitigated against large-scale white settlement. Extractive industries here relied more on small numbers of white overseers and large amounts of indigenous labour, with little attempt made at formal skilling. In many such settings, many of which achieved independence in the second half of the twentieth century in Africa and South Asia in particular, there was typically initial dependence on expatriate skilled workers, followed by a growth in local skills development around extractive industries and some heavy industry.

In many places, North and South, formal vocational education remains tightly linked to the same old sectors, even though there may be few new jobs being created in them. Moreover, at a discursive level, the heterodox VET literature remains largely located within earlier political

economy thinking and has not yet engaged sufficiently with the political-economy-ecology move. Although it has addressed extractive effects on human labour, it has not extended this to nature and remains largely in a productivist bind (Anderson, 2008; McGrath, 2012). This approach is seen as having three problems. First of all, the understanding of the full purpose of VET has been improvised. Secondly, it avoids the issue of unsustainability. Lastly, it is based on an inaccurate account of actually existing labour markets, especially in the global South. This critique has not been seriously engaged in the mainstream VET literature. Indeed, even less radical accounts of sustainability are rare in the major VET journals. In the past 20 years, only eight articles have been published in the five leading VET journals that address sustainability issues (Coll et al., 2003; Sack, 2012; Brown, 2013; Brown et al., 2013; Draper et al., 2014; Evans and Stroud, 2016; Comyn, 2018; Pavlova, 2018; Liu et al., 2020). Most are small-scale empirical studies about attitudes, with very little engagement in theoretical debates regarding what is meant by ‘green’ or ‘sustainable’, let alone an engagement in political-economy-ecology arguments.

### **3 VET and an increasing focus on greening, sustainability and just transitions in economy and society**

As the argument for a green and sustainable economic transition grows, more institutions have become involved in defining the VET agenda, including the UNEP and the ILO (see below), and increased pressure is being placed on the VET sector to orient programmes, relations, curricula and institutional cultures towards sustainability. This is, however, not an easy task, as there are often internal contradictions with other programmes in the VET institutions (e.g. supporting VET for the fossil fuel industries). Additionally, the fact that the green economy discourse is in itself complex and rapidly shifting, as are the issues that the environment and sustainability sector seek to respond to (e.g. climate change has shifted from a science to a policy to a technology to an ethical concern affecting all sectors of society).

Interrogating these shifts can help to frame the nature of sustainability response and can help VET educators and researchers to better frame their efforts towards supporting the greening of VET or VET work for climate action, circular economies and/or Just Transitions. The global impetus for VET and sustainable futures has been amplified by the proclamation of the Sustainable Development Goals in 2015.

While the emergence of sustainable development discourses heralded an important turn, it quickly became clear that sustainable development remains vague and imprecise, and is often critiqued for being a ‘floating signifier’ (Ferguson, 2015; Ramsarup, 2017), a concept that can be made to mean almost anything, in keeping with the discursive histories of the two component words. This “floating” continues when we come to look at green jobs and the green economy. These are concepts that are potentially crucial to VET as the educational sector preparing young people for the world of work.

Similarly, the green economy has largely been a descriptive and normative discourse used by policy analysts and often emerges as an empty signifier when agencies like CEDEFOP argue that “green skills are becoming a part of almost every job” (CEDEFOP 2019) or agencies state that ‘all jobs are green jobs’. The work of Death (2014), Facer (2014) and Ferguson (2015) (cf Table 1 below) provide typologies of green economy discourses that can enable more critical engagement with these in VET research and practice, with the most radical of these being ‘green revolution’, ‘transformational’ or ‘strong’ green economy’ discourses that signal a deeper commitment to sustainable futures that move beyond sustaining the existing economic model of (neo-)liberal capitalism and its ecologically destructive / extractivist tendencies. Weaker forms of green economy are typically referred to as ‘green growth’, ‘green resilience’, or ‘incrementalist’, and signify reactionary, or even greenwashing approaches to sustainable futures.

**Table 1**

Typologies of the Green Economy

Four discourses of the Green Economy (Death 2014)	Discourses related to the Green Economy (Faccer et al. 2014)	Discourses related to the Green Economy (Ferguson, 2015)
<i>Green Revolution:</i> radical, revolutionary transformation on economic (and hence social and political) relationships to bring them in line with natural limits and ecological virtues.	<i>Transformative Discourse:</i> incorporates critical perspectives calling for a more radical review of society's economic and broader developmental objectives.	<i>Strong Green Economy Discourses:</i> embody post growth or limits to growth as central to their macroeconomic trajectory and encompasses measures of welfare as a critical indicator.
<i>Green Transformation:</i> explicit focus on social justice, equity and redistribution (including intergenerationally) where economic growth is a means rather than an end.	<i>Reformist Discourse:</i> diverse agendas for a green economy, with an emphasis on the right combination of actions and long-term planning to achieve environmental benefits as well as stronger economic growth.	
<i>Green Growth:</i> green markets provide economic opportunities representing a recasting of the relationship between environment and economics with an emphasis on new markets, new services and new forms of consumption.	<i>Incrementalist Discourse:</i> defined by a broad acceptance of the prevailing macro-economic paradigm and a focus on greater use of market-based tools to drive a green economy transition.	<i>Transformational Green Economy Discourses:</i> reflect elements of selective growth often encompassing green consumerism and modified GDP as an indicator. However, both these categories still utilise GDP as a signifier of socio-economic development.
<i>Green Resilience:</i> essentially reactionary and cautious with an emphasis on environmental scarcity, climate change and resource depletion and the need to implement technological solutions to build local self-sufficiency / resilience.		<i>Weak green economy discourses:</i> have a macroeconomic trajectory of green growth and encompass unmodified GDP as an indicator.

Death's typology is based on and focuses on national strategies from the Global South, with his overall argument making a strong call for the model of economic growth to be transformed in ways that involve explicit political interventions geared to transforming the structure of the economy. Faccer et al. present three emerging agendas around the green economy. We have also focused on Ferguson's typology, as we believe that it represents an evolution of the 'weak/strong' dichotomy from sustainability' definitions, thus providing a useful basis for a framework of green economy visions. A significant rearticulatory move in Ferguson's argument is to attach notions of well-being to economic security than economic growth. His argument enables a continuum so that "transformative articulations of green economy provide

the basis for a shift from the currently dominant weak green economy to a future strong green economy” (Ferguson 2015, p. 27).

A prevailing critique of general green economy discourses are that they are too closely aligned to current systems. It is suggested that they do not consider potential limits to growth. Moreover, they are characterised as oversimplified and overoptimistic. All concepts relating to the green economy place the economic sphere at the centre of any debate on future viability. According to this view, we can only save the planet with the economy, not against it. From these descriptions of transformative greening discourses, we can see that an inclusive green economy is much more than an economic growth agenda which sees new prospects for economic activity using natural resources, thus representing new forms of green capitalism or ecological modernisation. Rather, it raises significant challenges to the idea that environmental issues can be resolved within the current political economic system without fundamental social, economic and political change, hence differentiating meanings within green economy discourses is important. Also, it is equally important not lose a focus on the intentionality, which is to reframe current systems towards sustainable futures.

#### 4 VET Analysis from a sustainability perspective

While there has been emphasis on green skills for VET as can be seen from the above discussion, there is limited work that considers the emerging trends in greening of VET critically to the demand for sustainable futures. The Environment and Sustainability Education (ESE) literature shows more evidence of engagement with especially more radical, transformational implications for education and skills development than the VET literature. This literature does a better job of thinking about educational providers and sustainability more systematically and transformatively, so we will briefly consider the work of Sterling (2004) as it offers a good analytical tool for analysing the greening of VET programmes and policy from an education and training sector perspective. He suggests that there are four predominant types of sustainability responses (that resonate with the typologies in Table 1 above) that are useful for considering implications for education system change.

**Table 2**

Comparing social and educational responses to sustainability (Sterling, 2004)

<b>Sustainability transition</b>	<b>Response</b>	<b>State of sustainability</b>	<b>State of education</b>
<b>1. Very weak</b>	Denial, rejection or minimum	No change (or token)	No change (or token)
<b>2. Weak</b>	‘Bolt-on’	Cosmetic reform	Education about sustainability
<b>3. Strong</b>	‘Build-in’	Serious greening	Education for sustainability
<b>4. Very Strong</b>	Rebuild or redesign	Wholly integrative	Sustainable education

The relationship between these and the three sets of green discourses above is apparent in the evolution or development of green skills discourses in VET guiding documents and practices over time, a period of twenty / thirty years, as also briefly introduced above. In the next section we will review these trends drawing on the Sterling framework. As can be seen above, definitions of green economy and the means of moving towards sustainability are contested. However the definitions are useful to consider, as they typically involve recalibrating an

introduction of new ways of thinking. In institutional terms, this is about a new logic being applied to economic and social policies, practices and systems in order to support economy, ecology and equity. In the sections below we examine how these have been applied and/or are developing within VET systems in Africa. To do this we draw on data from our studies and work on VET in Africa. As indicated above, this offers an iterative tool for reviewing the emerging VET greening practices.

## 5 Analysis 1: Predominance of ‘bolt-on’ or more cosmetic reforms

As noted above, there have been various efforts to influence the greening of VET. These efforts have been mainly led by UNESCO-UNEVOC teams and centres. A key focus of this work has mainly been to influence the greening of VET policies. At the policy level, there has been a response from the supply side through UNESCO’s lead role in international VET policy development.

What is evident are embryonic policy interventions to bring ‘green aspects’ into some parts of the TVET system, which lead to various ‘bolt-on’ initiatives in the service of specific sectors, for example:

The aim to “introduce climate change into the curricula at all levels”, in the TVET sector, is an explicitly stated intervention of Lesotho’s NSDP II (GoL, 2018, p.111). Lesotho National Strategic Development Plan II (NSDP II) identified tourism as one of the productive sectors with great potential to create jobs and contribute significantly towards poverty reduction. The country aims to diversify tourism products by, among other things, promoting “Sustainable ecotourism” (GoL, 2018, p. 97). The intention is to mainstream ecotourism in Technical and Vocational Education and Training (TVET), which will expand job creation and sustainability.

As noted above, policy movement has only really just started, with ‘bolt-on’ interventions as the end results. Substantive greening of vocational providers is yet to emerge, and as yet this has not been discussed much in the wider academic literature. Subsequently, reports on greening of TVET providers has mainly been confined to the grey literature of the development community.

Where public, formal VET providers are seeking to engage with the challenge, their approaches typically focus on first two pillars, and even when efforts are made, they are plagued by interrelated challenges as expressed in this Kenyan study by Jubungei (2020, p. 32):

*Despite the importance of green skills in nurturing green economy that supports green growth, evidence from Kenya shows gaps in TVET institutions’ ability to develop green skills. Jahonga et al., (2015) for instance, point out that lack of human resources and requisite skills are among the major challenges to green technology and that the TVET courses on offer do not integrate green technology. Were and Ferej (2018) argue that insufficient integrated sustainable content in TVET training and lack of technical skills specific for transition to green economy were impediments to greening TVET. Murgor (2017) avers that TVET training fails to inculcate green skills (soft skills) relevant for survival in self-employment.*

In Sterling’s terms, this amounts to a ‘bolt-on’ of sustainability ideas to the existing system, while the system itself remains largely unchanged, and efforts are impeded as described by Jubungei (2020) where they are arising. This results in largely an adaptive, first order change or learning. While this is necessary as a key starting point for changes towards sustainability, through this response, the dominant paradigm and the institutional /system maintains its original stability despite key efforts to the contrary.

Since vocational education is closely linked to the world of work, it is important to consider both educational and occupational systems as TVET learning pathways are constituted by both

educational and occupational progression (Ramsarup, 2017). Most countries reported that they did have an occupational classification system, and the judgements from the respondents were fairly responsive to greening imperatives. However the specifics on what mid level and / or new green occupations have emerged were unclear. The survey also showed that most entry points in terms of represented occupations are at professional levels, mostly requiring postgraduate qualifications. Greater representation of entry level environmental occupations are to enable better access into the sector as technical skill levels needs to be explored, which will have implications for TVET pathways to enable better education and training opportunities. This point was also made by Ramsarup (2015) and Rosenberg et al, (2020). The focus on developing better understanding of greening of occupations is important for VET advancement for sustainable futures, as 53% of organisations surveyed indicated that they utilise occupational standards in design of TVET curricula.

It is imperative for TVET to be more pro- active in embracing provisioning and learning pathways for sustainable futures as this has implications for teaching and learning. This is also a complex issue as curriculum for TVET tends to be centrally controlled, when the adaptive needs may be locally shaped. For example climate change adaptation strategies for agriculture may differ in different regions due to climatic conditions, ecotopes and more. In the survey, 67% of respondents indicated that TVET curricula for their qualifications are nationally prescribed and they follow these national curricula. This poses a constraint on responsiveness to local emerging issues. While this is the case, there are some curriculum innovations emerging to respond to the demands for greening occupations, and green economy development. For example,

- Mauritius has aimed to equip TVET trainees, in-service workers and technicians across various fields with green skills in order to enhance their employability. In achieving this aim, the TVET sector has created several new green qualifications and competencies (UNESCO 2014). These include a module on awareness of environmental issues in all TVET curricula; Training in the installation, maintenance and servicing of photovoltaic systems; Training in the installation and maintenance of solar water heaters; Training in the use of eco-friendly refrigerants; Training Module on environmental and sustainable development in the Diploma Of Hotel Management Course.
- In Lesotho, stargazing is being promoted as an important new stream of sustainability work focused around ‘astrotourism’, which focuses on travel to somewhat remote locations and on adventures that are unique in search for unpolluted views of the cosmos. The introduction of an ecotourism programme that entails astrotourism can greatly enhance the quality of TVET programmes in Lesotho. Prioritizing the mainstreaming of ecotourism within TVET offers important possibilities for local economic development and the sustainability spin offs, and would include reorienting of the current ‘development’ trajectory of indiscriminate lighting and air pollution; as well as to expand ecotourism-based job opportunities.
- In the Seychelles, agro-processing is a very important area which has led to a recently introduced Diploma in Sustainable Agriculture. Aquaculture was also identified as a new area that links the blue and green economies. The Seychelles Institute of Technology is offering programmes in rainwater harvesting and climate change, aimed at people who are self-employed. Additionally, developments are taking place in IT and greening.
- In South Africa, since 2013, the German Ministry of Economic Cooperation and Development’s Programme Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and Skills for Green Jobs (S4GJ) have, in cooperation with the South African DHET and DST, run a pilot project on the ‘Greening of TVET colleges.’ Amongst other projects, the collaborators developed specialised elective subjects in Renewable Energy Technologies (RET) for the National Curriculum Vocational in Electrical Infrastructure Construction (NCV-EIC). Thus, a key area of TVET provision for the green economy are

the RET subjects that are offered at introductory, intermediate and advanced levels. In this case, the curriculum intervention shaped the national qualification.

The discussion above indicates that there is emergence of greening of TVET taking place at policy, occupational system, and curriculum levels in the African countries involved in our studies. However, these are mostly following the ‘bolt-on’ interventionist approaches outlined by Stirling (2004) which mainly focus on education about sustainability in specific sectors. Few of these are systemically oriented towards wider transformation of the TVET system itself. While necessary, such interventions may not be sufficient if TVET is to become a strong sector contributing to sustainable futures. We turn now to a second analysis, where we examine some interventions that are leaning more towards the ‘build-in’ and ‘reframe’ approaches in Stirling’s framework that also reflect stronger and more radical commitments to sustainability.

## **6 Analysis 2: Towards transformational approaches**

There are some encouraging developments that are pointing towards the conceptualisation and development of more transformational approaches to greening of TVET for sustainable futures. Key amongst these are UNESCO’s new strategy for TVET (UNESCO, 2022). There is a further evolution of UNESCO’s conceptualisation of greening TVET. As noted above, the strategy is now explicitly about “Transforming TVET for successful and just transitions”. Although the language of just transitions is not explored further in the short document, this represents a significant shift in language. The three strategic priorities are:

1. Skills for individuals to learn, work and live
2. Skills for economies to transition towards sustainable development
3. Skills for inclusive and resilient societies (UNESCO, 2022, p. 7).

The first of these reflects much of UNESCO’s VET policy concerns over recent decades in which employability, productivity and entrepreneurship are emphasized but within a UNESCO framing of inclusion, citizenship and lifelong learning. Noteworthy under this heading is a statement that “Training will need to be reoriented towards ... occupations that expand as all sectors shift towards environmentally sustainable production processes” (UNESCO, 2022, p. 7). The second, of course, is the most obvious “green priority”, framed here in terms of anticipation of skills needs caused by job destruction and creation in the context of just transitions. The third reflects the longstanding UNESCO concern with skills for inclusive societies but, strikingly, adds in the environmental framing of “resilient”. The draft strategy argues that: “Climate change and other facets of environmental degradation will increasingly represent a major threat to the stability and resilience of societies. TVET and skills development can play a part in alleviating these concerns” (UNESCO, 2022, p. 8).

All of this reflects the slow deepening of UNESCO’s green skills discourse over the past decade. However, our point regarding UNESCO’s policy work at the country level could serve as a reminder that global policy discourses may be only slowly reflected at the national level. Nonetheless, data from recent policy research in Africa suggests that the moment may be right for a move towards greener skills policies and practices.

## **7 Towards a political-economy-ecology account of VET**

In recent work undertaken in a VET 4.0 Africa research collective, we have been involved in developing an approach to VET that gives more attention to sustainability within VET to enable a move away from the underpinning modes of productivist thinking that are implicit within it. We have done this via conceptualizing a political-economy-ecology approach that reviews how conventional VET is deeply embedded in the wider ‘Capitalocene’ (Moore, 2015) system. Outlining the limited, adaptive response from VET to sustainability, as also outlined above, we offer some pointers on a way forward. Moreover, there is little sense that training for unending production and consumption is simply unsustainable (Anderson, 2008; McGrath, 2012).

As Anderson notes, VET:

*uncritically mirrors the dominant logic of industrial society and produces its subjects as compliant and compulsive agents of economic growth, largely inured to the environmental consequences of their habitual behaviours. Located at the interface between education, the labour market and civil society, VET performs a crucial role in the constitution, population and legitimization of the vocations and professions, which are the main generators of economic growth.*

*Cast within the ethos of productivism and the ideological framework of neoliberalism, the institution of VPE [VET] is based on a restricted and instrumental view of lifeworlds which reduces people and the environment to the status of human and natural resources for economic exploitation. (Anderson, 2008, p. 106 and p. 121)*

Anderson here is drawing in particular on Giddens (1994) but more recently there have been a series of accounts that bring out the environmental aspect of this critique even more strongly (but see also earlier work by Gorz, 1989). This literature highlights the complex interconnections of the political economy tradition (which is dominant in heterodox accounts of VET) and that of political ecology (e.g., Bond, 2002; Forsyth, 2003; di Munzio, 2015; Malm, 2016; Moore, 2016; Scoones, 2016; Satgar, 2018). For example, Malm's account of 'fossil capitalism' highlights the centrality of the relationship between carbon-centric development and capitalist accumulation. Much of the literature highlights the close relationship between controlling natural resources and controlling labour that was central to the emerging logic of industrialisation. This had a particular, highly racialised inflection in imperial settings and continues in postcolonial forms of extractivism. This political ecology literature seeks to offer "a social response to the oblivion of nature by political economy" (Leff, 2015, 33, cf. VET Africa 4.0 Collective, 2023).

VET needs to be understood as existing in a particular moment in time and space and as having a history that reflects the interplay of systems of learning and working, themselves grounded in wider cultural, economic, political and social arrangements. Expanding the conventional VET account outlined above in our immanent critique of VET, is a small and growing literature based on our earlier research (e.g., McGrath and Powell, 2016; Ramsarup, 2017; Rosenberg et al., 2020; McGrath and Russon, 2022; VET Africa 4.0 Collective, 2023) that is beginning to move towards a political-economy-ecology approach to VET.

This body of work, including McGrath (2020) and the VET 4.0 Africa Collective (2023) argues that taking the sustainability challenge seriously means disrupting conventional VET assumptions about skills for employability / productivity / growth. As an emergent body of heterodox literature, it suggests that VET research needs to begin addressing questions of how vocational learning can "promote decent work that contributes both to sustainable livelihoods, individuals and communities, and to wider efforts to restructure work and economic activities so that we live within our planetary boundaries" (McGrath, 2020, 8).

There is a directionality of the Just Transition which seeks to ensure distributive, reparative and justice in and through VET, this indicates that we need a more radical/disruptive whole system approach rather than the fragmented approach that is currently evident. We conclude this review with some suggestions on how we can move to a more proactive, transformative praxis oriented system and what the implications of this will be for the underpinning institutional, social and economic conditions that enable/constrain VET. In other words, we offer ways forward to move beyond the 'bolt-on' approach to sustainability in VET, instead seeking out more 'wholly integrative' approaches as in Stirling's (2004) framework above.

Seen in this light, sustainability is not just another issue to be added to an overcrowded curriculum, but a gateway to a different view of curriculum, pedagogy, organisational change,



policy and particularly of ethos. As we have argued above, the effect of patterns of unsustainability on our current and future prospects is so pressing that the response of VET should not be predicated only on bolt-on approaches to 'integration of sustainability' into VET, because this invites a limited, adaptive, response. In our view, and based on our emerging body of research, we propose that a whole system approach to VET would involve a multi-levelled response including the following:

1) At macro levels - we would need to examine national policies /regulatory frameworks/industrial plans and the implications they would have for transitioning TVET - environmental.

2) At the sector level - examine global changes (e.g. water security, climate change etc.), innovation trends and industrial planning - and examine how sustainability oriented skills and occupational changes could be integrated and planned for as an integral part of this change.

3) Occupational levels of analysis of occupational change and skills, at one level this will mean understanding the lock-ins in the value chain (e.g. the predominance of monoculture agriculture) and how they can be overcome in relation to local realities (e.g. predominance of small scale farmers in Africa) and what implications this has for the changing nature of work.

4) On another level, this will mean understanding how occupations will and are changing. As we have argued above, a more nuanced idea of how the transition will impact occupations will assist in making more relevant educational decisions.

5) Training and Educational provisioning which will involve mapping qualifications, curriculum analysis in relation to sustainability transition needs; examining learning pathways, articulation opportunities, upscaling and re-educating training providers to embrace more systemic principles of education as sustainability (cf. Stirling, 2004), and curriculum innovations that cross boundaries and reframe education.

6) At a micro level, thinking about learning and work transitioning, transformative learning in VET contexts (e.g. Lotz-Sisitka & Pesanayi, 2020) and the how young people can move within streams of work (laterally and vertically).

7) Relationship between the levels - Coordination and planning between levels Central role of ministries in driving a whole system approach. It does not mean that one size fits all, it cannot be top down - need an understanding of a bottom up approach. This could be a Place based / disrupt form traditional notion of firm as central Relate to local possibilities for employment and livelihoods.

8) Beyond thinking about and inclusion of economic actors only - there is a need to consider other actors such as those involved in using VET for livelihoods construction, especially in contexts where informality is a key feature of the VET landscape.

## References

- Anderson, D. (2008). Productivism, vocational and professional education, and the ecological question. *Vocations and Learning*, 1(2), 105-129.
- Avis, J. (2018). Socio-technical imaginary of the fourth industrial revolution and its implications for vocational education and training: A literature review. *Journal of Vocational Education & Training*, 70(3), 337-363.
- Avis, J., & Avis, J. (2020). Conclusion: Vocational Education in the Fourth Industrial Revolution—Education and Employment in a Post-Work Age. *Vocational Education in the Fourth Industrial Revolution: Education and Employment in a Post-Work Age*, 103-116.
- Badroodien, A. (2004). Technical and vocational education provision in South Africa from 1920 to 1970.
- Bond, P. (2002). *Unsustainable South Africa*. Pietermaritzburg: University of KwaZulu Natal Press.

- Brown, M. (2013). The development of green skills through the local TAFE Institute as a potential pathway to regional development. *International Journal of Training Research*, 11(1), 27-43.
- Brown, M., Sack, F., & Piper Rodd, C. (2013). Student voice in 'skills for sustainability': A missing component from the demand side of Australian Vocational Education and Training. *International Journal of Training Research*, 11(3), 213-224. <https://doi.org/10.5172/ijtr.2013.11.3.213>
- Castro, C. D. M. (1998). The Stubborn Trainers vs. The Neoliberal Economists: Will Training Survive the Battle?
- Coll, R. K., Taylor, N., & Nathan, S. (2003). Using work-based learning to develop education for sustainability: a proposal. *Journal of Vocational education and Training*, 55(2), 169-182.
- Comyn, P. J. (2018). Skills, employability and lifelong learning in the Sustainable Development Goals and the 2030 labour market. *International Journal of Training Research*, 16(3), 200-217.
- Deissinger, T., & Gonon, P. (2021). The development and cultural foundations of dual apprenticeships—a comparison of Germany and Switzerland. *Journal of Vocational Education & Training*, 73(2), 197-216.
- Di Munzio, T. (2015). Carbon Capitalism. Rowan and Littlefield International, London.
- Draper, F., Oltean-Dumbrava, C., Kara-Zaitri, C., & Newbury, B. (2014). Individual learning on environmental vocational education and training courses does not always lead to the workplace application of knowledge and skills. *Journal of Education and Work*, 27(6), 651-677.
- Evans, C., & Stroud, D. (2016). Greening steel work: Varieties of Capitalism and the 'greening' of skills. *Journal of Education and Work*, 29(3), 263-283.
- Faccar, K., Nahman, A., & Audouin, M. (2014). Interpreting the green economy: Emerging discourses and their considerations for the Global South. *Development Southern Africa*, 31(5), 642-657.
- Ferguson, P. (2015). The green economy agenda: business as usual or transformational discourse?. *Environmental Politics*, 24(1), 17-37.
- Forsyth, T. (2003). *Critical Political Ecology*. London: Routledge.
- Fuller, A., & Unwin, L. (2009). Change and continuity in apprenticeship: The resilience of a model of learning. *Journal of education and work*, 22(5), 405-416.
- Gamble, J. (2021). The legacy imprint of apprenticeship trajectories under conditions of segregation and Apartheid in South Africa. *Journal of Vocational Education & Training*, 73(2), 258-277.
- Gelb, S. (Ed.). (1991). *South Africa's economic crisis*. New Africa Books.
- Giddens, A. (1994). *Beyond Right and Left*. Polity, Cambridge.
- Gorz, A. (1989). *Critique of Economic Reason*. London: Verso.
- Jebungei, K. N. (2020). Green skills and sustainable economy in Kenya: The influence of TVET trainer competencies. *Africa Journal of Technical and Vocational Education and Training*, 5(1), 29-40.
- Leff, E. (2015). Political ecology: a Latin American perspective. *Desenvolvimento e meio ambiente*, 35(35), 29-64.
- Liu, X., Chen, Y., Yang, Y., Liu, B., Ma, C., Craig, G. R., & Gao, F. (2022). Understanding vocational accounting students' attitudes towards sustainable development. *Journal of Vocational Education & Training*, 74(2), 249-269.
- Majumdar, S. (2010, November). Greening TVET: Connecting the dots in TVET for sustainable development. In *16th IVETA-CPSC International Conference on "Education for Sustainable Development in TVET" Manila, Philippines*.

- Malm, A. (2016). *Fossil capital: The rise of steam power and the roots of global warming*. Verso Books.
- McGrath, S. (2012). Vocational education and training for development: A policy in need of a theory?. *International Journal of Educational Development*, 32(5), 623-631.
- McGrath, S. (2020). *Skilling for sustainable futures*. TEF Background Paper Series, University of Bristol. <https://doi.org/10.5281/zenodo.4022328>
- McGrath, S., & Powell, L. (2016). Skills for sustainable development: Transforming vocational education and training beyond 2015. *International Journal of Educational Development*, 50, 12-19.
- Mcgrath, S., & Russon, J. A. (2022). Towards sustainable vocational education and training: thinking beyond the formal. *Southern African Journal of Environmental Education*, 38.
- Moore, J. W. (Ed.). (2016). *Anthropocene or capitalocene?: Nature, history, and the crisis of capitalism*. Pm Press.
- Pavlova, M. (2018). Fostering inclusive, sustainable economic growth and “green” skills development in learning cities through partnerships. *International Review of Education*, 64, 339-354.
- Ramsarup, P. (2017). A critical realist dialectical understanding of learning pathways associated with two scarce skill environmental occupations within a transitioning systems frame. *Unpublished PhD thesis, Rhodes University, Grahamstown, South Africa*.
- Rosenberg, A. (2020). No jobs on a dead planet: the international trade union movement and just transition. *Just Transitions. Social Justice in the Shift Towards a Low-Carbon World*, 32-55.
- Rosenberg, E., Ramsarup, P., & Lotz-Sisitka, H. (2020). *Green Skills Research in South Africa: Models, Cases and Methods*. Routledge.
- Sack, F. (2012). Gen Green: Changes in Australian apprentices’ and trainees’ experience of skills and sustainability from 2008 to 2011. *International Journal of Training Research*, 10(1), 30-42.
- Satgar, V. (2018). *The climate crisis: South African and global democratic eco-socialist alternatives* (p. 372). Wits University Press.
- Scoones, I. (2016). The politics of sustainability and development. *Annual Review of Environment and Resources*, 41:263–319.
- Sterling, S. (2004). Higher education, sustainability, and the role of systemic learning. *Higher education and the challenge of sustainability: Problematics, promise, and practice*, 49-70.
- UNESCO, (2012). Shanghai consensus: recommendations of the Third International Congress on Technical and Vocational Education and Training, <https://unevoc.unesco.org/home/UNESCO+Publications/lang=en/akt=detail/qs=5457>.
- UNESCO. (2016). *UNESCO Strategy for Technical and Vocational Education and Training (TVET) (2016-2021)*. UNESCO, Paris.
- UNESCO. (2022). *UNESCO Strategy for Technical and Vocational Education and Training (TVET) (2022-2027)*. UNESCO, Paris.
- UNESCO-UNEVOC 2014 "International Framework for Action: Greening TVET" (Draft).
- UNESCO-UNEVOC. (2012). Greening TVET for Sustainable Development. Report of the UNESCO-UNEVOC online Conference. 22 October to 2 November. [https://unevoc.unesco.org/fileadmin/user\\_upload/docs/e-Forum\\_Synthesis\\_report\\_Greening\\_TVET.pdf](https://unevoc.unesco.org/fileadmin/user_upload/docs/e-Forum_Synthesis_report_Greening_TVET.pdf).
- VET Africa 4.0 Collective (2023). *Transitioning Vocational Education in Africa*. Bristol University Press, Bristol, forthcoming.

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Saniter, A. & Harberts, V. (2023). A sector qualification framework (SQF) level 2-7 for industrial shoe production. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 395–399). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7822364>

## A Sector Qualification Framework (SQF) Level 2-7 for Industrial Shoe Production

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### Abstract

In the years 2008 and 2017, the European parliament and the council published respective updated the European Qualification Framework (EQF) for Lifelong Learning to increase transparency and comparability of qualifications and the mobility of workers. Since then no or only very few advantages induced by QF have been published. One of the main reasons is the inherent broadness and openness of the descriptors of the levels. A promising approach to overcome this dilemma could be Sector Qualification Frameworks (SQF); ICSAS and DIA-CVET projects developed, implemented and evaluated a SQF level 2 to 7 for the sector of industrial shoe production.

### Keywords

industrial shoe production, IVET, CVET, sector qualification frameworks (SQF), transparency

### 1 Background

In the years 2008 and 2017, the European parliament and the council published two recommendations to improve comparability of qualifications among member states, which refer to «the establishment of the European Qualifications Framework for lifelong learning» (cp. EU 2008 and EU 2017). The European Qualification framework (EQF) consists of eight levels, starting with level one for (almost) unskilled workers and ending with level eight for PhD holders. European institutions like the Cedefop celebrate the recommendations and the follow-up since then: «Qualifications frameworks in Europe: a never-ending success story» (Cedefop 2018).

The neutrality and the added value of general Qualification Frameworks (QF), might they claim national or transnational relevance, has been questioned by researchers since the publication of the first recommendation in 2008. In 2010, Cort, P. highlighted the simple fact, that «policies are *never* neutral» (accentuation by the author) and analysed that «[t]his focus on outcome is closely tied to the marketisation of education and training». In 2015, Elken, M. published a contribution entitled «Vertical, Horizontal and Internal Tensions in the European Qualifications Framework» and concluded, that the «actual impact on national level practice remains to be seen». Still in 2023, few studies can be found that certify a positive “actual impact”, on the contrary, Winch, C. stated, based on the recent developments in the UK, that



«[t]he EU should do what the English have failed to do and analyse what is wrong with learning outcomes so that progress can be made» (Winch, 2023).

The authors of this paper share neither the euphoric view on EQF by European bodies nor the partially very critical perspective of colleagues (as long as the discussion is about qualifications – and not about units with ECVET-credits that proved their zombie-character after official funeral in their resurgence as “micro-credentials” – but this is another story). Probably the summary of Bohlinger, S. (2019), that QF are «somehow nothing but a paradigmatic case of travelling educational reforms»; a technocratic exercise with few impact, sketches the role of QF best.

Her conclusion is not surprising, as descriptors like «[a] range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study» (EQF, level 4, skills, EU 2008) are this generic, that various stakeholders might interpret it very, very different.

Some evidence has been published already (cp. europeactive 2018, newhealth 2022) that qualification frameworks, focussing on one sector only, might be a better option, as they offer the possibility to specify the mentioned «field of work or study» and to characterise the «range of cognitive and practical skills».

## 2 Research questions

Against this background, one of the issues tackled by the transnational Erasmus+ research and development projects ICSAS (Integrating Companies in a Sustainable Apprenticeship System) and DIA-CVET (Developing Innovative and Attractive Continuous Education and Training profiles) is the work on developing a Sector Qualification Framework (SQF) for the sector of industrial shoe production, referencing the qualifications from Romania, Portugal, Germany and (partly) Spain.

Leading questions in this regard have been:

- What are the relevant «fields of work or study», in both Initial Vocational Education and Training (IVET) and CVET? (These «fields of work or study» are named “Spheres of Activity (SoA)” in the projects.)
- How can the different expertise of professionals skilled in the various VET programmes of the mentioned countries be differentiated?
- Can the qualifications from the participating countries in the sector be levelled to the SQF?

## 3 Methodology

The approach combines desk research, Learning Station Analyses (LSA) and expert-workshops. After analysing SQF of other sectors (cp. europeactive 2018, newhealth 2022), a drafted structure has been developed; this structure has been modified via expert-workshop in the participating countries. The SQF level 2-4 is confirmed and has been endorsed by the relevant stakeholders in the sector. Currently the developed SQF level 5-7 is presented to experts from industrial shoe production and other sectors – crossing boundaries in VET is a marvellous option to expand this validation/feedback collection to an audience beyond the sector and the participating countries.

## 4 Findings






Regarding the first question, there was a broad consensus that nine Spheres of Activity are appropriate to describe the (potential) «fields of work or study» of IVET qualified, for CVET 13 Spheres of Activity have been identified (cp. ICSAS 2019, DIA-CVET 2021). Among those

4 are (partly) part of both qualification tracks, IVET and CVET, thus the overall SQF consists of 18 Spheres of Activity.

Findings on the second question, on how to differentiate the «range of cognitive and practical skills» of a qualification holder in the different Spheres of Activity, pointed in a unique dimension: the level of autonomy. That workers skilled via IVET or CVET have the necessary knowledge and skills for successful working on a task of a Sphere of Activity was self-evident for the experts consulted. Findings and the respective levelling of IVET (level 2-4) qualifications have already been published by Saniter, A. & Harberts, V. (2020). Regarding CVET, a new descriptor had to be introduced, whether some of the Spheres of Activity are part of a (mandatory) previous qualification (cp. table 1).

**Table 1**

Level of autonomy as descriptor for performance

	autonomous performance
	initiation
	Partly; e. g. planning of a single product
	not tackled
	part of previous qualification

With respect to the third question, levelling of IVET qualifications was very smooth and confirmed by all experts consulted (cp. ICSAS 2020). The SQF level 2-4 was confirmed as a general overview of all Spheres of Activity, levels and countries in one table as well as for each level of qualification for a better overview (cp. Saniter, A. & Harberts, V. 2020). Overall, 19 qualifications on levels 2-4 from Germany, Spain, Portugal and Romania have been levelled.

Regarding CVET, it must be taken into account that Spain does not participate anymore in the current project, that the number of Spheres of Activity is higher (18, including those of IVET) and that the amount of existing CVET qualifications is much lower (2 in Germany, 1 in Romania, none in Portugal). Thus, it was decided, to include a Portuguese IVET qualification on level 5 (footwear designer), the higher education (HE) programmes in Germany and Romania in the sector and the new trial qualifications developed and currently piloted in DIA-CVET, as well.

**Table 2**

Qualifications level 5-7 from DE, PT and RO, 2<sup>nd</sup> part of table refers to same qualifications as first part

Level 5-7										
Level according to EQF (Qualification)	Level 6 (DIA-CVET programme)	Level 6 (Footwear foreman, Industriemeister)	Level 6 (Footwear technician, Schuhtechniker/-in)	Level 6 (HE Bachelor, Leather- and Textile-technics)	Level 5 (DIA-CVET programme)	Level 5 (Technical Specialist in Footwear Design)	Level 5 (Footwear Manufacturing Technician/Foreman)	Level 7 (DIA-CVET programme)	Level 6 (BSc) Footwear Design and Production Engineer	Level 7 (MSc) Footwear Design and Production Engineer
Country	DE	DE	DE	DE	PT	PT	RO	RO	RO	RO
Spheres of activity in footwear sector	Cutting	Cutting	Cutting	Cutting	Cutting	Cutting	Cutting	Cutting	Cutting	Cutting
	Stitching	Stitching	Stitching	Stitching	Stitching	Stitching	Stitching	Stitching	Stitching	Stitching
	Lasting	Lasting	Lasting	Lasting	Lasting	Lasting	Lasting	Lasting	Lasting	Lasting
	Assembly	Assembly	Assembly	Assembly	Assembly	Assembly	Assembly	Assembly	Assembly	Assembly
	Finishing	Finishing	Finishing	Finishing	Finishing	Finishing	Finishing	Finishing	Finishing	Finishing
	Design	Design	Design	Design	Design	Design	Design	Design	Design	Design
	Production planning	Production planning	Production planning	Production planning	Production planning	Production planning	Production planning	Production planning	Production planning	Production planning
	Technical development	Technical development	Technical development	Technical development	Technical development	Technical development	Technical development	Technical development	Technical development	Technical development
	Training Management	Training management	Training management	Training management	Training management	Training management	Training management	Training management	Training management	Training management
	Maintenance Management	Maintenance Management	Maintenance Management	Maintenance Management	Maintenance Management	Maintenance Management	Maintenance Management	Maintenance Management	Maintenance Management	Maintenance Management
	Quality Management	Quality Management	Quality Management	Quality Management	Quality Management	Quality Management	Quality Management	Quality Management	Quality Management	Quality Management
	New Materials	New Materials	New Materials	New Materials	New Materials	New Materials	New Materials	New Materials	New Materials	New Materials
	Supply Chain Management	Supply Chain Management	Supply Chain Management	Supply Chain Management	Supply Chain Management	Supply Chain Management	Supply Chain Management	Supply Chain Management	Supply Chain Management	Supply Chain Management
	Social Responsibility Management	Social Responsibility Management	Social Responsibility Management	Social Responsibility Management	Social Responsibility Management	Social Responsibility Management	Social Responsibility Management	Social Responsibility Management	Social Responsibility Management	Social Responsibility Management
	Sustainability Management	Sustainability Management	Sustainability Management	Sustainability Management	Sustainability Management	Sustainability Management	Sustainability Management	Sustainability Management	Sustainability Management	Sustainability Management
	Environmental Management	Environmental Management	Environmental Management	Environmental Management	Environmental Management	Environmental Management	Environmental Management	Environmental Management	Environmental Management	Environmental Management
	STEM	STEM	STEM	STEM	STEM	STEM	STEM	STEM	STEM	STEM
	Health and Safety	Health and Safety	Health and Safety	Health and Safety	Health and Safety	Health and Safety	Health and Safety	Health and Safety	Health and Safety	Health and Safety

It must be considered, that the current “level of autonomy” documented in table 2 represents the self-estimation of the programme providers, minor modifications might have to been undertaken after the validation workshops in the three participating countries scheduled for 04./05.2023.

## 6 Outlook

The projects have delivered evidence that a SQF increases transparency of qualifications, especially in very specific areas of the labour market like industrial shoe production.

Thus, SQF seem to have a benefit, both for companies and skilled workers: In a globalised world, they could support companies in finding suitable staff and vice versa, to help professionals to estimate whether job announcements from abroad are appropriate for their skills and interests.

Additionally, and even more important, a unified SQF, including all career options via IVET, CVET and Higher Education (HE) might have the potential to increase not only transparency, but also permeability between educational tracks.

On the other hand, concerns published by other researchers as quoted in the section “background”, must be taken into account: A SQF should not have the consequence that it supports qualification providers (might they be public bodies or companies within dual education) switch from holistic vocations to “plug and play” micro-credentials.

## References

- Bohlinger, S. (2019). Ten years after: the ‘success story’ of the European qualifications framework. *Journal of Education and Work*, 32(4), 393-406.
- Cedefop (2018). Qualifications frameworks in Europe: a never-ending success story. <https://www.cedefop.europa.eu/en/press-releases/qualifications-frameworks-europe-never-ending-success-story>



- Cort, P. (2010). Stating the Obvious: the European Qualifications Framework is not a neutral evidence-based policy tool. *European Educational Research Journal*, 9(3), 304-316.
- DIA-CVET (2021). Spheres of activity of CVET-qualified in industrial shoe production. [https://dia-cvet.eu/wp-content/uploads/2022/02/IO-01\\_EN.pdf](https://dia-cvet.eu/wp-content/uploads/2022/02/IO-01_EN.pdf)
- Elken, M. (2015). 'New EU Instruments for Education: Vertical, Horizontal and Internal Tensions in the European Qualifications Framework', *Journal of Contemporary European Research*, 11 (1), pp. 69-83.
- EU (2008). Recommendation [...] on the establishment of the European Qualifications Framework for lifelong learning. <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2008:111:0001:0007:EN:PDF>
- EU (2017). Recommendation of 22 May 2017 on the European Qualifications Framework. <https://op.europa.eu/en/publication-detail/-/publication/ceed970-518f-11e7-a5ca-01aa75ed71a1/language-en>
- ICSAS (2019). Spheres of Activity of Industrial Shoemakers. [http://icsas-project.eu/wp-content/uploads/2020/03/IO\\_06\\_EN.pdf](http://icsas-project.eu/wp-content/uploads/2020/03/IO_06_EN.pdf)
- ICSAS (2020). Sector Qualification Framework (SQF) Industrial shoemaker level 2-4. [http://icsas-project.eu/wp-content/uploads/2020/06/06\\_SQF-Table\\_EN.pdf](http://icsas-project.eu/wp-content/uploads/2020/06/06_SQF-Table_EN.pdf)
- europaactive (2018). Sectoral qualifications: the SIQAF project. <https://www.europaactive.eu/projects/siqafnewhealth>
- New Health partner network EU. (2022). <https://new-health.eu/en/new-health-partner-network-eu>
- Saniter, A, & Harberts, V. (2020). A sector qualification framework (SQF) level 2-4 for industrial shoe production – Added value or good for nothing? In C. Nägele, B. E. Stalder, & N. Kersh (Eds.), *Trends in vocational education and training research*, Vol. III. Proceedings of the European Conference on Educational Research (ECER), Vocational Education and Training Network (VETNET) (pp. 258–266). <https://doi.org/10.5281/10.5281/zenodo.4007627>
- Winch, C. (2023). Learning outcomes: The long goodbye: Vocational qualifications in the 21st century. *European Educational Research Journal*, 22(1), 20-38.

All internet sources consulted on the 20.02.2023.

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## Hydrogen as a Future Topic in German VET? – Research Design and Initial Findings from the Research Project H2PRO

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### Abstract

**Context:** Hydrogen is a crucial element in the transition towards a green economy. In various sectors, hydrogen opens up decarbonization paths where direct or battery electric systems cannot meet high energy demands or where no other alternatives to fossil raw and auxiliary materials are applicable. Qualified workers are a crucial factor for the successful establishment of the hydrogen economy. The research project H2PRO at the German Federal Institute for Vocational Education and Training (BIBB) addresses the questions of how skills requirements in training occupations change due to hydrogen, and what measures are necessary in German vocational education and training policy and practice to support hydrogen-related skills development.

**Methods:** The project uses a qualitative research design consisting of sector analyses, expert interviews, and case studies, and examines the entire hydrogen value chain from production to application areas such as steel, chemicals, mobility, and heat supply.

**Findings:** The contribution focuses on the mobility and transport sector, specifically on skilled workers in automotive workshops. At this point, initial results suggest that there is no need for a specific hydrogen training occupation. Instead, specific training offers are required in vocational education and training to address qualification gaps in specific occupations, ensuring that skilled workers are prepared to work with hydrogen technologies.

### Keywords

hydrogen, green transition, VET, mobility and transport

### 1 VET as a blind spot in discussions about Hydrogen

Hydrogen and its secondary products are a key component in the transition towards a greener economy. In the transformation of the energy system, hydrogen offers a promising opportunity to replace fossil energy carriers where battery or direct electric systems cannot meet high energy demands, such as for mobility applications or heat supply (Fraunhofer IPT, 2021). In the chemical and steel industry, hydrogen will be decisive to replace fossil raw and auxiliary materials and to avoid process emissions (IEA, 2020). Generally speaking, power-to-X technologies enable a deep integration of energy sector infrastructures, industries, and the transportation sector (sector coupling) to provide a comprehensive supply of renewable energy. Thanks to its flexible production and storage options, hydrogen also enables more efficient



system integration of renewable energies, especially when surplus electricity cannot be fed into the grid during particularly windy or sunny phases (Wietschel et al., 2018).

In 2020, Germany introduced its National Hydrogen Strategy, an ambitious roadmap to build a large-scale hydrogen economy through the market ramp-up of hydrogen technologies, fostering research and development, and building international markets and partnerships. With the coalition agreement the new government signed in 2021, the initial goal to reach hydrogen productions capacities of 5 GW by 2030 was even doubled to 10 GW (Federal Ministry for Economic Affairs and Energy, 2020). Skilled workers, who manufacture hydrogen technologies, maintain day-to-day operations and contribute important impulses for innovation are indispensable for putting the hydrogen strategy into practice (Steeg et al., 2022). However, political hydrogen strategies at the federal, state and regional levels in Germany often recognise the need to strengthen vocational education and training for the hydrogen economy, but they do not name specific measures or need for action. In general, workforce-related discussions regarding hydrogen largely focus on academically trained professions, while the VET level is often neglected. While quantitatively oriented studies predict a high employment potential in the hydrogen economy (e.g. RolandBerger, 2020), qualitative employment issues have so far been little examined in Germany. From the perspective of vocational education and training research, there is a research gap regarding the question of how work tasks, work processes, and skills requirements change along the hydrogen value chain and whether existing occupational profiles and regulatory instruments are sufficient.

## **2 H2PRO: Skills anticipation and research design**

The goal of the project H2PRO at the German Federal Institute for Vocational Education and Training (BIBB) is to identify new skills requirements and qualification needs in mid-level professions along the hydrogen value chain and to derive recommendations for action for political and practice-supporting actors in initial and further training. The project ties in with the German National Hydrogen Strategy, which aims at "further developing vocational [...]training in the field of hydrogen technologies" (Federal Ministry for Economic Affairs and Energy, 2020, S. 24). Throughout the project, the entire hydrogen value chain, spanning from production to application areas such as the steel and chemical industry, mobility, and heat supply, will be analysed.

The following questions will be answered in the course of the project:

- I. Which training professions and further training strategies are of particular importance at the intermediate skilled worker level for the implementation of the hydrogen strategy?
- II. What additional qualitative qualification requirements are likely to arise?
- III. Are the necessary qualification contents already anchored to a sufficient extent in the regulatory instruments?
- IV. What recommendations for regulatory and practice-supporting measures are derived on the basis of the identified qualification needs?

Since hydrogen is a new field of technology that many companies are slowly integrating into their portfolios and production processes, changes on work levels have not yet unfolded on a broad scale. Therefore, the research represents a skills anticipation approach to identify changes in work tasks, as well as new knowledge and skills needs that could become standard requirements in the different areas of the hydrogen economy. Skills anticipation in occupational sciences aims to sustainably secure vocational competence and prevent skills mismatches in light of new technologies and forms of labour (Spöttl & Windelband, 2006). This information provides stakeholders with a more precise direction for skills investments and for designing future-oriented vocational profiles (CEDEFOP, 2017; ILO, 2017). To accurately determine how work tasks, work processes, and skills requirements are changing and whether profiles of

training occupations need to be adjusted, a qualitative research design is used that consists of a sectoral analysis, expert interviews and case studies.

- **Sectoral analysis:** The sectoral analysis opens up a structured approach to the research field. In the case of the hydrogen economy, the primary aim is to discuss sector-specific structures and changes associated with the manufacture and application of hydrogen technologies at the product, production, market and organizational levels, and from there shed light on "dimensions of skilled labour" (Spöttl, 2005). At the occupational level, the sector analysis will provide initial delineations of areas of work and professional profiles, and highlight forward-looking qualification activities.
- **Expert interviews:** Building on the interim results of the sector analysis, guided expert interviews will be conducted with persons from associations, chambers, research institutions, educational institutions and companies.
- **Case studies:** The core of the research project consists of case studies, in which work tasks and processes are analysed, taking into account the respective workplace and operational structure. Hydrogen is a relatively young technology field that encompasses very heterogeneous industries and types of companies. Therefore, the case studies should also reflect the company's level of technology and market experience. To examine and reflect work tasks and skills requirements within the different operational contexts, processes and situations, work process studies, in which expert interviews and observation methods are combined (Becker, 2018a; Röben, 2018), are the main focus of the case studies.

### 3 VET for the green economy in Germany

The research on skills requirements for the hydrogen economy provides an extension of earlier research on VET for the green economy in Germany, which mainly focusses on renewable energy and energy efficiency. It is important to note that the German VET system is strongly institutionalised and characterised by federally recognised occupations with defined occupational profiles that are trained through a dual system of vocational school and in-company training. Training regulations which comprise occupational profiles and standards and contents for in-company-training are developed through negotiations between the government, employers' associations and unions (BIBB, 2014).

The example of renewable energy shows that there was no need to establish a specific occupation. Instead, new technologies and learning content were integrated into the training regulations and curricula of existing occupations. Technical occupations often have broad skills profiles that provide a solid foundation for many tasks in the green economy. Furthermore, training regulations and curricula are usually formulated in a way that enables companies and schools to incorporate technological innovations into vocational and educational training if necessary. Skilled workers can build on their basic training by specializing in specific technologies and areas of work through further training and certificates offered by chambers and other training providers.

### 4 The role of hydrogen in the mobility and transport sector

With its Federal Climate Change Act the German government set the goal to reduce CO<sub>2</sub> emission of the mobility and transport sector to 85 mio. t by 2030. In 2021 the mobility and transport sector emitted around 148 mio. t of CO<sub>2</sub>-equivalents. In January 2023, little over one million BEV (battery electric vehicles) were sold in Germany. While for passenger cars BEV are expected to be the dominant solution towards zero emission due to their better efficiency and their driving range continuously improving, hydrogen brings the opportunity to replace fossil fuels in segments where battery electric powertrains are not able to serve high energy

demands or that require long driving range and quick refuelling. Therefore, hydrogen-based powertrains are gaining relevance in fields such as heavy-duty transportation, public transportation and agricultural and construction machinery (Fraunhofer IPT, 2021). The dominant type of hydrogen-powered vehicles is FCEV (fuel cell electric vehicles). Fuel cells convert hydrogen into electrical power through chemical reaction, which powers an electric drive train. Besides that, hydrogen can be used in combustion engines or as a basic material for synthetic fuels. In heavy-duty transportation, non-European manufacturers are already offering fuel cell trucks, and several European manufacturers have announced plans to begin serial production between 2025 and 2028. In public transportation, around one hundred fuel cell buses are already in use in various German cities, and their numbers are expected to grow rapidly over the next few years due to the Clean Vehicles Directive, which sets national targets for the procurement of low- and zero-emission vehicles in the public sector (European Union, 2019). In the agricultural and construction machinery sectors, where attachments and working functions of the vehicles require additional energy and long working hours are needed, battery electric systems are not sufficient. As a result, some manufacturers are developing prototypes that use fuel cells or hydrogen combustion engines.

In the automotive and supplier industry as well as in affiliated service areas, hydrogen is part of a broad structural change, which is being driven forward by the shift from combustion engines to electric powertrains. Electric powertrains comprise significantly fewer parts and components and require new production structures and processes with higher potentials for automation, which results in lower employment requirements and electrical and IT occupations gaining relevance (Dispan, 2013; Fraunhofer IAO, 2019). Even though the production of fuel cells and tank systems for FCEV holds additional potential for employment and value creation, it won't balance out the expected job reduction connected to the change in production towards electric drive systems in Germany (NPM, 2021).

## **5 Occupational changes and qualification requirements in electromobility**

Since FCEV are also electric vehicles, qualifications for high-voltage drive systems are a basic requirement for professional practice in the hydrogen mobility. Therefore, it is worth taking a look at previous changes for automotive professionals in the rapidly developing field of electromobility. Electric drive systems operate with voltages up to 1000 volts, whereas ICEV are only equipped with 12 or 48-volt electrical systems. Working on electrical drive systems requires basic knowledge of electrical measurement technology, knowledge of potential hazards and their avoidance, skills such as conducting analyses, error diagnosis and measurements, as well as the evaluation of measurement results and the installation and removal of high-voltage system components (Becker, 2018b; Kohl, 2018a). Kohl summarizes that compared to a previously more "mechanical and visually controlled way of working" in automotive professions, electromobility represents a "significantly more abstract area of work" that "requires a new electrical way of thinking and working" (2018b, S. 26). In 2013, the basic qualifications for working on high-voltage drive systems were integrated into the basic training for the occupation of "automotive mechatronics service technician" with the last adjustment of regulatory instruments. In addition, apprentices have the option to specialize in electromobility (BIBB, 2013). To ensure that all apprentices receive basic qualifications for high-voltage drive systems, regardless of whether their training company works with electric vehicles, a standardized course for inter-company training has been introduced (Syha, 2016).

## **6 Additional training needs for workshop personnel in the hydrogen mobility using the example of automotive mechatronics technicians.**

Fuel cells have not yet been integrated into the training of automotive professionals. However, working with fuel cell drives requires qualifications in high-voltage and gas systems. Workshop personnel working on fuel cell systems typically perform tasks such as conducting leakage, tightness, and functional tests on the gas system, flushing the gas system, diagnostic procedures, as well as removal and installation of components. It is essential to consider safety aspects when working with hydrogen vehicles. Hydrogen has a broad explosive range and requires lower ignition energy than other fuels. Besides that, risk of injury exists due to high gas pressures. In the case of liquid hydrogen, the cryogenic temperature of -253 degrees Celsius poses an additional risk. Additional skills for working with fuel cell and tank systems include safe handling of high-pressure system components, knowledge of substance behaviour and hazard avoidance, system understanding for performing diagnostics and analyses, and application of tools and work equipment. In addition to new skills requirements, the workplace also changes, for example, because hydrogen workshops require explosion protection devices such as sensors and ventilation systems, as well as overhead workstations and cranes, for example, because in hydrogen buses, the fuel cell and tanks are mounted on the roof.

As the example of automotive mechatronics shows, the training occupation provides a very good basis for working in hydrogen mobility, especially since qualifications for electric drives are already anchored in the basic training. To qualify skilled workers for work in hydrogen workshops, demand-oriented further training is necessary. In the further course of the H2PRO project it will be necessary to examine based on the overall needs whether it makes sense to include hydrogen-related training and teaching content as mandatory in the basic training for automotive mechatronics technicians.

## **7 Initial findings: No need for a hydrogen-related training occupation and the role of regional skills ecosystems**

At this point in research, it is assumed that there is no need for a specific hydrogen-related training occupation such as a "hydrogen technician" in Germany. Many technical occupations have broad skills profiles that provide a good foundation for working in different fields of the hydrogen economy. However, there is a need for tailored training and education programs to provide specific qualifications for working with hydrogen that should be provided in time to avoid qualification bottlenecks during the ramp-up of hydrogen technologies.

Initial findings from the H2PRO project also show that training needs are currently covered by what can be characterised as regional skills ecosystems. According to Buchanan et al. (2017), skills ecosystems refer to "regional or sectoral social formations in which human capability is developed and deployed for productive purposes". The concept is of great benefit in this case because it offers a lens through which the evolvement of qualification structures for skills that are yet not covered by training regulations or school curricula can be analysed on a regional basis. The hydrogen economy will develop from individual regions and networks, where different qualification needs exist depending on the local sectors and hydrogen technologies. Currently, these needs are met through individual training programs and certificates designed and offered through cooperation of local actors such as chambers, training providers or research institutes. In some regions, analyses are conducted initially to determine what qualification needs exist and what potentials are available to set up specific training programs (e.g. H2Skills, 2022).

In the further course of the project, it is necessary to further examine for individual training occupations where qualification gaps exist for working with hydrogen. Furthermore, it will be examined how training companies and vocational schools can be supported in teaching hydrogen-related content and skills. As mentioned before, qualified professionals are essential

for the successful establishment of a hydrogen economy and for the green transformation as a whole. Other sectors have already shown that a shortage of skilled workers can slow down the expansion of green technologies. Therefore, it is even more important to identify potential qualification and skilled worker shortages in the hydrogen economy at an early stage in order to prevent similar effects.

## References

- Becker, M. (2018a). Beobachtungsverfahren. In F. Rauner & P. Grollmann (Eds.), *Handbuch der Berufsbildungsforschung* (3rd ed., pp. 758–763). wbv Media.
- Becker, M. (2018b). Veränderter Qualifizierungsbedarf für Kfz-Mechatroniker/innen durch Elektromobilität. In G. C. Goth, S. Kretschmer, & I. Preiffer (Eds.), *Auswirkungen der Elektromobilität auf die betriebliche Aus- und Weiterbildung* (pp. 33–49). wbv.
- BIBB. (2013). Verordnung über die Berufsausbildung zum Kraftfahrzeugmechatroniker und zur Kraftfahrzeugmechatronikerin. [https://www.bibb.de/dienst/berufesuche/de/index\\_berufesuche.php/profile/apprenticeship/nh324578](https://www.bibb.de/dienst/berufesuche/de/index_berufesuche.php/profile/apprenticeship/nh324578)
- BIBB. (2014). Training regulations and how they come about. Bonn. <https://www.bibb.de/dienst/publikationen/en/7324>
- Buchanan, J., Anderson, P., & Power, G. (2017). Skill Ecosystems. In J. Buchanan, D. Finegold, K. Mayhew, & C. Warhurst (Eds.), *The Oxford Handbook of Skills and Training* (pp. 444–465). Oxford University Press.
- CEDEFOP. (2017). Skills Anticipation: Looking to the Future [Briefing Note]. [https://www.cedefop.europa.eu/files/9124\\_en.pdf](https://www.cedefop.europa.eu/files/9124_en.pdf)
- Dispan, J. (2013). Elektromobilität: Schlüsselfaktor Qualifikation. Informationsdienst Des IMU-Institut(1).
- European Union. (2019). Directive (EU) 2019/1161 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 June 2019. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L1161&from=EN>
- Federal Ministry for Economic Affairs and Energy. (2020). The National Hydrogen Strategy. [https://www.bmwk.de/Redaktion/EN/Publikationen/Energie/the-national-hydrogen-strategy.pdf?\\_\\_blob=publicationFile&v=6](https://www.bmwk.de/Redaktion/EN/Publikationen/Energie/the-national-hydrogen-strategy.pdf?__blob=publicationFile&v=6)
- Fraunhofer IAO. (2019). ELAB 2.0: Wirkungen der Fahrzeugelektrifizierung auf die Beschäftigung am Standort Deutschland. Abschlussbericht. <https://public-rest.fraunhofer.de/server/api/core/bitstreams/e391ba92-e041-48f9-9feb-b5850a305b65/content>
- Fraunhofer IPT. (2021). The Relevance of Fuel Cells for Mobility Applications. Discussion Paper. Aachen. <https://www.ipt.fraunhofer.de/en/publications/whitepaper-trendreports-studies/relevance-of-fuel-cells-for-mobility-applications.html>
- H2Skills. (2022). Branchenübergreifende Bedarfsanalyse für Qualifizierungsangebote im Wasserstoff-Kontext in Nord-Ost-Niedersachsen. IHK Lüneburg-Wolfsburg; HWK Braunschweig-Lüneburg-Stade. <https://www.wasserstoff-niedersachsen.de/wp-content/uploads/2022/09/H2Skills-Bedarfsanalyse-Qualifizierung-Wasserstoff.pdf>
- IEA. (2020). Iron and Steel Technology Roadmap: Towards more sustainable steelmaking. Paris. [https://iea.blob.core.windows.net/assets/eb0c8ec1-3665-4959-97d0-187ceca189a8/Iron\\_and\\_Steel\\_Technology\\_Roadmap.pdf](https://iea.blob.core.windows.net/assets/eb0c8ec1-3665-4959-97d0-187ceca189a8/Iron_and_Steel_Technology_Roadmap.pdf)
- ILO. (2017). Skill Needs Anticipation: Systems and Approaches: Analysis of stakeholder survey on skill needs assessment and anticipation. [https://www.ilo.org/wcmsp5/groups/public/---ed\\_emp/---ifp\\_skills/documents/publication/wcms\\_616207.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---ifp_skills/documents/publication/wcms_616207.pdf)

- Kohl, M. (2018a). Auszubildende in der Automobilindustrie: Praxisnahe Qualifizierung für das Arbeiten an Hochvoltfahrzeugen. In G. C. Goth, S. Kretschmer, & I. Preiffer (Eds.), *Auswirkungen der Elektromobilität auf die betriebliche Aus- und Weiterbildung* (pp. 75–91). wbv.
- Kohl, M. (2018b). Elektromobilität, Digitalisierung und Industrie 4.0 als Innovationstreiber - neue Produkte und Produktionsprozesse bedingen neue Kompetenzenanforderungen. In G. C. Goth, S. Kretschmer, & I. Preiffer (Eds.), *Auswirkungen der Elektromobilität auf die betriebliche Aus- und Weiterbildung* (pp. 11–32). wbv.
- NPM. (2021). Quantifizierung von Beschäftigungseffekten durch Leistungselektronik und Brennstoffzellenfahrzeuge: AG4 - Zwischenbericht. Nationale Plattform Zukunft der Mobilität. [https://www.plattform-zukunft-mobilitaet.de/wp-content/uploads/2021/10/NPM\\_AG4\\_Leistungselektronik-1.pdf](https://www.plattform-zukunft-mobilitaet.de/wp-content/uploads/2021/10/NPM_AG4_Leistungselektronik-1.pdf)
- Röben, P. (2018). Berufswissenschaftliche Aufgabenanalyse. In F. Rauner & P. Grollmann (Eds.), *Handbuch der Berufsbildungsforschung* (3rd ed., pp. 735–739). wbv Media.
- RolandBerger. (2020). Potenziale der Wasserstoff- und Brennstoffzellenindustrie in Baden-Württemberg. Studie im Auftrag des Landesministeriums für Umwelt, Klima und Energiewirtschaft Baden-Württemberg. [https://um.baden-wuerttemberg.de/fileadmin/redaktion/m-um/intern/Dateien/Dokumente/6\\_Wirtschaft/Ressourceneffizienz\\_und\\_Umwelttechnik/Wasserstoff/200724-Potentialstudie-H2-Baden-Wuerttemberg-bf.pdf](https://um.baden-wuerttemberg.de/fileadmin/redaktion/m-um/intern/Dateien/Dokumente/6_Wirtschaft/Ressourceneffizienz_und_Umwelttechnik/Wasserstoff/200724-Potentialstudie-H2-Baden-Wuerttemberg-bf.pdf)
- Spöttl, G. (2005). Sektoranalysen. In F. Rauner (Ed.), *Handbuch Berufsbildungsforschung* (pp. 112–118).
- Spöttl, G., & Windelband, L. (2006). Berufswissenschaftlicher Ansatz zur Früherkennung von Qualifikationsbedarf, 39(3), 72–91.
- Steeg, S., Helmrich, R., Maier, T., Schroer, P., Mönning, A., Wolter, M., Schneemann, C., & Zika, G. (2022). Die Wasserstoffwirtschaft in Deutschland: Folgen für Arbeitsmarkt und Bildungssystem.: Eine erste Bestandsaufnahme. <https://lit.bibb.de/vufind/Record/DS-779809>
- Syha, J. (2016). Hochvolt-Qualifizierung in der überbetrieblichen Lehrlingsunterweisung. *Lernen & Lehren*, 31(2), 63–68.
- Wietschel, M., Plötz, P., Klobasa, M., Müller-Kirchenbauer, J., Kochems, J., Hermann, L., Grosse, B., Necken, L., Küster, M., Naumann, D., Kost, C., Fahl, U., Timmermann, D., & Albert, D. (2018). Sektorkopplung - Was ist darunter zu verstehen? *Zeitschrift Für Energiewirtschaft*, 43, 1–10.

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Sekmokas, M., Sai, A., Friedel, M. & Tilon, N. (2023). Modelling skills mismatch evolution in the European Union. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 407–423). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7822461>

## Modelling Skills Mismatch Evolution in the European Union

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### Abstract

Ensuring, that the supply of skills matches their demand in the labour market is a persistent policy concern. As a consequence, there are regular efforts to estimate skills supply-demand imbalances and project their evolution over time. However, such projections may not always take into account the complex dynamic effects, present in education and labour market systems. System dynamics (SD) modelling is well-placed to take into account such effects. Therefore, this paper attempts to model the evolution of supply, demand and imbalances of skills in the European Union, also taking into account dynamic factors, such as policy choices (e.g., education financing) and/or socio-economic tendencies (e.g., the attractiveness of higher education). The modelling exercise demonstrates that SD may be used to model skills supply-demand systems and that it can be calibrated to perform in line with historical data. Using this model, the future projection of skills mismatch evolution indicates, that by the mid-2030s an over-supply of high-skilled labour may appear in the EU. This may also happen much earlier if post-secondary VET qualifications would be considered well-matched with some of the jobs requiring a high level of skills, as has been argued to be the case by some authors earlier. There is a potential for further refining and extending this analysis with a more detailed definition of mismatch, longer time series, country-level data analysis and broadening geographical coverage.

### Keywords

skills mismatches, education, labour market, system dynamics

### 1 Introduction

There is a persistent policy concern as to what extent the available workforce skills correspond to the skills requirements of jobs and how well the education systems can close any such gaps. The pan-European policy objectives of improving the skills of European citizens via the EU



skills policy testify to this concern (European Commission, 2020). In response to this policy challenge, there have been a number of efforts to estimate skills supply, demand and the imbalances between the two, as well as develop projections of their evolution into the future (Biagi et al., 2020; Sekmokas et al., 2020; CEDEFOP, 2018).

System dynamics (SD) is a useful tool to provide insights into the evolution of complex systems as well as provide decision support. In particular, it can help reveal complex, non-linear behaviour, thus enhancing understanding and anticipation of changes. Multiple examples exist in applying SD for strategic workforce planning, for example at a firm (Größler and Zock, 2010) or a sectoral (Willis and Kunc, 2018) level. The aim of this paper is to develop an SD model covering the whole labour market of a large territorial entity – the European Union.

## **2 A concise review of the literature**

Multiple domains in the social sciences and humanities are pursuing questions related to education and work - with sociology and economics, in particular, having a large corpus of research available. In economics, for example, human capital theory is a dominant perspective on how individuals and households make decisions to invest in education and how these generate returns in the labour market (Kremer and Holla, 20019). Sociology, conversely, is often focused on exploring the causes and consequences of inequalities and social stratification - both within education as well as work, going beyond purely economic perspective (Buchmann and Hannum, 2001).

When studying the phenomena of mismatches between education and work, insights from the human capital theory can often be informative. This theory is based on the assumption, that more (less) education than required for a particular profession leads to a return (or penalty), for example, in wages, which would compensate the initial investment in schooling (Bauer, 2002). However, there have been attempts to counterweight this theory with alternative perspectives.

For example, the human capital compensation hypothesis, which is based on the notion that over-educated persons compensate for a lack of other human capital qualities by attaining more schooling than required for a given job, whereas under-qualified workers show strengths in other human capital areas, compensating the lacking years of education (Rubb, 2006; Korpi & Tåhlin, 2006). Thus, it may not be appropriate to measure and explain the extent of mismatch solely on the basis of scholarly education. In summary, according to the compensation theory, the observed educational mismatches do not reflect actual mismatches but rather individual heterogeneity across the working individuals (Korpi & Tåhlin, 2006).

Another alternative theory is the so-called "signaling theory". It suggests that the effect of education may be realized not by changing individuals (i.e., by enhancing their skills), but as a communication tool. Given that it is difficult to observe the actual capabilities of job applicants, education can be an instrument for individuals to showcase to potential employers that they have stronger innate skills and/or attitudes as compared to their peers, who were not able/willing to achieve the same level of education (Ghazarian, 2015).

A further angle to investigate the correlation between higher education and highly skilled work is how society and policy permit new graduates to access wages and employment opportunities that match graduates' skills. However, there is a lot of variation in this regard across countries and in many countries, the graduates are doomed to be overqualified, underpaid, or even unemployed, which may cause political dissatisfaction among them. Ansell and Gingrich (2017) state that higher education systems vary dramatically in their reliance on private funds, their stratification and the ways they shape and reshape class and race relations in society.

In response to this policy ambition, there have been a number of efforts to estimate the supply and demand of, for example, tertiary graduates as well as project these estimates into the future (Biagi et al., 2020). However, these efforts may not always take into account the

possible dynamic (reinforcing and/or balancing) effects present in such systems. Therefore, it can be argued that developing a system dynamics model capturing the evolution of supply and demand for labour as well as their mismatch at different skill levels could be of interest to further enrich this ongoing debate.

### 3 Research questions

Accordingly, this paper aims to simulate the dynamics of skills development (education), skills supply (workforce size) and skills demand (number of jobs), with a focus on tertiary education as well as policy and social factors possibly moderating those dynamics. In particular, the intention is to explore the mechanisms driving over-education and what possible factors influence these mechanisms. More broadly, the main research question addressed in this paper is:

*To what extent a meaningful system dynamics model could be constructed to represent, in line with actual data, the evolution of supply and demand for skills as well as their mismatch in the European Union over time?*

### 4 Methodology

The objective of this study is to test the possibility, based on actual statistical data, to model the evolution and dynamics of the (mis)match between the available workforce and demand for it depending on the level of skills possessed by people and those required at work. This included identifying appropriate measures and data sources, building an SD model and adjusting the model so that simulated values correspond to real data.

#### 4.1 Main definitions

Three broad skill levels (low; medium and high) have been defined in line with international statistical standards and regular practice (Eurostat, 2016). Notably, the level of skills of a person can be defined based on the highest educational attainment level, using the International Standard Classification of Education (ISCED). Similarly, the level of skills demanded in a job can be defined based on the occupational group to which the particular job belongs, using the International Standard Classification of Occupations (ISCO). A match is assumed where the level of education corresponds to the level of skills required in a job.

#### 4.2 Key elements of the model

The central element of the model is the education system, which represents the flow of individuals through education until they exit (or drop out) from it. Subsequently, they enter the labour market, contributing to the pool of individuals with the same level of education, who are available for work. For reasons of simplicity, there are only two education levels represented in the system - upper secondary education and tertiary education at the bachelor's degree level.

However, these two education levels, in terms of absolute student numbers represent the two primary points of transition from education to the labour market. This is due to the fact that in a large number of countries individuals are legally obliged to attend school until the end of upper-secondary education, thus there are only very few persons leaving school earlier. Furthermore, for the purpose of this model, individuals who would complete education at higher levels beyond Bachelor's degree would remain counted as highly skilled and thus would not change the skills supply or mismatch dynamics as measured in the model.

Individuals, who complete education either at the upper secondary or tertiary level then enter the labour market contributing to the pool of individuals with the same level of education, who are available for work. At the end of their working life, individuals also retire and thus are

removed from these workforce pools. The model also represents the fact, that not all persons, who are available for work, are actually working. Also, in real life, the probability of employment differs depending on their level of education (skills). This is represented in the model by differentiating the proportion of individuals who are employed, in line with the actual data of employment rates of individuals with different levels of education.

Another important element of the model is the representation of skills demand. This is shown as the number of jobs assumed to require a certain level of education (and thus skills), with a focus on jobs at medium and high skill levels and their change over time. Ultimately, the model allows calculating skills supply-demand imbalance indicators, i.e., to what extent the number of employed individuals, at each skills level, is larger (or smaller) as compared to the number of jobs available at that skills level. Mismatch indicators are standardized, showing negative values when, at a certain skills level, there is an undersupply of the workforce, positive values when there is an oversupply and a zero when there is a perfect match between the two.

Finally, the model also includes two moderating factors (dynamic hypotheses). The first one is that the size of high skilled workforce will influence positively the relative attractiveness of higher education. This is justified by the so-called crowding-out phenomenon (Cockx & Dejemeppe, 2002) when highly educated persons replace less educated ones in jobs that normally do not require high levels of skills. This phenomenon can also be inferred from the relatively significant share of university graduates in the EU, who are considered over-educated for the jobs they do. For example, according to Eurostat experimental statistics, the share of overqualified university graduates in the EU in 2020 was estimated to be 21.5%, increasing slightly from the 20.4% observed in 2008.

The second moderating factor (dynamic hypothesis) is that the size of the highly skilled workforce may have an impact on the policy intended to limit the oversupply of certain skills (i.e., aiming to balance skills supply and demand). Existing literature argues that over-education may be negative effects both at the individual level (through relatively lower wages as compared to their well-matched pairs (De Santis et al., 2021) as well as at the macro level (waste of public resources invested in education (Caroleo & Pastore, 2015)). Therefore, it can be hypothesized that high levels of over-education would likely lead to policy efforts to reduce the number of individuals who acquire higher education degrees. Such policy reaction (among several others) is also suggested in the literature (McGuinness et al., 2018).

### **4.3 Data sources, model calibration and simulation**

The model proposed in this study was simulated using Vensim PLE software. It was calibrated to perform in line with actual data, which is available for the majority of the indicators, except for the two dynamic hypotheses - the effect of the attractiveness of higher education and the policy response to skills oversupply, which are difficult to observe empirically.

The actual data was sourced from two data sources, both available online on the Eurostat data depository: the Unesco-OECD-Eurostat (UOE) joint data collection on education systems and the European Labour Force Survey (LFS). The model was calibrated to represent the evolution of the system as observed through actual data between 2011 and 2020 and then simulate the evolution of the system for 70 years into the future, e.g. until around 2080.

However, it must be noted that the realistic behaviour of the system is only expected to last up until around 2030-2040, as beyond these dates it is expected that a number of assumptions of the current model would not hold any more. This in particular concerns the currently relatively low rate of retirement of highly skilled workers, which would be expected to start increasing, when population cohorts with a higher share of highly skilled workers start reaching retirement age. In other words, currently, the outflow of highly-skilled workers from the available workforce is comparably low, as workers who graduated after the expansion of higher education in most countries still have not reached retirement age.

## 5 Results

Assuming that the key variables such as levels of educational enrolment and graduation, employment rates and job growth rates, will remain stable over time, it seems to be possible to simulate the behaviour of the system over time following the past trends.

### 5.1 Analysis of the trends in the past

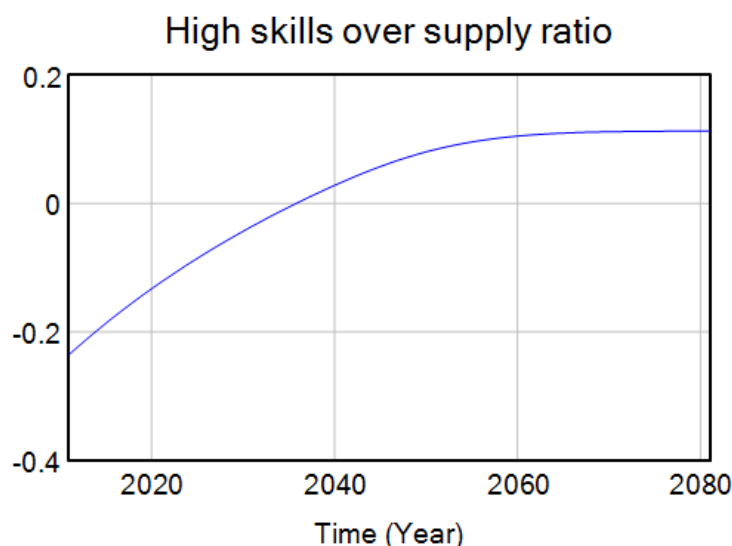
Based on available data, we observe that during the last decade (or more specifically after 2013, which was the first year of the implementation of the new ISCED 2011 classification) student numbers in the secondary and tertiary education systems in the European Union on average have been remarkably stable. On the other hand, we do observe a continuous increase in the size of the workforce with a high level of education (and thus, presumably, a high level of skills) from 64.2 million in 2011 to almost 82 million in 2020. Similarly, we also observe a continuous, even if slower, increase in the number of jobs requiring a high level of skills - from nearly 70 million in 2011 up to almost 80 million in 2020. Absolute numbers reveal, that the size of high skilled workforce, over the period of nearly 10 years, increased by around 18 million, while the number of highly skilled jobs increased only by around 10 million. By 2020, the number of employed high-skilled individuals (at around 68 million) was still quite lower than the total number of high-skilled jobs (at nearly 80 million), a difference of around 13.3%.

### 5.2 Simulating the supply-demand imbalance of high-level skills

When looking over a 70-year horizon (assuming the starting year is 2011), the model estimates that the difference between employed high-skilled workforce and the number of high-skilled jobs would evolve from -24% in 2011 towards -12% in 2021, -0.04% in 2031 and +0.04% in 2041, moving from under to oversupply between the years 2035 and 2036 and finally stabilizing after the 2060s at around the rate of 0.113 (or 11.3% of oversupply).

**Figure 1**

Simulated evolution of high skills imbalance indicator between 2011 and 2081.



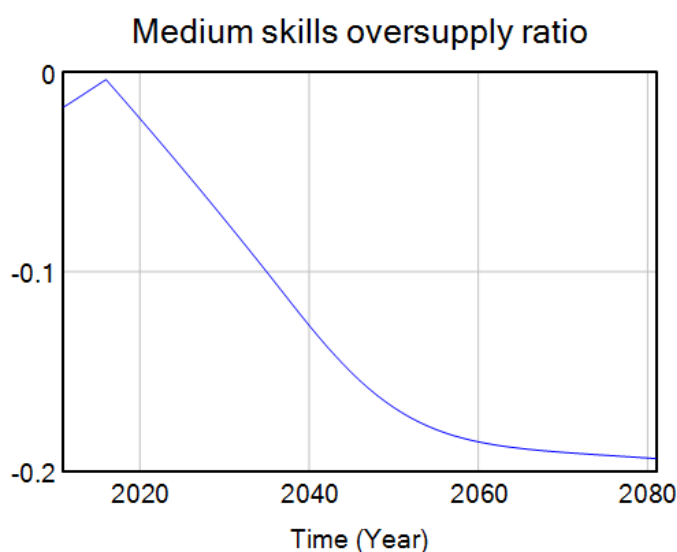
### 5.3 Simulating the supply-demand imbalance of medium-level skills

For medium skills imbalance, a shortage was also observed from 2011, which was declining for a couple of years before starting to increase again from around 2015-2017. The simulation

further extends this declining trend to proceed until the 2050s, then slowing down and around the 2060s presumably stabilizing at a rate of -0.2 (or around 20% of shortage).

**Figure 2**

Simulated evolution of medium skills imbalance indicator between 2011 and 2081.

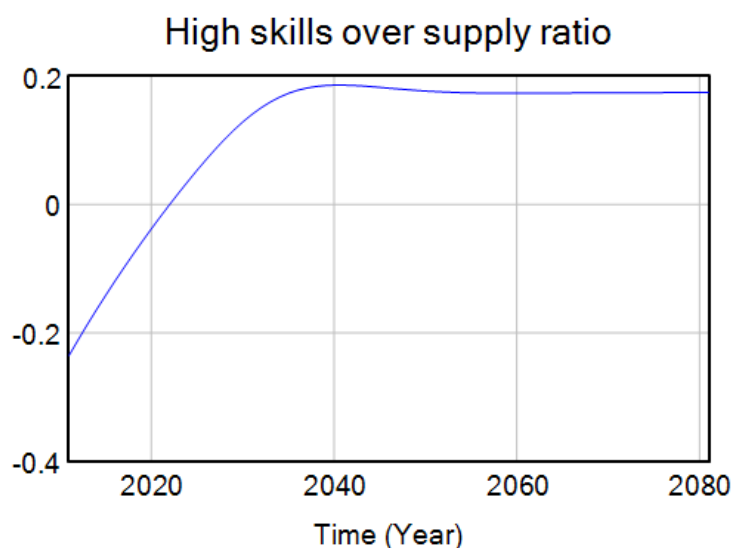


#### 5.4 Simulating the effects of change in immigration levels

One outstanding finding when calibrating the model was the identification of the inflow of highly-skilled workers beyond levels accounted for through the output of education systems in the EU. This inflow has been presumed to represent the net migration of high-skilled labour in the EU. Interesting system behaviour can be observed when modifying the rate of immigration of high-skilled workers, increasing from 1 million per year (as has been on average observed in the data) to 2 million per year. In this case, one can observe a much more rapid increase in the over-supply of high-skill labour, peaking around the year 2040 and later stabilizing at the level of around 0.175 (or 17.5% of oversupply).

**Figure 3**

Simulated evolution of high skills imbalance indicator between 2011 and 2081, with an elevated rate of immigration



## 5.5 Modelling changes in policy sensitivity

Another way to explore the functioning of the model is to assess the impact of the mediating factors (dynamic hypotheses). In the baseline model, the two mediating factors were set not to have an effect until the high skills oversupply ratio goes above 0. When oversupply becomes above zero, they are then modelled to affect the probability of enrollment in higher education, in proportion to the size of the oversupply, multiplied by a factor of 5. Each of the moderating factors acts in an opposite direction, i.e., the crowding-out effect increases the attractiveness of higher education and thus affects the probability of enrollment positively, while the skills oversupply reduction policy affects the probability of enrollment in higher education negatively. These crowding-out or policy sensitivity factors could be adjusted.

For example, when reducing the policy sensitivity factor to 1, there is a strong increase in the number of tertiary education students and the high skills oversupply indicator grows without any stabilization and reaching by 2080 the value of 0.5 (or 50% of oversupply). Conversely, increasing the policy sensitivity factor to 10 makes policy react very strongly to the appearance of high skills oversupply, which promptly leads to a reduction in the number of tertiary education students from an initial 2.6 to 1.68 million and to a stabilization of the high skills oversupply index at a much lower value of 0.048 (or 4.8% of oversupply).

## 5.6 Observations from model calibration

The model parameters were calibrated so that the behaviour of all indicators in the model for which real data is available would approximate, as best as possible, real data. Indicators, for which direct observations were not available are the drop-out rates and retirement rates. Thus, the real drop-out rate was estimated as the difference between the number of new students and the number of graduates, given that within education systems the total number of students enrolled remained stable. Furthermore, it was observed that at the upper-secondary education level, the number of new entrants largely correspond to the number of graduates, eliminating the need for a drop-out variable at that education level. This, however, is counter-intuitive, as other data sources suggest a notable number of drop-outs from secondary education. For example, based on the results from the 2016 EU LFS ad-hoc module, it was estimated that in 2016 there may have been around 800.000 young people aged 18-24, who report having started and then leaving upper secondary education<sup>44</sup>. This may be a measurement artefact and it deserves further analysis.

Another caveat was identified when modelling the evolution of the total size of the workforce depending on skill levels. Such modelling requires setting the volumes of both inflows of new members into those groups (i.e., those who complete education) as well as those who leave those groups (i.e. retire and leave the labour market). Direct data on annual retirement rates are difficult to access, thus a simplified calculation was done to estimate this rate based on the size of cohorts aged 60-64 (which is available from the EU LFS) and dividing it by five to get the size of cohort leaving the workforce every year. Such estimation revealed an accelerating rate of retirement of individuals with medium-level skills, but this acceleration appeared only after 2016. This may also be some data-source-specific artefact and may need further exploration.

Similar estimations made for the highly skilled workforce, however, revealed that there seems to be a significant gap between the inflow (new graduates), estimated outflow (retirement) and the changes in the stock of this workforce group. Notably, the simulated retirement rate seemed to be too big to allow the growth of the highly skilled workforce, observed from the data. Actually, to make sure that the highly skilled workforce would increase

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<sup>44</sup> [https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=lfso\\_16elvncom&lang=en](https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=lfso_16elvncom&lang=en)

at the observed rate, the retirement rate should be zero or even slightly negative - which is highly unlikely. Thus, an additional factor of "immigration" was added, to account for this unexplained inflow of highly skilled workers.

Overall, for the calibration of the model, it was aimed to use, where possible, stable volumes of inflows and outflows, only using accelerating or decelerating rates where a significant deviation from real data was observed, such as the acceleration of retirement rate of medium-skilled individuals after 2016. The final data set including both actual and calibrated values is presented in the technical appendix, in Table A1.

## 6 Discussion and conclusions

Overall, the model seems to suggest that an absolute oversupply of high skills could be reached around the year 2035 if the parameters as set out in the model remain similar to the real-life conditions during this period. The model also suggests that if the effect of two opposite moderating factors with equal strength is included, it could be expected that the skills oversupply ratio could stabilize at around the year 2045. In this model, such moderating factors include a "reinforcing" feedback loop between high skills oversupply and higher education attractiveness, based on the notion of "crowding out" and a "balancing" loop of policy, aiming to limit the waste of public resources resulting in over-education.

The overall process of modelling the supply, demand and mismatch of skills proved to be a relatively straightforward (even if much simplified) exercise. Conversely, setting out the behaviour of moderating factors – the attractiveness of tertiary education and policy of managing skills oversupply - was more challenging to model. This is due to the fact that no data were identified to directly represent the behaviour of such factors in the real world. Some other notable findings from our analysis include the observation, that the reported number of university graduates is too small to fully explain the increase in the size of high skilled workforce in the EU during the last ten years as well as the sensitivity of the model to rates of retirement at different skills levels, which seem to be less stable than expected.

When interpreting the results of this modelling exercise, a number of caveats need to be taken into consideration. For example, the size of the high-skilled workforce is possibly underestimated. Notably, earlier work (Sekmoka, 2021; Sekmoka et al., 2020) has indicated, that some of the medium-level vocational qualifications, particularly those at ISCED levels 4 and 5) are likely to be a good fit for some of the high-skilled jobs particularly those at ISCO level 3). Such adjustment, as calculated for the reference year 2016, resulted at that time in an estimated EU-level high-skilled workforce shortage of only several percentage points (Sekmoka et al., 2020), as opposed to almost 20% shortage as estimated in the model presented in this paper. Other uncertainties, as already mentioned before, include past and future migration rates, retirement rates or drop-out rates from different education levels and all these suggest that care is needed when drawing real-life conclusions from this rather experimental exercise.

Finally, the role of education should not be judged exclusively from the labour market matching perspective, as there may be a variety of effects of mismatch, some of them positive while others negative. Thus, it can be assumed that in some cases the presence of a mismatch may be preferable from an economic or social perspective. At the same time, decisions on the optimal and preferable levels of education should be well-considered. Hopefully, this exercise illustrates the potential of labour market modelling to enrich the evidence base used to inform such decisions.



## References

- Ansell, B., & Gingrich, J. (2017). Mismatch: University education and labor market institutions. *PS: Political Science & Politics*, 50(2), 423-425.
- Bauer, T. K. (2002). Educational mismatch and wages: a panel analysis. *Economics of education review*, 21(3), 221-229.
- Biagi, F., Castaño-Muñoz, J., & Di Pietro, G. (2020). *Mismatch between Demand and Supply among higher education graduates in the EU*. European Union, Luxembourg.
- Buchmann, C., & Hannum, E. (2001). Education and stratification in developing countries: A review of theories and research. *Annual review of sociology*, 27(1), 77-102.
- Busemeyer, M. R. (2014). *Skills and inequality: Partisan politics and the political economy of education reforms in western welfare states*. Cambridge University Press.
- Caroleo, F. E., & Pastore, F. (2015). Overeducation: A disease of the school-to-work transition system. IZA Discussion Papers, No. 9049, Institute for the Study of Labor (IZA), Bonn
- Cedefop (2018). *Skills forecast: trends and challenges to 2030*. Luxembourg: Publications Office. Cedefop reference series, No 108. <https://data.europa.eu/doi/10.2801/626296>
- Cockx, B., & Dejemeppe, M. (2002). Do the Higher Educated Unemployed Crowd out the Lower Educated Ones in a Competition for Jobs?. *Available at SSRN 323595*.
- De Santis, M. O., Gáname, M. C., & Moncarz, P. E. (2022). The impact of overeducation on wages of recent economic sciences graduates. *Social Indicators Research*, 163(1), 409-445.
- European Commission (2020). European Skills Agenda for sustainable competitiveness, social fairness and resilience. Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee and the Committee of the Regions. COM/2020/274 final.
- Eurostat (2016) “*Statistical approaches to the measurement of skills*”. Technical Report Statistical Working Papers, Eurostat.
- Ghazarian, P. (2015). Signaling value of education. *The SAGE encyclopedia of economics and society*, 1, 1476-1477.
- Größler, A., & Zock, A. (2010). Supporting long-term workforce planning with a dynamic aging chain model: A case study from the service industry. *Human Resource Management*, 49(5), 829-848.
- Korpi, T., & Tählin, M. (2006). Skill mismatch, wages and wage growth: overeducation in Sweden, 1974–2000. *Institutet for social forskning (SOFI), Stockholms universitet*.
- Kremer, M., & Holla, A. (2009). Improving education in the developing world: what have we learned from randomized evaluations? *Annu. Rev. Econ.*, 1(1), 513-542.
- McGuinness, S., Bergin, A., & Whelan, A. (2018). Youth Overeducation in Europe: Is there scope for a common policy approach? In *Youth Labor in Transition* (pp. 530-559). Oxford University Press.
- Rubb, S. (2006). Educational mismatches and earnings: Extensions of occupational mobility theory and evidence of human capital depreciation. *Education Economics*, 14(2), 135-154.
- Sekmokas, M. (2021). Skills (Mis)Match Analysis in the EU: Disaggregating "Objective" Mismatch Measures and the Role of Vocational Qualifications. In *Pathways in Vocational Education and Training and Lifelong Learning. Proceedings of the 4th Crossing Boundaries Conference in Vocational Education and Training*, Muttentz and Bern online, 8. - 9. April 2021 (pp. 326–331). European Research Network on Vocational Education and Training, VETNET, University of Applied Sciences and Arts Northwestern Switzerland and Bern University of Teacher Education. <https://doi.org/10.5281/zenodo.4607856>

- Sekmokas, M., Borunsky, L., Horgan, M., Ravet, J., & Nurminen, M. (2020). *Workforce skills and innovation diffusion: trends and policy implications*. EU Working paper.
- Willis, G., Cave, S., & Kunc, M. (2018). Strategic workforce planning in healthcare: A multi-methodology approach. *European Journal of Operational Research*, 267(1), 250-263.

### Biographical notes

**Mantas Sekmokas** is currently an independent consultant. Until mid-2020, he was working for nearly a decade for the European Commission, providing evidence-based advice to underpin EU skills, VET and AL policy initiatives. His academic background includes a MSc in Information Studies from the University of Amsterdam (UvA), a MSc in Cognitive and Decision Sciences from the University College London (UCL) as well as a MSc and a BA in management.

Dr. **Sai** is a Lecturer/Assistant professor at Maastricht University and The Open University of The Netherlands. He has a Ph.D. in Computer Science from SFI Centre for Software Ireland where his research focused on better understanding what decentralization entails in a distributed systems context. His research has been featured in several national and international media outlets (Forbes, Economic Times). His work on centralization has been foundational to policy development around cryptocurrencies. Dr. Sai's work has been cited by SEC in the US, OECD, Ada Lovelace Institute, and Norges Bank in their policy documents. He has also worked as visiting scholar at the University of California, Berkeley where he continued working on promoting scientific rigor in decentralized research. In the past, he has worked as a lecturer at Trinity College Dublin and the University of Amsterdam.

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**Naomi Tilon** has been working for a number of years for the Dutch banking industry in roles related to data analysis. She is also currently a student at the University of Amsterdam within the Information Studies domain.

## Technical appendix

## 1 Model building choices

We first used a causal loop diagram (CLD) to conceptually model our dynamic system and map the relationships of variables around education and the labour market systems, including, where relevant, their relations i.e., the influence of some of the variables on others (see Figure A1 below).

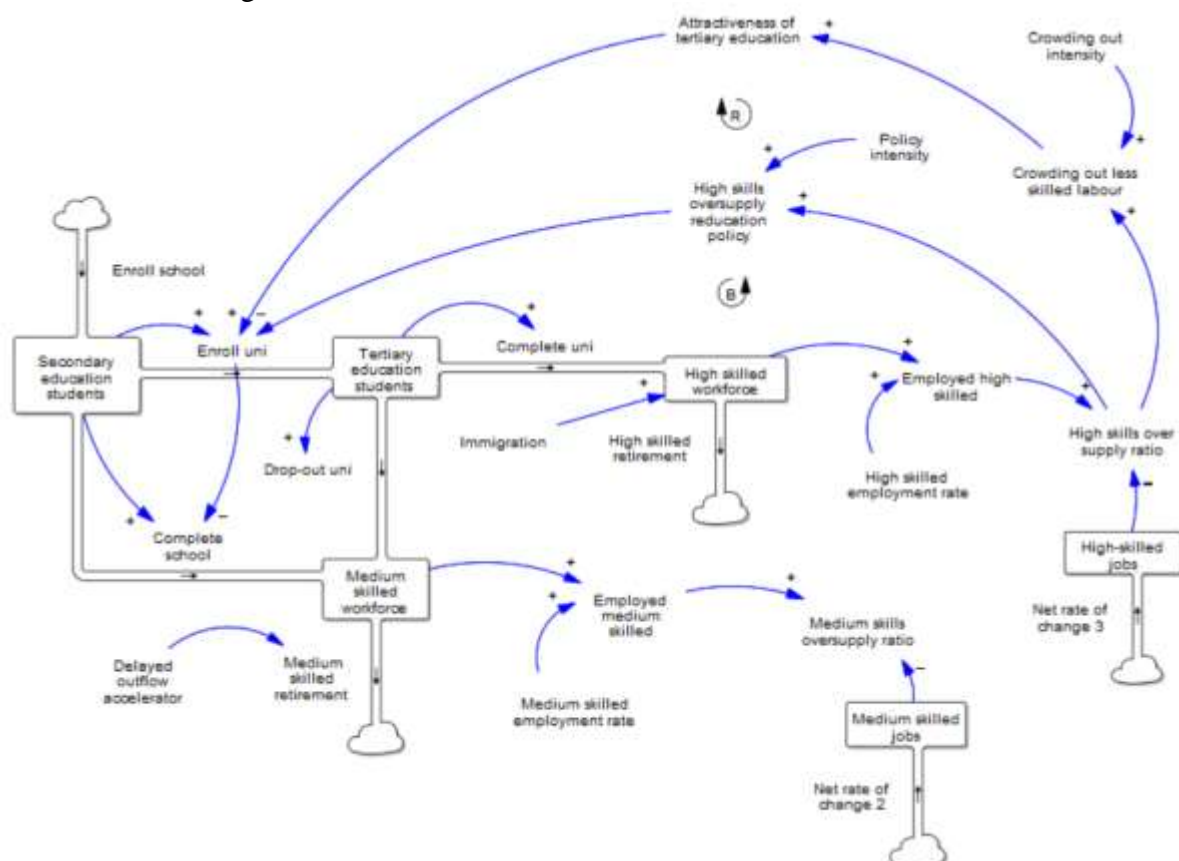
**Figure A1**  
Causal loop diagram

- A reinforcing loop of the crowding-out effects leads to an increase in the attractiveness of higher education. As discussed before, the literature points out that there may be crowding-out effects when there is a significant presence of over-skilled individuals in the labour market. Notably, when competing for less-skilled jobs, over-skilled individuals often out-compete individuals with lower levels of education, even if that is the level most appropriate for particular jobs. As a consequence, in case of oversupply of highly-skilled labour, less skilled labour may appear in an ever more precarious situation - being able to access only the least attractive, lowest paying jobs or not being able to find employment at all. Such a situation would make the relative benefits of higher education persistently larger and thus would be an incentive for more people to pursue higher education. This would even be the case in a situation where the number of high-skilled jobs would be limited, as de-facto high skills level would become a prerequisite to access any type of employment.

In order to run simulations, a Stock and Flow diagram (SFD) was built (see Figure A2 below). Diagrams are ways of representing the structure of a system with more detailed information than is shown in a causal loop diagram. Stocks are levels, they are fundamental to generating behavior in a system; flows can be considered as rates, which cause stocks to change by increasing or decreasing them.

**Figure A2**

Stock and flow diagram



## 2 Key assumptions

From a very general perspective, the key assumption behind the model is that skills supply (e.g., through education) and skills demand (e.g. through job creation) are independent processes and the main mechanisms linking those systems are the individuals' (households') and policy reactions to the imbalance between the two, subsequently effecting skills supply (education) systems. Thus, three high-level elements are the skills supply system; the skills demand system and the feedback loops connecting them. In addition, a significant number of other assumptions, to simplify the model, have been made (though compiling an exhaustive list of all the assumptions behind the model is probably not feasible):

- Exclusion of many other possible links within the system, for example, the impact policy has on such variables as immigration, employment rates and job growth rates;
- Exclusion of the possible interaction between feedback loops - for example, the impact of popular opinion on the attractiveness of higher education on oversupply mitigation policy;
- Exclusion for temporal effects, i.e., future expectations. Different actors may have different expectation horizons and may start reacting much more in advance to expected changes in conditions as opposed to other actors;
- Exclusion of the majority of demographic effects on population variables (different cohort sizes; population ageing; falling birth rates);
- Using constant rates of changes, for example as regards retirement or as regards the growth in jobs, which are unlikely to persist in the long term.

## 3 Key uncertainties

It is also important to note the two major sources of uncertainty in the model, which may limit its validity, especially over the long term:

- The largest scope of uncertainty is related to the functioning and the mechanisms of feedback loops. As mentioned in the text before, it is difficult to directly observe the effects of moderating factors such as policy reaction or attractiveness of higher education, their change over time and their relation to other factors. Thus, at this stage, these feedback loops are mostly for illustration purposes and they would deserve much more detailed analysis before their effects could be established with more reliability;
- Another significant scope of uncertainty is the long-term changes in the structure of the job market (i.e., long-term evolution of structural change). Until recently, structural change has been progressing across most countries in a rather linear manner, with job jobs moving first from agriculture to industry and later from industry to services. But these mechanisms lately seem not to hold any more, as many developing countries are not able to build a strong industrial base. There are also fears that automation may start negatively affecting service jobs. Thus, overall, long-term projections of skills demand have a large element of uncertainty.

## 4 Ordinary differential equations

The overall model consists of six stocks; thus six ordinary differential equations (ODEs) can be developed: the stock of secondary school students, the stock of university students, the stock of medium-skilled workforce, the stock of highly skilled workforce, the stock of medium-skilled jobs and the stock of high skilled jobs. Most of the equations are rather straightforward as they do not have many interaction terms with other parameters in the model.

The ODE for the stock of secondary school students includes a fixed inflow of new students and an outflow of graduates, who may either choose a higher education pathway or enter the labour market, with  $x_1$  being the stock of secondary school students at the time  $t$ ;  $a$ ,  $b$  and  $c$  are model parameters; the model includes two inter-dependent outflows from the stock which always have to sum-up to 100%. It can thus be expressed as:

$$\frac{Dx_1}{Dt} = a - \frac{x_1}{b} - \left( \frac{x_1}{c} - \frac{x_1}{b} \right) = a - \frac{x_1}{c}$$

The ODE for the stock of university students includes an inflow of secondary school graduates who enter university and two outflows – graduated students and drop-outs, with  $x_1$  being the stock of secondary school students at time  $t$ ;  $x_2$  being the stock of university students at time  $t$ ;  $b$ ,  $d$  and  $e$  being model parameters; the model includes two independent outflows from the stock. It can thus be expressed as:

$$\frac{Dx_2}{Dt} = \frac{x_1}{b} - \frac{x_2}{d} - \frac{x_2}{e}$$

The ODE for the stock of medium-skilled workforce includes an inflow of secondary school students who enter labour market and an inflow of drop-outs from higher education minus a fixed “retirement” outflow, with  $y_1$  being the stock of medium-skilled labour at time  $t$ ;  $x_1$  being the stock of secondary school students at time  $t$ ;  $x_2$  being the stock of university students at time  $t$ ;  $c$ ,  $b$ ,  $e$  and  $f$  being model parameters; furthermore, even if outflow in the model is set as a fixed parameter, in a more precise model it could be expressed as an interaction term between the stock ( $y_1$ ) and one or several parameters. It can thus be expressed as:

$$\frac{Dy_1}{Dt} = \left( \frac{x_1}{c} - \frac{x_1}{b} \right) + \frac{x_2}{e} - f$$

The ODE for the stock of high skilled workforce includes an inflow of university graduates, plus a fixed inflow of immigration, minus a fixed “retirement” outflow, with  $y_2$  being the stock of high skilled labour at time  $t$ ,  $x_2$  being the stock of university students at time  $t$ ,  $d$ ,  $g$  and  $h$  being model parameters; furthermore, even if outflow in the model is set as a fixed parameter, in a more precise model it could be expressed as an interaction term between the stock ( $y_1$ ) and one or several parameters. It can thus be expressed as:

$$\frac{Dy_2}{Dt} = \frac{x_2}{d} + g - h$$

The ODE for the stock of medium-skilled jobs includes the inflow of a net rate of change set as a fixed parameter  $i$ , with  $z_1$  being the stock of medium-skilled jobs at time  $t$ . It can thus be expressed as:

$$\frac{Dz_1}{Dt} = i$$

The ODE for the stock of high-skilled jobs includes the inflow of a net rate of change set as a fixed parameter  $j$ , with  $z_2$  being the stock of medium-skilled jobs at time  $t$ . It can thus be expressed as:

$$\frac{Dz_2}{Dt} = j$$

## 5 Stocks, parameters and constants

The stocks and flows used in the model are as follows:

- The stock of upper-secondary school students. The stock is a function of an inflow of new entrants into upper-secondary education and an outflow of graduates from upper-secondary education, with a portion of graduates entering the labour market directly and another portion entering further studies in higher education. The initial value is set at 17.5 million, in line with the actual data varying between 17 million and 18 million. Data sources: Eurostat, UOE data collection, online table code for the stock of students is [educ\_uae\_enrs05], online table code for the new entrants is [educ\_uae\_ent01] and the online table code for the graduates is [educ\_uae\_grad01].
- The stock of university students at the Bachelor's level. The stock is a function of an inflow of new entrants into higher education Bachelor's programmes and an outflow of graduates and drop-outs. The initial value is set at 10 million, in line with the actual data fluctuating between 9.8 and 10.7 million students. Data sources: Eurostat, UOE data collection, online table code for the stock of students is [educ\_uae\_enra02], for the new entrants is [educ\_uae\_ent01] and for graduates is [educ\_uae\_grad01].
- The stock of medium-skilled workforce. The stock is a function of an inflow of graduates from secondary education who enter the labour market as well as drop-outs from tertiary education as well as a "retirement" outflow. As retirement levels are not observed directly, they are estimated as one-fifth of the size of the medium-skilled cohort at ages 60-64. The outflow is also affected by a sudden increase in its rate observed from the year 2016. The initial value of the stock is set at 130 million, in line with the actual data varying between 131 and 130 million. Data source: Eurostat, EU labour force survey, online table code [lfsa\_pgaed].
- The stock of high skilled workforce. The stock is a function of an inflow of graduates from tertiary education; an inflow of immigrants and a "retirement" outflow. As retirement levels are not observed directly, they are estimated as one-fifth of the size of high skilled cohort at ages 60-64. The initial value of the stock is set at 64.2 million, in line with actual data. Data source: Eurostat, EU labour force survey, online table code [lfsa\_pgaed].
- The stock of medium-skilled jobs. The stock is a function of the net rate of change, calibrated based on actual data. The initial value of the stock is set at 92.6 million, in line with actual data. The net rate of change is fixed at -0.25 million/year, which is an average of the actual data which varies between -3.1 to +1.0 million/year. Data source: Eurostat, EU labour force survey, online table code [lfsa\_egais].
- The stock of high-skilled jobs. The stock is a function of the net rate of change, calibrated based on actual data. The initial value of the stock is set at 69.7 million, in line with actual data. The net rate of change is fixed at +1 million, which is an average of the actual data which varies between -0.1 to +1.9 million/year. Data source: Eurostat, EU labour force survey, online table code [lfsa\_egais].

The other key parameters in the model include:

- The employment rate of the medium-skilled workforce. It is set as a fixed value of 0.7 (or 70%), calibrated based on actual data which fluctuates between 68.7% and 73.4%. Data source: Eurostat, EU labour force survey, online table code [lfsa\_ergaed].
- The size of the employed medium-skilled workforce is a multiplication of the total medium-skilled workforce and medium-skilled employment rate.
- The employment rate of the highly skilled workforce. It is set as a fixed value of 0.83 (or 83%), calibrated based on actual data which fluctuates between 81.3% and 84.8%. Data source: Eurostat, EU labour force survey, online table code [lfsa\_ergaed].
- The size of the employed high-skilled workforce is a multiplication of the total high-skilled workforce and high-skilled employment rate.
- Policy intensity factor. It is set subjectively as a fixed factor with a value of 5, in order to make the effects of the policy reaction visible over the simulation time horizon.
- The skills oversupply reduction policy is set as a conditional equation with a value of 1 if the oversupply index is below or equal to 0. When the oversupply index is above zero, its value is calculated as 1 minus (-) the value of oversupply, multiplied by the policy intensity factor.
- Crowding out intensity factor. It is set subjectively as a fixed factor with a value of 5, in order to make the effects of the crowding-out visible over the simulation time horizon.
- The crowding out function is set as a conditional equation with a value of 1 if the oversupply index is below or equals to 0. Then oversupply index is above zero, its value is calculated as 1 plus(+) the value of oversupply, multiplied by the crowding-out intensity factor.
- The attractiveness of higher education equals to the crowding out function value.

## 6 Parameter tuning

In calibrating the model, it was aimed to reach model behaviour during the years for which data is available as close as possible to the real data for both actual and modelled data. However, several of the indicators for simplicity reasons were set as rounded figures (though still approximating well the actual data). These include the stock of medium-skilled workforce, net rates of change of jobs, retirement outflows, immigration, etc. Besides these adjustments, only very limited further fine-tuning were required to further adjust the performance of the model, which includes adding 0.1 value to the drop-out from higher education, adding 0.1 to as well as subtracting 0.002 from the inflow of students into higher education. The calibration between actual data and model parameters is presented in Figure A3 below.



**Table A1**

Calibration between actual data and the model parameters (all figures are in millions)

Domain	Variable	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
School	Entry - actual	-	-	4.3	4.8	4.6	4.6	4.7	4.6	4.7	-
	Entry - model	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
	Students - actual	-	-	18.0	17.8	17.0	16.8	17.6	17.7	17.6	-
	Students - model	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
	Total graduates - actual	-	-	-	4.8	4.7	4.7	4.7	4.5	4.6	-
	Total graduates - model	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
	Graduates to uni - model	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	-
	Graduates to work - model	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
University	Entry - actual	-	-	-	-	-	2.6	2.6	2.7	2.8	-
	Entry - model	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
	Students - actual	-	-	10.5	10.5	9.9	9.8	10.5	10.5	10.7	-
	Students - model	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
	Graduates - actual	-	-	2.0	2.0	2.1	2.0	2.0	2.0	2.1	-
	Graduates - model	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	Dropout - actual estimate	-	-	0.6	0.6	0.5	0.6	0.6	0.6	0.5	-
	Dropout - model	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
High skilled workforce	Stock - actual	64.2	66.4	68.5	70.4	72.1	73.5	75.2	77.1	79.2	81.9
	Stock - model	64.2	66.2	68.2	70.2	72.2	74.2	76.2	78.2	80.2	82.2
	Immigration - estimate actual	-	-	-	1.0	1.0	1.0	0.9	0.9	0.8	0.9
	Immigration - model	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Retirement - estimate actual	0.9	1.0	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.3
	Retirement - model	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Medium skilled workforce	Stock - actual	131.3	130.9	130.8	131.2	130.6	130.1	129.1	127.9	126.9	125.4
	Stock - model	130.0	130.0	130.0	130.0	130.0	130.1	129.1	128.1	127.1	126.1
	Retirement - estimate actual	2.2	2.3	2.4	2.4	2.5	2.5	2.6	2.7	2.7	2.8
	Retirement - model	2.6	2.6	2.6	2.6	2.6	2.6	3.6	3.6	3.6	3.6
High skilled jobs	Stock - actual	69.7	70.2	70.6	71.7	73.1	74.8	76.2	77.8	79.6	79.6
	Stock - model	69.7	70.7	71.7	72.7	73.7	74.7	75.7	76.7	77.7	78.7
	Net change - actual	-	0.5	0.4	1.1	1.4	1.7	1.4	1.6	1.9	-0.1
	Net change - model	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Medium skilled jobs	Stock - actual	92.6	91.9	90.7	91.2	91.6	92.3	93.2	93.6	93.5	90.4
	Stock - model	92.6	92.4	92.1	91.9	91.6	91.4	91.1	90.9	90.6	90.4
	Net change - actual	-	-0.7	-1.2	0.5	0.3	0.7	1.0	0.4	-0.1	-3.1
	Net change - model	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3

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## Recognizing Foreign Acquired VET Qualifications: Potential to Empower and Challenge Skill Formation Ecosystems

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### Abstract

In an era of globalization, demographic change, and increasing academization, recognition of foreign vocational qualifications and credentials (RFQ) has emerged as a critical labor market institution. RFQ promotes mobility, flexibility, and lifelong learning while enabling employers and employees to signal and screen skills effectively. However, comparing qualifications and competencies is challenging, particularly in skill eco-systems that differ significantly. This paper explores the key trade-offs and conflicts of RFQ and how various skill and qualification ecosystems approach this issue. The focus is on Germany, a potential destination country for individuals with VET credentials, and its impact on Kosovo's skill eco-system. The case study reveals that Germany's policies in facilitating RFQ have resulted in new migration-driven VET programs and stakeholder landscape transformations in Kosovo. However, the impact has been mixed, demanding improved joint efforts to achieve positive effects for both skills eco-systems and the mutual benefits of labor migration while safeguarding the sustainable recruitment of skilled workers.

### Key words

recognition of current competency, skilled migration, transition economy, foreign aid

## 1 Introduction

Recognizing foreign acquired VET qualifications (RFQ) fulfils key functions for people, social welfare, and socio-economic development (Cedefop, 2008; Sweetman et al., 2015). Evaluating and validating the equivalence of VET credentials and qualifications obtained by an individual in a foreign country to the qualification in the host country allows migrants to build their career on previously acquired credentials (Brücker et al, 2021; Damelang et al., 2020). It also accelerates migrants' social and economic integration in the host country by improving employment prospects and income generation.

Theoretically, RFQ should serve as a labor market institution that permits the comparison or at least harmonization of qualifications, skills and experience developed in different skill eco-systems (Pfeffer & Skrivanek, 2018). In this context, we understand skill eco-systems as



geographically or sectoral defined social and institutional environments in which skills are developed, demanded, and utilized for productive purposes (Finegold, 1999). However, in practice, the politics and practices that permit RFQ are complex and face substantial conflicts and trade-offs in the countries of origin (CoO) of individuals wanting to get RFQ and in the countries of destination (CoD) that permit RFQ. From a technocratic perspective, these challenges especially arise when comparing institutionally highly different VET systems like those marked by a strong private sector involvement in skill provision with those driven by schools and the state. But RFQ is also salient from a political perspective because RFQ cannot be disentangled from the politically sensitive issue of migration politics. Nevertheless, with the rise of megatrends such as the knowledge economy, academization, demographic change, and the Europeanization of education systems, RFQ is becoming a tool to deal with and resolve new pressures like skill shortages (Hawthorne, 2013). RFQ is therefore evolving to an increasingly important technocratic, but also social and political phenomenon. In view of this trend, in a first step, this paper aims to consolidate the literature to create a more comprehensive understanding of major trade-offs and conflicts that come along with RFQ. In a second step, we empirically investigate the policies and practices that facilitate RFQ in CoO and CoD. Answering these questions will help better understand how RFQ as a labor market institution can empower and limit skill eco-systems, and will contribute to policy debates on sustainable and inclusive migration and education policies.

We apply a qualitative case study design and examine the politics and practices of RFQ in the case of Germany as the CoD and Kosovo as the CoO. This case selection represents a crucial case. Germany has a highly efficient, century-year old collectively organized VET system characterized by a strong commitment and involvement of social partners in VET (Busemeyer & Trampusch, 2012). In contrast, Kosovo's VET system is characterized by a predominantly school-based, centralized, and state-driven system, and a complex history with numerous historical challenges like communist rule, conflict, and instability since gaining independence in 2008 (Pusterla, 2020). Germany has a strong diaspora and positive migration inflows from Kosovo (Gashi & Haxhikadrija, 2012; Hajdari & Krasniqi, 2021), but as an EU-Neighborhood country, Kosovo does not benefit from the Single Market and free movement of people. We concretely compare RFQ policies and practices for qualifications acquired within the construction and health sector. In Germany, the former sector represents a traditionally stronghold of occupational labor protection, collective bargaining and of a long tradition of VET provision (Trampusch, 2020), while the latter represents a relatively new occupational field regulated and offered within the VET track. To support the validity and reliability of findings and add additional context and insight, we will make anecdotal references to the policies and practices of RFQ in the case of the health and construction sector in Switzerland. Since Switzerland is in many ways similar to Germany (collectively organized VET system, advanced and open economy that relies on migration), it can serve as an insightful shadow case (Soifer, 2021). For our empirical analysis, we mainly analyze secondary literature, legislative texts, position statements of key stakeholders, policy debates, and interview transcripts with experts on RFQ.

## **2 Conflicts and trade-offs in RFQ**

As already indicated, in theory, RFQ should serve as a labor market institution to make different skill-ecosystems comparable. In the end, given that we are all human being, it should not be so challenging to be able to consider and evaluate each other's credentials, knowledge, and experience. However, since skill eco-system reflect specific societal and cultural answers to historical problems and political struggles, each skill eco-system and according formalized VET system is historically, socially, culturally, and politically unique, and context-dependent

(Georg, 1997; Wolf, 2011). In view of this, in the following sections, the main political, institutional, and cultural conflicts and trade-offs that accompany RFQ are elaborated.

Firstly, RFQ affects the structure and composition of the labor force and occupational markets in the CoD and CoO. In CoD with highly efficient and collectively driven VET systems like Germany, organized interests like employer organizations and trade unions usually try to protect occupational standards and limit competition from abroad by strongly standardizing and regulating domestic qualifications (Aerne & Trampusch, 2022). Given that a large share of companies train and collectively contribute to the collective good of skills, employers need to be sure that the acquired qualifications are portable between companies to maintain the quality of VET credentials and prevent freeriding (Brown, 2006; Thelen, 2004; Trampusch, 2020). Using formal qualifications as access criteria for positions in certain occupational fields leads to a reduced supply of candidates and creates a monopoly for those who hold those qualifications. This allows to stratify labor markets, fix wages, prevent wage dumping, and essentially maintain the comparative advantage of the skill formation system driving a sector's competitiveness. However, with increasing academization, demographic problems and globalization, which reduce the supply of skills for certain occupational labor markets (Durazzi & Benassi, 2020; Fuchs et al, 2022), this protectionist position conflicts with a rapid social and labor market integration of strongly needed foreign skills to fill occupational skill shortages. Employer associations therefore also discretely lobby their governments for pragmatic and liberal labor migration policies due to fears that their distinct productive systems cannot be maintained (Menz, 2008). The policies, practices, and mechanisms that accompany RFQ therefore need to balance these competing logics and interests by ensuring that the impact of RFQ is complementary and not substitutional to domestic institutional arrangements like collective agreements (Afonso & Dewitt, 2016).

Secondly, RFQ essentially means making qualifications comparable. But because countries have different VET systems, the quality of occupational skills in one country can be qualitatively different in another country. Understanding the relative "quality" and nature of the match between credentials in CoO and CoD is highly challenging (Sweetman et al., 2015). This is especially the case when there are information asymmetries and low levels of trust between employers and authorities in CoD vis-à-vis credentials recognized by authorities in CoO and the actual skills of individuals. This information asymmetry can lead to a mismatch between the "signaling" capacity of qualifications obtained and the capacity of employers to "screen" for employees (Brown, 2001). At the same time, authorities governing occupations, such as those issuing qualification in CoO and those regulating and implementing RFQ in CoD act as monopoly gatekeepers. They do not necessarily have an interest and pressure to have completely transparent, clean, and well-structured processes (Sweetman, et al., 2015). This can materialize in RFQ being lengthy and costly regulative processes and in the creation of incentives to find ways around the process of full RFQ (Hawthorne, 2013).

Thirdly, the RFQ also affects the interests and agency of individuals and their CoO. The right to work can but does not necessarily have to follow from RFQ. This forward ordering of educational credentialing can however have a significant impact on and conflict with the investments into skills and education made by individuals and CoO. Under conditions of uncertainty, RFQ can impact potential migrant's choice of destination and occupation since it increases the information about future employment opportunities in CoD (Czaika et al., 2021). But it also has an impact on the investments decisions of governments in CoO in skills and education: Governments in CoO can view RFQ and potential migration movements as a way to secure cash transfer via remittances, so they domestically orient their skill provision towards CoD' skill eco-systems and undersupply occupational skills needed domestically (Hossain & Hickey, 2019; Ruhs & Anderson, 2010). However, increased migration facilitated via RFQ can

also at a certain point stand in conflict with the CoO's socio-economic development (Docquier & Rapoport, 2012).

This brief overview of trade-offs and conflict that accompany RFQ is not exhaustive. But it directs towards key dimensions that matter for understanding the policies and practices that have been put in place to make RFQ possible. To shed light on these, in the next section, a case study is presented on some policies, practices and dynamics that arose in the case of the Kosovan health and construction sector due to RFQ.

### **3 Policies and practices resolving the trade-offs and conflicts in the case of the Kosovan skill formation eco-system**

#### **3.1 Germany's liberal, but selective migration regimes faced with Kosovo's fragile VET system**

Over the last half of century, Germany's migration policies have evolved from being restrictive to being liberal, but selective. Until the 2010s, Germany traditionally relied on the guest-worker approach, intra-EU migration and high-skill migration of ICT professionals to fill comparatively small skill shortages (Maletzky, 2017). These skill shortages were considerably insignificant since the collectively organized VET system was traditionally able to provide the skills demanded by its productive sectors. However, the skill eco-system is under pressure to fill newly arising skill shortages due to increased digitalization and academization shifting the skill eco-system away from vocational skills towards general skills generation, and demographic changes including youth depopulation and ageing (Fuchs et al, 2022). These skill shortages concern a variety of skills and various sectors including manufacturing, construction, and healthcare. Influenced by dominant employer organizations and liberal political parties, two different migration regimes have been put in place to fill skill shortages. On the one hand, Germany has substantially facilitated skilled migration via the adoption of the Recognition Act in 2012 and the subsequent Skilled Worker Immigration Act in 2020 that facilitate the selective labor migration of people with recognized VET qualifications. On the other hand, the Western Balkan Regulation came into force in 2016. It originates in a response to the increase in irregular migration coming from the Western Balkan region to EU countries in 2015 (Bither & Ziebarth, 2018). This act is of specific importance to attracting labor force from the Western Balkans, particularly in non-regulated occupations. It enables workers of all skill levels with or without formal qualifications from the six Western Balkan countries an easier access to the German labor market, provided they have a valid employment contract from a Germany-based employer.

The role of RFQ in Germany's new migration regime has substantial impact on a CoO like Kosovo, which is subject to both migration policies. It is a decisive factor explaining the emergence of a wide range of migration-driven policies and practices in the Kosovar skill eco-system as elaborated below. However, before elaborating on these, the agency of Kosovan needs to be understood. Nearly half of the Kosovan population is considering leaving their CoO to work abroad (Gashi, 2020; Gallup, 2019; Talevska, 2019). Germany constitutes a top CoD. For Kosovars considering migrating to Germany with VET credentials, the pathway via RQF and the Skilled Worker Migration Act is theoretically more sustainable: They have better chances of finding adequate employment that matches their skill level since it makes their qualifications more transparent towards potential employers, they do not have to pass a priority check by the Federal Employment Agency and an annual quota, and they can take their family along (BIBB, n. d.).

But the fundamental system differences between the German and Kosovan VET systems impact the low potential of RFQ earned in Kosovo and the individual agency of Kosovars to undertake the path of «quality seal» (BMWK, 2022) towards a skilled work. RFQ faces

substantial hurdles due to the fragility of the formal Kosovan VET system. The Kosovan National Qualifications Authority (NQA) verified only 111 occupational standards and validated 100 qualifications. The occupational standards, as foreseen by the Law on Vocational Education and Training, have not yet been approved by the Council of VET/CVET because the latter is not operational. In addition, due to limited capacity and resistance from public VET actors, NQA faces obstacles in enforcing the implementation of legislation that requires the accreditation of all qualifications and the accreditation of all VET providers (KEEN, 2019). Public provision of initial VET remains undiversified, school-based, and underfunded, with educational institutions having little managerial and financial autonomy, making VET a non-attractive track. large differences between the German and Kosovan VET systems constitute a major barrier to meeting the requirements for full RFQ (Gashi, 2021). Compared to other Western Balkan countries, Kosovars have submitted the lowest number of applicants for RFQ (BMBF, 2019).

Despite weak similarity of the two systems, a range of policies and practices have nevertheless been put in place to orient the Kosovan skill eco-system towards the German VET system. This is particularly the case due to the high demand for occupational skills in Germany, especially in the health and construction sector. This includes the diversification of Kosovo's VET by private providers and accordingly increased enrolments in these sectors (Gashi, 2021; KEC, 2021; Serhati, 2017), the establishment of skill partnership models to facilitate RFQ prior emigration, the rise of private German language centers (GAP, 2020) and private recruitment and mediation agencies that process visa applications and work permits all contributing to the creation of a migration-driven skill eco-system (Meyn & Sauer, 2019; Gashi, 2021). This has led to a transformation of the stakeholder landscapes into a complex map that represents a combination of stakeholders in Kosovo and Germany. These include involvement of development cooperation agencies (BPRG, 2020), diaspora organizations, individual diaspora experts who return with government and development cooperation organization support, migration information and advice services, expansion of institutions to address the migration governance, capacity development for labor migration management across various institutions, and, most importantly, private employment and mediation agencies. Two excursions are made into the policies, challenges, and tradeoffs in the health and construction sector.

### **3.2 Policies, challenges and trade-offs in health occupations**

Like in all advanced economies, occupational skills in the German health sector are desperately needed (Flake et al., 2018; IAB, 2022). That Kosovans could be a source to cover these skills is exemplified by the visit of Jens Spahn, former German Federal Minister of Health, in Kosovo, where he visited Kosovan nursing schools and announced that 70'000 nurses were needed (Schmergal, 2019). The German health sector has been addressing the shortage of skilled workers by recruiting care workers from abroad. There were 218,000 individuals with foreign nationality working in the health sector in 2021, of which 36,000 were from Western Balkan countries. The Kosovar health workers' motivation to emigrate remains high, especially due to dissatisfaction with wages and working conditions (Murataj et al., 2022).

In Germany, the health occupations are regulated, which implies that foreign individuals seeking to enter the labor market in this field are required to get RFQ. Qualifications are evaluated against the duration and content of the occupational training. However, there are fundamental differences between the learning content and structure shaping nursing training systems in Germany and Kosovo, with the former emphasizing a holistic approach to healthcare, and the latter focusing on a more medical approach with centralized-education and training. Kosovan nurses often serve as assistants to doctors and perform medical tasks. However, due to these differences, health sector qualifications obtained in Kosovo are not fully recognized without complementary trainings in Germany or Kosovo. In the end, the obtained



credentials are mostly considered different and inferior, so that health workers are usually recruited to provide care for the elderly – a challenging task to otherwise fill (Gashi, 2021).

However, to still overcome this issue of fundamental system differences, the private sector in Kosovo collaborated with German training providers and implemented several measures as part of their adjustment programs. The dual-track Bachelor study initiated by a German benchmarked but national private higher education institution (hereinafter referred to as “college”) in Pristina adapted German curricula to Kosovar labor market needs and reality. The first step involved creating an educational track that combined the practical aspects of the German dual system with the academic requirements of a Bachelor's program following the Bologna system, which is recognized in both countries. Furthermore, certain fields of study that were lacking in the Kosovar system were introduced in the curricula, such as social law, documentation and quality assurance” (Sauer & Volarevic, 2020). To further meet the demands of the German labor market, the college partnered with German hospitals and undertook other additional steps to create the adjustments in curricula, such as facilitating teacher/trainer and student mobility within the German market. Moreover, qualifications that were portable between private health corporations and private universities were initiated, which contributed to a rise of bilateral standard-settings. These private-sector generated models claim to prepare candidates for the “home track” (those planning to stay in CoC) and the “away track” (those that seek work in the CoD Germany). Provision of similar, yet different models emerged from other private higher education institutions. The health qualifications rapidly became a common path among youth – mainly female entrants of the higher education level.

### **3.3 Policies, challenges, and trade-offs in construction occupations**

The Western Balkan regulation has been especially attractive to attract low-skill workers without formal qualifications from Western Balkan countries, including Kosovo. For example, in 2017 42% of pre-approvals came from the construction sector (Bither & Ziebarth, 2018). However, German embassies in certain Western Balkan Countries such as Kosovo still carried out rigorous plausibility assessment during the visa application process for individuals seeking to work in non-regulated professions like the construction sector. “A bricklayer without a qualification” was regularly rejected (BMAS, 2020, p. 116). In response, short courses provided by vocational training centers offered by public employment services gained momentum. One third of Kosovan youth are not in education, employment or training (World Bank, 2022). For a Kosovar lacking an official certificate but with significant work experience, one of the most feasible “short-cut” solutions is to undertake a three-month training and/or examination. Short-term courses offered by vocational training centers were the most popular among all Active Labour Market Measures (ALMM): a significant number of individuals utilized these courses, with the highest number of beneficiaries (6,736) recorded in 2016 (KEEN, 2019). In light of this example, experts find that as a response to Germany’s evolving demand for skilled labor, prospective Kosovar migrants are motivated to obtain higher qualifications, resulting in a strengthened human capital stock (Vracic, 2018).

Under the lead of the Ministry of Labour and Social Welfare of Kosovo and in cooperation with a German development cooperation agency and German employer organization, “Skills Partnership Program” were established with the goal of enhancing the standard of vocational education in the Kosovan construction sector. This provided young Kosovars the opportunity to undertake a 2 to 3-year dual training course in the member companies of the German construction organizations. A goal of this partnership was to equip the potential workforce for CoD by offering them initial language skills, career counseling and information, assistance with the recruitment process while still in their country of origin, as well as cultural preparation both before and after they reached the CoD through an Albanian Diaspora organization. Such partnerships are coined as “transnational skills partnerships” and aspire a mobility “platform”

that aims to define benefits of all actors involved (Azahaf, 2020; Clemens, 2015; Sauer, & Kllokoqi: 2017). The enrolment in apprenticeship program in Germany requires no recognition of previous qualifications. This makes it an appealing option for Kosovars seeking both employment and training opportunities, particularly since apprenticeships are typically compensated, with employers offering monthly salaries and opportunities for further training. For Germany, this group of apprentices – prospective labor force – implies filled gaps in the economy.

As a result of increased levels of trust built within the cooperation in the Skills Partnership Scheme in construction occupations, another, though more cooperative-intensive initiative came along. A German employer organization initiated the harmonization of occupational standards for “bricklayer”, which required the involvement of wider range of stakeholders consisting of both the public and private institutions in Kosovo and Germany. Despite difficulties, the initiative succeeded in convening a comprehensive group of decision-makers and stakeholders, such as a German chamber of commerce, the Kosovar Agency of VET, a Kosovar VET upper-secondary school offering qualifications in construction, and one of the largest Kosovo-based local employer organizations in the construction sector. The cooperation resulted in development of a new occupational standard getting verified and validated by both the Kosovar and German quality assurance and recognition authorities. Subsequently, curricula were developed to align with the new occupational standard.

These partnership schemes were successful in paving the way to RFQ relevant initiatives, such as the above-mentioned harmonization of occupational standards and curricula to approximate the qualifications between involved countries in the partnership. Within the construction industry alone, approximately 10 new institutions and 20 new training profiles were established between the years 2016 and 2019. The accreditation and validation by the National Qualifications Authority of the majority of programmes followed shortly after their establishment (NQA, 2016, 2019). However, such initiatives do not influence the system level of the VET system, hence the positive spillover effects in the Kosovan skill eco-system remains limited.

### **3.4 Implications for Kosovo’s skill eco-system**

The new migration regime in Germany governed by full or partial RQF has contributed to an increase in private providers, vocational training modules and program of different formats within the Kosovan VET system. Migration policies in the CoD have transformed the stakeholder landscape in the CoO, primarily in the health and construction sector. Yet, the question must be raised whether these new developments add complementary or substitutional value and if they empower or challenge the Kosovan skill eco-system. The synergies between Germany’s policies on the one hand and the practices in Kosovo on the other hand are not being reflected and mainstreamed in the public policies within Kosovo. They remain pilots and projects with less potential for scale-up within the Kosovan system. And although all these initiatives aim at harmonizing the Kosovan with the German VET system, post-implementation feedback from involved stakeholders and experts perceive this objective as not feasible in view of the fundamental system differences between the two VET systems.

It is furthermore unclear if these developments signify an authentic expansion of vocational education and training options or if they reflect a business model and profit-driven strategy that depletes the pool of skilled workers in Kosovo (Gashi, 2021). Proxy indicators on increased enrollments in health and construction in Kosovo lead to the anecdotal assumption that Kosovar youth make education and training choices driven by the demands in Germany more than those in their home country, “increasing competition in the same sectors [at home]” (Vracic, 2018, n. p.). Kosovo with its ageing population faces a high risk of youth drain in general, and brain drain among its health and medical professionals in particular (Ahmetxhekaj, 2019; Gashi,



2021). Although the World Health Organization recommends that developed countries facing labor shortages should not actively recruit health workers from countries experiencing critical shortages (WHO, 2021), private institutions and providers offering new health programs, as well as licensed recruitment and employment agencies can pursue their business plans without being subject to any accountability or monitoring system. Seeking employment via private agencies is frequently the only choice for obtaining legitimate employment for many individuals, but it is also the most rapid route to becoming employed irregularly (Lakić, 2023). And there remains a lack of monitoring and evaluation mechanisms for example by labor inspectors that would safeguard ethical and orderly standards of recruitment abroad. Dubious narratives have been massively reported in the last five years (Correctiv, 2020; Lakić, 2023).

### **3.5 Swiss RFQ policies and practices for skills developed in Kosovo: Irrelevant due to lack of forward ordering of educational credentialing**

Despite having a similar VET system marked by strong involvement of social partners, similar relative size of components of the economy, and similarly high reliance on foreign skills, Switzerland's policies and practices with regards to RFQ differ substantially. Foreign VET qualifications are mainly recognized and regulated for safety concerns, and they do not ensure forward ordering of educational credentialing like in the case of Germany. For example, nurses within the health sector and specific professions in the construction sector like crane operator are primarily recognized by state and cantonal authorities (SERI, n.d., 2022). Employer or professional organizations do not have any relevant discretionary power. Employer and professional organizations are however free to RFQ independently of national regulations, but they usually only do so for a limited number of CoO, for example neighboring countries with similar VET systems (Aerne & Trampusch, 2022). Since RFQ does not ensure forward ordering of educational credentialing because RQF and labor migration policies are not connected like in the case of Germany, RQF plays a very limited role as a labor market institution. Moreover, Switzerland follows a more restrictive policy towards labor migration from non-EU countries, regulated by a quite strict quota system directed at high skill professionals like IT experts (Lavenex & Manatschal, 2022). Therefore, Swiss RQF policies and practices do not systematically impact individuals with VET credentials and stakeholders' landscapes in a non-EU CoO like Kosovo.

These differences in RFQ policies and practices can likely be explained by the fact that Switzerland is able to attract foreign skills via intra-EU migration due to its relatively high average wages, an education system that still primarily relies on a strong VET system compared to Germany (Durazzi & Benassi, 2020), and the relatively smaller size of the economy. This weak appetite for low- and mid-level skill migration and protected occupational labor markets, but liberal high-skills migration represents a typical strategy employed by economies with collectively provided skill eco-systems (Menz, 2008).

## **4 Conclusion and policy recommendations**

In conclusion, our analysis demonstrates the challenges and opportunities of using RFQ as a labor market institution for governing labor mobility and emigration from CoO like Kosovo to CoD like Germany. The RFQ presents a significant obstacle for Kosovans considering Germany as a work destination, particularly in regulated occupations like health, which are subject to RFQ and deemed fundamentally different and incomparable between the two countries. Migration-driven policies need to be considered in conjunction with VET policies and dynamics in the CoO to achieve effective integration of skilled migrants into the CoD's labor market. Partnership-based initiatives among public and private representatives are essential for enabling reciprocal trust in institutions, among gatekeepers of occupational markets, and for enabling trade-offs and bringing the practice of RFQ into life.

The research has shed light into the importance of effective policies for managing labor migration to facilitate the integration of emerging stakeholders, enable the creation of monitoring mechanisms among them and their migration-driven activities, while also promoting the scaling up of initiatives that generate positive spill-over effects in specific qualifications. However, to maintain the credibility of regular labor migration channels the coordination processes and mandates of various stakeholders need to be improved. This includes improved transparency and communication to limit misinformation spread by private and shady recruitment agencies and to better manage expectations of individuals and governments in CoO. Moreover, the labor market and development implications both in the CoD and the CoO need to be considered, for example, regarding brain drain in the health sector or implications for the German VET system. As long as wealthy nations continue to require labour and have the capacity to attract workers from developing countries, it is unlikely that they will alter their migration policies in the near future. Acknowledging this is important to understand the implications of immigration of these countries for vulnerable countries like Kosovo, to identify the favorable outcomes and strategies, and alleviate unfavorable consequences (Vracic, 2018).

By implementing these policy recommendations, we believe that Germany and Kosovo can both strengthen their entire skill eco-systems, foster development, and ultimately achieve the mutual benefits of labor migration while safeguarding the ethical recruitment of skilled workers.

## Bibliography

- Aerne, A., & Trampusch, C. (2022). Including migrant skills in a knowledge economy: The politics of recognition of foreign qualifications, work experience and industry courses. *Social Policy & Administration*. doi: 10.1111/spol.12862
- Afonso, A., & Dewitt, C. (2016). Comparative political economy and international migration. *Socio-Economic Review*, 14(3), 591–613.
- Azahaf, N. (2020). *Fostering transnational skills partnerships in Germany*. Policy Brief Migration. Bertelsmann Stiftung. <https://www.bertelsmann-stiftung.de/de/publikationen/publikation/did/fostering-transnational-skills-partnerships-in-germany-all>
- Ahmetxhekaj, S. (2019, December 4). “Brain Drain: Will the Last Doctor in Kosovo Turn Out the Lights?” *Balkan Investigative Reporting Network*. <https://balkaninsight.com/2019/12/04/brain-drain-will-the-last-doctor-in-kosovo-turn-out-the-lights/>
- BIBB (Bundesinstitut für Berufsbildung). (n.d.). *Vorteile der Anerkennung* [Benefits of Recognition]. <https://www.anerkennung-in-deutschland.de/html/de/pro/aus-der-praxis-hujic-prorecognition-westbalkan.php#>
- BMAS (Bundesministerium für Arbeit und Soziales) (2020). *Abschlussbericht zur Evaluierung der Westbalkanregelung: Registerdatenanalyse und Betriebsfallstudien* [Final Report on the Evaluation of the Western Balkans Regulation: Register Data Analysis and Operational Case Studies]. IAB Forschungsbericht 544. <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-68998-7>
- BMWK (Bundesministerium fuer Wirtschaft und Klimaschutz) (2022). *Eckpunkte zur Fachkraefteeinwanderung aus Drittstaaten* [Key points on skilled labour immigration from third countries]. BMWK (Bundesministerium fuer Wirtschaft und Klimaschutz). <https://www.bmwk.de/Redaktion/DE/Downloads/E/eckpunktepapier-fachkraefteeinwanderung.html>

- BPRG (Balkan Policy Research Group). Kosovo: Migration Trends Require A New Policy Response. BPRG (Balkan Policy Research Group). <https://balkansgroup.org/en/kosovo-migration-trends-require-a-new-policy-response/>
- Böse, C., & Schmitz, N. (2021). *Auswertung der amtlichen Statistik zum Anerkennungsgesetz des Bundes für 2021* [Evaluation of official statistics on the Federal Recognition Act for 2021]. Results of the BIBB Recognition Monitoring. BIBB (Bundesinstitut für Berufsbildung).
- Brown, D. K. (2001). The social sources of educational credentialism: Status cultures, labor markets, and organizations. *Sociology of Education*, 74, 19–34.
- Brown, W. (2006). The influence of product markets on industrial relations. In P. Blyton, N. Bacon, & J. Fiorito (Eds.), *The Sage handbook of industrial relations* (pp. 113–128). SAGE Publications Ltd.
- Brücker, H., Glitz, A., Lerche, A., & Romiti, A. (2021). Occupational recognition and immigrant labor market outcomes. *Journal of Labor Economics*, 39, 497–525.
- Busemeyer, M. R., & Trampusch, C. (2012). Introduction: The Comparative Political Economy of Collective Skill Formation. In M. R. Busemeyer & C. Trampusch (Eds.), *The Political Economy of Collective Skill Formation* (pp. 3–38). Oxford University Press.
- Cedefop (2008). *Terminology of European education and training policy. A selection of 100 key terms*. Luxembourg: Office for Official Publication of the European Communities.
- Correctiv (2020, November 25). *An unsettling business: how agents are commoditizing foreign nurses for German healthcare*. Correctiv. <https://correctiv.org/en/uncategorized/2020/11/25/nurses-for-sale/>
- Czaika, M., Bijak, J., & Prike, T. (2021). Migration Decision-Making and Its Key Dimensions. *The ANNALS of the American Academy of Political and Social Science*, 697(1), 15–31.
- Damelang, A., Ebensperger, S., & Stumpf, F. (2020). Foreign credential recognition and immigrants' chances of being hired for skilled jobs: evidence from a survey experiment among employers. *Social Forces*, 99, 648–671.
- Docquier, F., & Rapoport, H. (2012). Globalization, brain drain, and development. *Journal of economic literature*, 50(3), 681–730.
- Durazzi, N., & Benassi, C. (2020). Going Up-Skill: Exploring the Transformation of the German Skill Formation System. *German Politics*, 29(3), 319–38.
- Finegold, D. (1999). Creating Self-Sustaining, High-Skills Ecosystems. *Oxford Review of Economic Policy*, 15(1), 60–81.
- Flake, R.; Kochskämper, S.; Risius, P.; Seyda, S. (2018). *Fachkräfteengpässe in der Altenpflege* [Shortage of skilled workers in elderly care]. IW-Trends 2/2018. Institut der Deutschen Wirtschaft (IW). <https://www.iwkoeln.de/studien/regina-flake-susanna-kochskaemper-susanne-seyda-fachkraefteengpass-in-der-altenpflege-396291.html>
- Fuchs, J., Söhnlein, D., & Weber, B. (2022). Demografische Alterung führt zu einem stark sinkenden Erwerbspersonenpotenzial [Demographic ageing leads to a sharply declining labour force potential]. *Wirtschaftsdienst*, 102(2), 148–50.
- GAM (Governmental Authority of Migration). (2019). *Migration Profile Light 2019*. GAM. [https://mpb.rks-gov.net/Uploads/Documents/Pdf/EN/350/Migration%20Profile%20Light\\_2019\\_141220\\_20\\_fin.pdf](https://mpb.rks-gov.net/Uploads/Documents/Pdf/EN/350/Migration%20Profile%20Light_2019_141220_20_fin.pdf)
- GAP (GAP-Institute) (2020). *The emigration of Kosovo's labour force to Germany – A brief assessment of positive and negative returns*. GAP (GAP Institute) & ECGFIM (The Expert Council of German Foundations on Integration and Migration). [https://www.institutigap.org/documents/38227\\_emigration-.pdf](https://www.institutigap.org/documents/38227_emigration-.pdf)

- Gashi, G. (2020). *Labour mobility: A bottom-up approach. To go or not to go – that will not be the question*. D4D (Democracy for Development). [https://d4d-ks.org/wp-content/uploads/2020/06/D4D\\_Labor-Mobility\\_ENG.pdf](https://d4d-ks.org/wp-content/uploads/2020/06/D4D_Labor-Mobility_ENG.pdf)
- Gashi, A. (2021). *How migration, human capital and the labour market interact in Kosovo*. European Training Foundation (ETF). [https://www.etf.europa.eu/sites/default/files/2021-07/migration\\_kosovo.pdf](https://www.etf.europa.eu/sites/default/files/2021-07/migration_kosovo.pdf)
- Gashi, A., & Haxhikadrija, A. (2012). *Social Impact of Emigration and Rural-Urban Migration in Central and Eastern Europe*. Policy Brief (VT/2010/001). European Commission. <https://ec.europa.eu/social/main.jsp?langId=en&catId=89&newsId=1778&furtherNews=yes>
- Georg, W. (1997). Kulturelle Tradition und berufliche Bildung: Zur Problematik des internationalen Vergleichs [Cultural tradition and vocational education: On the problem of international comparison]. In W.-D. Greinert, W. Heitmann, R. Stockmann, & B. Vest (Eds.), *Vierzig Jahre Berufsbildungszusammenarbeit mit Ländern der Dritten Welt: Die Förderung der beruflichen Bildung in den Entwicklungsländern am Wendepunkt?* (pp. 65–93). Nomos.
- Hajdari, L., & Krasniqi, J. (2021). The economic dimension of migration: Kosovo from 2015-2020. *Humanities and Social Sciences Communications*, 8(273). <https://doi.org/10.1057/s41599-021-00923-6>
- Hawthorne, L. (2013). *Recognizing Foreign Qualifications: Emerging Global Trends*. Washington, D.C.: Migration Policy Institute.
- Hossain, N., & Hickey, S. (2019). The Problem of Education Quality in Developing Countries. In S. Hickey & N. Hossain (eds), *The Politics of Education in Developing Countries: From Schooling to Learning* (pp. 1–21). Oxford University Press.
- Institut für Arbeitsmarkt -und Berufsforschung (IAB). (2022). *Arbeitsmarkt – Arbeitsmarktsituation im Pflegebereich*. [Labour market - Labour market situation in the care sector]. Institut für Arbeitsmarkt -und Berufsforschung (IAB). [https://statistik.arbeitsagentur.de/DE/Statischer-Content/Statistiken/Themen-im-Fokus/Berufe/Generische-Publikationen/Altenpflege.pdf?\\_\\_blob=publicationFile&v=13](https://statistik.arbeitsagentur.de/DE/Statischer-Content/Statistiken/Themen-im-Fokus/Berufe/Generische-Publikationen/Altenpflege.pdf?__blob=publicationFile&v=13)
- KEC (Kosovo Education Center). (2021). *Evaluation of the Implementation of Kosovo Education Strategic Plan 2017-2021*.
- KEEN (Kosovo Education and Employment Network). (2019). *Vocational Education and Training in Kosovo: Challenges and Opportunities*. KEEN project (Kosovo Education and Employment Network). [http://www.kec-ks.org/wp-content/uploads/2020/08/VET-Education-in-Kosovo\\_Challenges-and-Opportunities\\_ENG.pdf](http://www.kec-ks.org/wp-content/uploads/2020/08/VET-Education-in-Kosovo_Challenges-and-Opportunities_ENG.pdf)
- Lakić, A. (2023 January 23). *The EU must adopt a radically different approach towards labour migration*. In Displacement, Migration, Integration. Friedrich Ebert Stiftung. <https://www.fes.de/en/displacement-migration-integration/article-page-flight-migration-integration/the-eu-must-adopt-a-radically-different-approach-towards-labour-migration>
- Lavanex, S., & Manatschal, A. (2022). Migrationspolitik [Politics of Migration]. In Y. Papadopoulos, P. Sciarini, A. Vatter, S. Häusermann, E. Emmenegger & F. Fossati, F. (Eds.). *Handbuch der Schweizer Politik* [Handbook of Swiss Politics] (pp. 857–882). NZZ Libro.
- Menz, G. (2008). *The political economy of managed migration*. Oxford University Press.
- Murataj N., Sylja, B., Krasniqi, Y., Bahtiri, S., Bekaj, D., Beqiri P, Hoxha, IS. (2022). Migration Intent of Health Care Workers during the COVID-19 Pandemic in Kosovo. *International Journal of Environmental Research and Public Health*. 19(17), 11122. [doi.org/10.3390/ijerph191711122](https://doi.org/10.3390/ijerph191711122)
- NQA (National Qualifications Authority). (2016). *EQF Referencing Report of the Kosovo National Qualification Framework*. NQA (National Qualifications Authority).

- <https://europa.eu/europass/system/files/2022-06/NQF%20Kosovo%20Referencing%20Report%20to%20European%20Qualification%20Framework%20EQF%20%281%29.pdf>
- Pfeffer, T., & Skrivanek, I. (2018). Why is the recognition of credentials not just a matter of good will? Five theories and the Austrian case. *European Journal of Cultural and Political Sociology*, 5(4), 389–422.
- Pusterla, F. (2020). *Factbook Education Systems: Kosovo*. CES Factbook Education System, Nr. 3. Zurich: ETH.
- Ruhs, M., & Anderson, B. (2010). *Who Needs Migrant Workers? Labour Shortages, Immigration, and Public Policy*. Oxford University Press.
- Sauer & Volarevic, (2020). *Transnationale Qualifizierungs- und Mobilitätspartnerschaften (tQMP): Kontext – Konzeption – Praxis*. Bertelsmann Stiftung. [https://www.bertelsmann-stiftung.de/fileadmin/files/Projekte/Migration\\_fair\\_gestalten/IB\\_Studie\\_tQMP\\_Sauer\\_Volarevic\\_2020.pdf](https://www.bertelsmann-stiftung.de/fileadmin/files/Projekte/Migration_fair_gestalten/IB_Studie_tQMP_Sauer_Volarevic_2020.pdf)
- Sauer, M., & Meyn, A. (2018). *Mobility and Skills Partnership: Linking Labour Migration and VET*. Presentation to European Consortium for Political Research (ECPR). <https://ecpr.eu/Events/Event/PaperDetails/40344>
- Sauer, M., & Kllokoqi, S. (2017). *Circular Migration as a Policy Tool to Foster Development in Kosovo*. In: European for Social Welfare Policy and Research. (Eds.), *Bridge Building: Knowledge Exchange in Social Welfare Policy and Research -Innovative Approaches in Labour Market Policy and Health and Long-Term Care in Eastern Europe* (pp. 97–118). <https://catalog.ihnsn.org/citations/86411>
- SERI (State Secretariat for Education, Research, and Innovation). (2022). *Verordnung des SBFI über das Verzeichnis der gemäss dem nationalen Qualifikationsrahmen für Abschlüsse der Berufsbildung eingestufteten Berufsbildungsabschlüsse* [SERI Ordinance on the List of VPET Qualifications Classified in Accordance with the National Qualifications Framework for VPET Qualifications]. State Secretariat for Education, Research, and Innovation (SERI). <https://www.fedlex.admin.ch/eli/cc/2015/269/de>.
- SERI (State Secretariat for Education, Research, and Innovation). (n.d.). *Recognition of Foreign Qualifications*. Retrieved from <https://www.sbf.admin.ch/sbf/en/home/education/recognition-of-foreign-qualifications.html>
- Serhati, J. (2017). *Incentives for Reform: Increasing opportunities for VET students and graduates in the labour market*. Democracy for Development (D4D). [https://rs.boell.org/sites/default/files/d4d\\_pi\\_09\\_eng\\_web.pdf](https://rs.boell.org/sites/default/files/d4d_pi_09_eng_web.pdf)
- Soifer, H. (2021). Shadow Cases in Comparative Research. *Qualitative & Multi-Method Research*, 18(2), 9–18.
- Sweetman, A., McDonald, J. T., & Hawthorne, L. (2015). Occupational Regulation and Foreign Qualification Recognition: An Overview. *Canadian Public Policy / Analyse de Politiques*, 41, S1–S13.
- Thelen, K. (2004). *How Institutions Evolve: The Political Economy of Skills in Germany, Britain, the United States, and Japan*. Cambridge University Press.
- Trampusch, C. (2020). Social partners' policy reactions to migration in occupational labour markets: The case of the Swiss construction industry. *European Journal of Industrial Relations*, 26, 157–172.
- Vratic, A. (2018). *The Way Back: Brain Drain and Prosperity in the Western Balkans*. ECFR (European Council on Foreign Relations). [https://ecfr.eu/publication/the\\_way\\_back\\_brain\\_drain\\_and\\_prosperity\\_in\\_the\\_western\\_balkans/](https://ecfr.eu/publication/the_way_back_brain_drain_and_prosperity_in_the_western_balkans/)

- Wolf, S. (2011). Arbeitskultur und der Transfer von Berufsbildungselementen in andere Länder [Work culture and the transfer of VET elements to other countries]. *Zeitschrift Für Berufs- Und Wirtschaftspädagogik*, 107(4), 543–567.
- World Bank. (2022). *Share of youth not in education, employment or training, total (% of youth population)* – Kosovo. World Bank Data. <https://data.worldbank.org/indicator/SL.UEM.NEET.ZS?locations=XK>

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## The Impact of Collaboration among Vocational Teachers Implementing Teaching Practices During a State of Emergency

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### Abstract

Collaboration has been an important factor for shaping the professionalism of vocational teachers (VTs) and in respect to this three profiles of VT emerge. Accordingly, highly collaborative VTs are open to educational changes, are self-confident in supporting student learning, use learner-centred teaching practices and develop their own professionalism more. However, it is not known how important VT collaboration was during the state of emergency and how it influenced their teaching. This paper aims to explain the nature of the collaboration between VTs during the state of emergency and its impact on the teaching practices implemented. The results revealed that the extent to which VTs participated in collaborative activities varied and collaborative VTs more often applied teaching practices that required better digital competences and these teaching practices enabled them to provide more feedback to the students as well as support their learning.

### Keywords

vocational teachers, professionalism, collaboration, teaching practices, state of emergency

### 1 Introduction

The first wave of the Covid-19 pandemic was announced worldwide at the beginning of 2020. Literally overnight all schools had to rearrange work according to a completely new situation. On 12 March, a state of emergency was declared in Estonia. Therefore, teaching in all schools and vocational education institutions was transferred to online learning. Schools had one day to reorganise their face-to-face teaching to online learning (Vabariigi Valitsus, 2020). This meant a new situation emerged for vocational teachers (VTs) overnight and required the rapid restructuring of existing activities and teaching practices, as well as acquiring the necessary digital competences for online learning, such as knowing and using the appropriate digital/virtual learning environments, tools, web applications for creating teaching materials, conducting lessons, giving feedback, interacting, communicating and collaborating (Vuorikari et al., 2022).

Therefore, digital competences which *involve the confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society* (European Commission, 2019) became very important. Research has shown that some teachers had previously developed their own digital competences and were therefore in a slightly better position (Gudmundsdottir & Hathaway, 2020). However, most teachers lacked the experience and knowledge to teach in such an online mode (Delcker & Ifenthaler, 2020;



Gudmundsdottir & Hathaway, 2020). Teachers had to plan teaching differently and take into consideration circumstances that did not depend on them (Fahmalatif et al., 2021). Therefore, this rapidly changed situation caused uncertainty and teachers did not know which teaching and assessment methods were most relevant to choose (Gudmundsdottir & Hathaway, 2020).

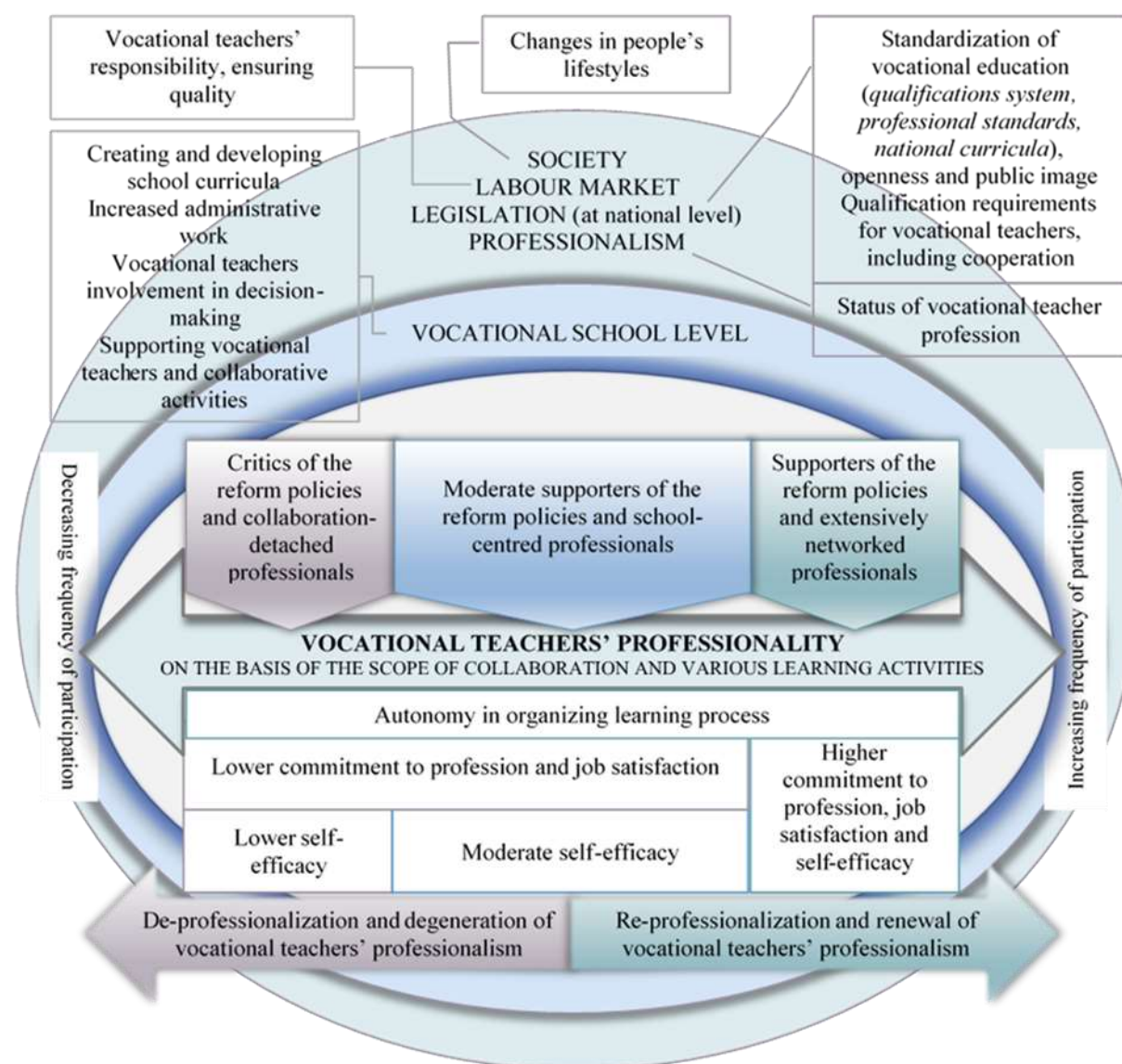
To manage this new situation, teachers who had a higher level of digital competence provided help to their colleagues and became supporters (Delcker & Ifenthaler, 2020). Some teachers also sought help from their colleagues (Trust & Whalen, 2020). These activities enhanced teacher collaboration and helped them to cope more quickly with the situation and reduced the feelings of insecurity (Popa et al., 2020).

Research on change in vocational education and training (VET) has also shown that collaboration helped VTs to better adapt to change as well as supporting professional development (e.g. Runhaar et al., 2016; Sirk et al., 2020). In general, teacher collaboration is understood as interaction in a variety of activities (e.g. discussion about new and common norms, rules, values, teaching beliefs, goals, problem-solving together, creating new learning materials, planning teaching activities, sharing best practices etc.), which require common tasks in order to achieve objectives (Vangrieken et al., 2015). In Estonia, in the context of changes to VET (including reforms), based on Hoyle's (2008) professionalism model, where the scope of collaboration is an essential factor, three profiles of VTs have emerged (Sirk, 2020; Figure 1). Accordingly, VTs who collaborate more with colleagues in their school and outside, and with different business representatives develop their professionalism more, are better able to cope in changing situations and with new tasks and roles, as well as being able to perceive the change as part of their own professionalism (Figure 1). However, the most important factor is that collaborative teachers are also open to teaching innovations, use more learner-centred teaching practices and perceive their role in supporting as well cultivating their students (Sirk, 2020; Sirk et al., 2020).



**Figure 1**

Vocational teacher professionalism (Sirk, 2020)



However, the question arises of whether collaboration between VTs is also essential in rapidly changed situations for developing teaching practices that support student online learning.

The aim here is to explain the nature of collaboration between VTs during the state of emergency and its impact on the teaching practices implemented.

To achieve the aim, the following research questions are posed:

- How did vocational teachers differ in terms of their collaboration activities during the state of emergency?
- How did the collaboration activities of vocational teachers impact the teaching practices they implemented?

## 2 Methodology

To answer the research questions, the study theoretically relies on the model of VT professionalism focusing on collaboration as one important factor in managing change, including teaching innovation and professional development (Sirk, 2020). Second, quantitative analysis is conducted with data collected using a web-based questionnaire after the end of the

period of online learning required by the state of emergency. The number of completed questionnaires was 104. K-means cluster analysis was used to cluster VTs according to the forms of collaboration they engaged in. Using variance analysis, the clusters were described based on the teaching practices the VTs implemented.

### 3 Results

Based on the analysis, three clusters of VTs were identified (Table 1): 1) collaboration-detached (36%), 2) moderately collaborative (31%) and 3) frequently collaborative vocational teachers (33%).

**Table 1**

Clusters of VTs according to their collaboration activities

VT collaboration activities	M SD	cluster I	cluster II	cluster III	F	Sig
VTs discussed with colleagues of the same study group when planning the learning process <i>A seven-point scale ranging from 1 "definitely not" to 7 "yes, sure"</i>	<i>M</i> <i>SD</i>	1.42 <sup>II and III</sup> 0.51	3.67 <sup>I and III</sup> 0.64	6.24 <sup>I and II</sup> 0.69	542.93	0.00
Web-meetings and discussions with colleagues to share information/organise work <i>A four-point scale ranging from 1 "never" to 4 "very often"</i>	<i>M</i> <i>SD</i>	1.83 <sup>II and III</sup> 0.65	2.22 <sup>I and III</sup> 0.61	2.78 <sup>I and II</sup> 0.58	21.53	0.00
Collaborative lesson planning and teaching, and seeking feedback <i>A four-point scale ranging from 1 "never" to 4 "very often"</i>	<i>M</i> <i>SD</i>	1.59 <sup>III</sup> 0.48	1.92 <sup>III</sup> 0.61	2.43 <sup>I and II</sup> 0.64	19.16	0.00

Note. The mean difference is significance at the  $p < 0.05$  level.

The clusters revealed that the extent to which VTs participated in collaborative activities during the state of emergency from Covid-19 varied, as emerged previously in the professionalism model (Sirk, 2020). The teachers in the third cluster evaluated that they often discussed with colleagues of the same study group when planning the learning process and participated in web-meetings to share information or organise work. In addition, they participated more often in collaborative lesson planning, teaching and seeking feedback from students, and in these activities they differed from the other clusters to a significant level (Table 1). They felt that collaboration between colleagues increased compared to the time before Covid-19. According to the frequency of their collaboration, it appears that they resemble the extensively networked professionals in the VT professionalism model (Figure 1).

The VTs in the first cluster evaluated their collaboration activities as the least frequent and clearly differ in this respect from VTs in the third cluster, as well from those in the second cluster. Therefore, they seem to resemble the collaboration-detached professionals in the model (Figure 1). They felt that their collaboration activities decreased during the Covid-19 period.

The second cluster of teachers is located between the first and third clusters according to their frequency of collaboration activities, like the school-centred professionals in the professionalism model (Figure 1), and interestingly, the frequency of their collaboration activities did not change compared with the time before Covid-19. They occasionally discussed with colleagues of the same study group when planning the learning process and seldom participated in the web-meetings and discussions with colleagues to share information or organise work. They rather seldom planned lessons collaboratively, but taught and sought

feedback more frequently than teachers in the first cluster but the difference was not at a significant level.

Analysing the emerged clusters of VTs in terms of their teaching practices revealed that they all implemented the following activities: often used discussion based on independently learned material, seldom differentiated teaching and assessment, often gave students tasks for independent learning from a textbook, workbook or the web, seldom guided students to write written works (reports, stories, essays), often created tasks using MS Word and other similar solutions and seldom guided students towards creative activities (manual activities, outdoor activities).

However, the clusters differed in terms of teaching practices which were more suitable for online learning, supported student learning and required a better level of digital competence. Accordingly, frequently collaborative VTs more often applied learning in pairs/groups and allowed students to compile assignments based on the learned material, while teachers in the other clusters engaged in these activities rather rarely. Therefore, the third cluster of teachers differ from the first cluster in terms of teaching activities at a significance level of  $p < 0.05$ . The third cluster of teachers most often sought feedback and supported student learning based on virtual learning environments (e.g. conducting lessons and personal communication via Zoom or GoogleMeets) and students with learning difficulties (carried out individual consultations or counselling, conducted lessons/consultations in a smaller group and individual meetings according to student progress). Other teachers implemented these practices less often and the difference compared to the first cluster of teachers was at a significance level of  $p < 0.05$ . In addition, teachers in the third cluster rather often implemented student-centred and integrated teaching and feedback via formal digital learning materials and channels and also allowed students to conduct more independent experiments, research and creative activities. Other teachers implemented these activities rather seldom and the difference between the third and the second cluster of teachers was at a significance level of  $p < 0.05$ . The results also showed that frequently collaborative VTs compared to the others more often used web applications for conducting teaching and providing feedback but the difference was not significant.

#### 4 Conclusions

The results of the current study show that in the state of emergency, VTs that collaborate more with their colleagues also more often applied those teaching practices which required better digital competences and this coincides with a previous study which highlighted that more collaborative teachers have better technological skills (Vangrieken et al., 2015). Therefore, it can be concluded that increasing collaboration between teachers also supports more use of virtual learning environments as well as web applications. Furthermore, these teaching practices enabled frequently collaborative VTs to provide more feedback to their students, and support their learning, as well as those with learning difficulties.

#### References

- Delcker, J., & Ifenthaler, D. (2020). Teachers' perspective on school development at German vocational schools during the Covid-19 pandemic. *Technology, Pedagogy and Education*, 30(1), 125–139. <https://doi.org/10.1080/1475939X.2020.1857826>
- European Commission (2019). *Key competences for lifelong learning*. Luxembourg: Publications Office. <https://data.europa.eu/doi/10.2766/569540>
- Fahmalatif, F., Purwanto, A., Siswanto, E., & Ardiyanto, J. (2021). Exploring barriers and solutions of online learning during the Covid-19 pandemic by vocational school teachers. *Journal of Industrial Engineering & Management Research*, 2(2), 53–63. <https://doi.org/10.7777/jiemar.v2i2.130>

- Gudmundsdottir, G.B., & Hathaway, D.M. (2020). We always make it work: Teachers' agency in the time of crisis. *Journal of Technology and Teacher Education*, 28(2), 239–250.
- Hoyle, E. (2008). Changing conceptions of teaching as a profession: Personal reflections. In D. Johnson & R. Maclean (Eds.), *Teaching: Professionalization, Development and Leadership* (pp. 285–304). Springer. [https://doi.org/10.1007/978-1-4020-8186-6\\_19](https://doi.org/10.1007/978-1-4020-8186-6_19)
- Popa, D., Repanovici, A., Lupu, D., Norel, M., & Coman, C. (2020). Using mixed methods to understand teaching and learning in Covid-19 times. *Sustainability*, 12(20). <https://doi.org/10.3390/su12208726>
- Runhaar, P., Bednall, T., Sanders, K., & Yang, H. (2016). Promoting VET teachers' innovative behaviour: Exploring the roles of task interdependence, learning goal orientation and occupational self-efficacy. *Journal of Vocational Education & Training*, 68(4), 436–452. <https://doi.org/10.1080/13636820.2016.1231215>
- Sirk, M. (2020). Kutseõpetajate muutuv professionaalsus [Vocational teachers' changing professionalism]. (Dissertation). Tallinn: Tallinna Ülikool.
- Sirk, M., Ümarik, M., & Loogma, K. (2020). The necessity of vocational educational changes as perceived by Estonian vocational teachers. *Journal of Vocational Education & Training* 74(3), 373–393. <https://doi.org/10.1080/13636820.2020.1765842>
- Trust, T., & Whalen, J. (2020). Should teachers be trained in emergency remote teaching? Lessons learned from the Covid-19 pandemic. *Journal of Technology and Teacher Education*, 28(2), 189–199.
- Vabariigi Valitsus. (2020). *Valitsus kuulutas Eestis välja eriolukorra 1. maini* [The government declared a state of emergency in Estonia until to 1st of May]. <https://www.valitsus.ee/uudised/valitsus-kuulutas-eestis-valja-eriolukorra-1-maini>
- Vangrieken, K., Dochy, F., Raes, E., & Kyndt, E. (2015). Teacher collaboration: A systematic review. *Educational Research Review*, 15, 17–40. <http://dx.doi.org/10.1016/j.edurev.2015.04.002>
- Vuorikari, R., Kluzer, S., & Punie, Y. (2022). *DigComp 2.2: The Digital Competence Framework for Citizens - With new examples of knowledge, skills and attitudes*. Luxembourg: Publications Office. <https://doi.org/10.2760/115376>

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Tremonte-Freydefont, L., Fiori, M. & Wenger, M. (2023). Emotional intelligence and scholastic achievement in VET. A study among apprentices in healthcare and social care. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 443–449). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7822707>

## **Emotional Intelligence and Scholastic Achievement in VET. A Study among Apprentices in Healthcare and Social Care**

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### **Abstract**

Based on the literature showing the important role of emotional intelligence (EI) in well-being, academic achievement, but also in sustainability and employability, the present study addresses the question of the role of EI in training achievement in Vocational Education and Training (VET) context, and more especially in the health and social care sectors. Among the competences required to succeed in these VET programs, we posit that EI is an important component of the skills and abilities that apprentices need to be successful in their path to become professionals. 92 apprentices in health care and social care programs at the end of dual-track vocational training completed an online survey. Results confirm our hypothesis that EI as ability and as personality trait positively influence the final exam grades. These new findings reveal the importance of EI on training achievement in health and social care and open the path to new investigations exploring the role of EI in the VET context.

### **Keywords**

emotional intelligence, Swiss VET system, healthcare sector, social care sector, apprenticeship's achievement



## 1 Introduction

### 1.1 Framework: Emotional intelligence and achievement

Among the key competences of the 21<sup>st</sup> century, socio-emotional competences play a central role. In fact, they are linked to professional achievement and, more generally, to well-being and development in life (Bughin et al., 2018). These competences reflect the so-called emotional intelligence (EI), i.e., the individual's capacity to recognize his/her own and others' emotional reactions, but also to express, control, understand them and use this understanding for action. In this sense, EI and its associated competences play an important role in educational and training pathways, particularly to adapt optimally to these contexts. However, a recent literature review reports scarcity of European educational programs oriented to socio-emotional competences in Vocational Education and Training (VET) (Sauli et al., 2022). Moreover, EI as a competence necessary for sustainable development is emerging as a new research topic. Recent studies showed the positive influence of EI on management and sustainable development (Di Fabio & Saklofske, 2019). These new findings have a direct impact on how VET should consider EI and its role in the VET context. For example, when teachers responsible for apprentices do not possess the necessary competencies to engage in sustainability education, the potential of VET to become a viable tool in the society will decrease (Chinedu et al., 2023). In fact, by developing socio-emotional competences, individuals are more likely to become considerate not only for other people, but also for their environment.

The literature on EI has put forward two approaches to consider this concept: either as an ability (ability EI) or as a personality trait (trait EI). The ability approach considers EI as an ability or a form of objective intelligence, strongly associated with two components of the classic intelligence: the fluid and crystallized intelligences, involved in reasoning and solving new problems (Olderbak et al., 2018). The second approach conceives EI as a dispositional tendency, like a personality trait, and is then measured with self-reports (Petrides & Furnham, 2020). Trait EI or trait emotional self-efficacy is described as a constellation of emotional self-perceptions. Although these two approaches differ in their conceptualization and their measurement methods, they both consider intelligence as a distinct construct from the classic IQ. Moreover, both ability and trait EI are well-known predictors of academic achievement (MacCann et al., 2020). Results of interventions on emotional competences indicate that students with a higher EI level show more advantages than student with a lower EI level. For instance, they have a better management of conflicts and related emotions, a lower dropout rate, and show a better effectiveness at school, linked to social adaptation (Dowling et al., 2019; Nathanson et al., 2016). EI is also positively associated with general resilience and is correlated to employability, self-efficacy, and decision making in young adults (Di Fabio & Kenny, 2015).

In addition to the predictive function of EI with regard to educational achievement, the scientific literature also reports the important role of EI in the health sector (Vlachou et al., 2016). Indeed, as this type of profession is centered on technical care and compassion, it requires an important emotional commitment, the latter influencing the quality of care. When nurses understand, identify, and manage their own emotions and the patients' ones, the patient's satisfaction increases (Dugue et al., 2021). As for nursing education, several studies showed the correlation between emotional competences and achievement in nurse school too. Nurse students with higher EI experience a higher resilience (Cleary et al., 2018), better chances of success (Singh et al., 2020), and manage stress and anxiety in a more efficient way than students with lower EI (Lewis et al., 2017).

In the field of social work and health, research shows the positive effects of EI on abilities to think, empathy, psychological health and resilience of social workers (Grant & Kinman, 2012; Grant et al., 2014). Despite the large literature covering the positive link between EI and

success at school, especially in social and health sector, this subject has not been investigated in the VET context.

At the same time, in the Swiss context, training in the health and social care sectors has a very high rate of apprentices: it is in fact one of the ten most chosen occupations in dual initial VET (State Secretariat for Education, Research and Innovation [SERI], 2022). Consequently, a significant number of young professionals enter the labor market with a consequent amount of job-related competences, but which do not necessarily and explicitly include the emotional ones. In this sense, it is legitimate to ask to what extent these competences - reflecting emotional intelligence - are present in apprenticeships and, above all, what role they play in explaining achievement in vocational education and training.

## 1.2 Research goals

Based on the current literature reporting the positive influence of EI on academic and professional achievements, the present study aims to investigate the influence of EI on training achievement in VET context and more especially in the health and social care sectors. According to the literature on EI, we consider the two constructs of EI, ability and personality trait, to investigate the influence of both EI's components on training achievement in VET context. We posit the EI as ability and as personality trait will positively influence the grades of apprentices in health and social care sectors.

## 2 Method

### 2.1 Participants

An online survey was completed by 110 dual initial VET apprentices in health and social care professions in a French-speaking Swiss vocational school. After exclusion of participants that did not fully complete the survey and after obtaining the grades from the final exam, 92 participants were retained (77 females and 15 males; age:  $M=21.64$ ,  $SD=2.63$ ). All participants gave their consent to participate to this study.

### 2.2 Procedure and Instruments

To test our hypotheses, we conducted an online survey on the 3<sup>rd</sup> (and last) year VET apprentices in health and social care sectors. The survey lasted about 25 minutes and was completed on a voluntary basis during school time. All participants gave their consent to participate in the study and allowed us to collect their grades at the end of the training program. The online survey was composed of several sections, each of them measuring the variables of interest, which are detailed below.

**The Situational Test of Emotional Understanding (STEU; (MacCann & Roberts, 2008)**, (translated in French for this study) assessing EI as ability by responding to 25 vignettes that illustrate different situations triggering emotions. Respondents were then asked to choose which of several emotions would be expected in each situation. The Cronbach alpha was .40<sup>45</sup> in our sample. A global score was calculated with the total number of correct answers (score ranging from 0 to 40).

**The Ten Items Personality Inventory (TIPI; (Storme et al., 2016)**, which assesses five personality traits, i.e., extraversion, agreeableness, conscientiousness, emotional stability, and

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<sup>45</sup> The STEU shows this low Cronbach alpha pattern because items do not aim to achieve coherence between the responses as self-reports do (Neubauer & Hofer, 2022).



openness on a Likert scale (1=“strongly disagree” to 7=“strongly agree”). The Cronbach alpha was .45<sup>46</sup> in our sample.

**A shortened version of the Raven Standard Progressive Matrices (RAPM; (Raven & Court, 1998)**, measuring general intelligence by showing 36 matrices of black and white patterns. with a maximal duration of 5 minutes. The Cronbach alpha was .91 in our sample. The score was calculated by summing the correct items (score ranging from 0 to 36).

**The Trait Emotional Intelligence Questionnaire (TEIQue; (Mikolajczak et al., 2007)**, assessing EI as personality trait by answering 30 statements about one’s emotions on a Likert scale (1=“strongly disagree” to 7=“strongly agree”), divided into four sub-dimensions (well-being, self-control, emotionality and sociability) and a global mean. The Cronbach alpha was .85 in our sample.

Participants also answered some sociodemographic questions (sex, age, training profession, etc.). In addition, a prior agreement with the participants and the vocational school had been reached to obtain the final exam grades. These range from 1 to 6, with sufficiency set at 4 and 6 being the best grade.

### 3 Results

To test our hypotheses, we started by calculating the correlations between the different variables considered in this study. Among the significant correlations (see Table 1), we observed that ability EI (i.e., STEU) correlates significantly and positively with classical intelligence (i.e., Raven) as stated in the literature (Olderbak et al., 2018). Moreover, according to the literature (Chamorro-Premuzic et al., 2007), trait EI (i.e., TEIQue) correlates with all five personality traits measured. Regarding the global grade, it shows significant positive correlations with sex, ability EI and trait EI.

Subsequently, we conducted hierarchical regression analyses (see Table 2) on the influence of EI as trait and ability on grades. Thus, as recommended in the literature (Becker, 2016), the first model included socio-demographic variables (gender, age and school orientation); then, the second model included two measures “classically” considered as predictors of school achievement were added to the regression model: “classical” intelligence (measured here with the short version of Raven matrices (Raven & Court, 1998) and personality (Storme et al., 2016). Finally, the two forms of emotional intelligence were inserted in the third model.

The results of the hierarchical regression showed first of all that gender has a significant relationship on the final score,  $\beta=.23$ ,  $t(88)=2.13$ ,  $p=.04$ . Moreover, the second model revealed that neither “classical” intelligence nor personality are significant predictors of training achievement, personality. On the contrary, the third model shows that the two forms of emotional intelligence significantly explain the scores obtained in the exams on top of all the other variables (EI as ability  $\beta=.31$ ,  $t(85)=2.82$ ,  $p<.01$ ; EI as personality trait  $\beta=.32$ ,  $t(89)=2.08$ ,  $p=.04$ ).

### 4 Discussion and conclusions

The present study aimed to investigate the role of EI as ability and personality trait on training achievement in the VET context, using the final exams grades obtained by the participants as an objective measure of achievement. Our results confirm our hypotheses showing that ability and trait EI can be considered as predictors of training achievement in the social and healthcare VET sectors. Indeed, our study demonstrates that apprentices with higher levels of EI succeed better in their apprenticeship.

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<sup>46</sup> The TIPI is composed of only 2 items for each factor, which leads to a low alpha.



Moreover, and contrary to what had been put forward in the literature, it seems that “classical” - i.e., intelligence and personality - do not explain VET achievement. Although non-significant results need to be interpreted with caution, this interesting result seems to reflect the fact that, in occupations where the relationship with others is particularly salient, EI seems to be a stronger predictor of training achievement than cognitive factors. Moreover, we observed a significant correlation between the gender and the final exam grades. We attribute this result to the distribution of the population in the specific health and social care sectors, where women are particularly prevalent. Given the fact that men were only 16% of the sample, we would not consider this effect as relevant in our study.

As further direction, although the present results did not provide any link between EI and sustainability, it would deserve more attention. Indeed, EI should be considered as a relevant variable in research in sustainability positing that high EI would lead to increase the motivation to develop an environment more sustainable.

To conclude, our study provides interesting new findings showing the crucial role of EI as ability and as personality trait on training achievement in the health and social care sectors. This study opens new leads on how emotional competences are involved in school and professional successes and thus would need to be given more attention in training in multiple aspects.

### Authors note

We have no conflicts of interest to disclose. This study did not benefit from any funding. Correspondence concerning this article should be addressed to Laure Tremonte-Freydefont, Avenue de Longemalle, 1, 1020 Renens, Switzerland, laure.tremonte@hefp.swiss

### References

- Becker, T. E. (2016). Potential Problems in the Statistical Control of Variables in Organizational Research: A Qualitative Analysis With Recommendations. *Organizational Research Methods*, 8(3), 274-289. <https://doi.org/10.1177/1094428105278021>
- Bughin, J., Hazan, E., Lund, S., Dahlström, P., Wiesinger, A., & Subramaniam, A. (2018). Skill shift: Automation and the future of the workforce. *McKinsey Global Institute*, 1, 3-84.
- Chamorro-Premuzic, T., Bennett, E., & Furnham, A. (2007). The happy personality: Mediation role of trait emotional intelligence. *Personality and Individual Differences*, 42(8), 1633-1639. <https://doi.org/10.1016/j.paid.2006.10.029>
- Chinedu, C. C., Saleem, A., & Wan Muda, W. H. N. (2023). Teaching and Learning Approaches: Curriculum Framework for Sustainability Literacy for Technical and Vocational Teacher Training Programmes in Malaysia. *Sustainability*, 15(3). <https://doi.org/10.3390/su15032543>
- Cleary, M., Visentin, D., West, S., Lopez, V., & Kornhaber, R. (2018). Promoting emotional intelligence and resilience in undergraduate nursing students: An integrative review. *Nurse Educ Today*, 68, 112-120. <https://doi.org/10.1016/j.nedt.2018.05.018>
- Di Fabio, A., & Kenny, M. E. (2015). The Contributions of Emotional Intelligence and Social Support for Adaptive Career Progress Among Italian Youth. *Journal of Career Development*, 42(1), 48-59. <https://doi.org/10.1177/0894845314533420>
- Di Fabio, A., & Saklofske, D. (2019). Positive Relational Management for Sustainable Development: Beyond Personality Traits—The Contribution of Emotional Intelligence. *Sustainability*, 11(2). <https://doi.org/10.3390/su11020330>
- Dowling, K., Simpkin, A. J., & Barry, M. M. (2019). A Cluster Randomized-Controlled Trial of the MindOut Social and Emotional Learning Program for Disadvantaged Post-

- Primary School Students. *J Youth Adolesc*, 48(7), 1245-1263. <https://doi.org/10.1007/s10964-019-00987-3>
- Dugue, M., Sirost, O., & Dosseville, F. (2021). A literature review of emotional intelligence and nursing education. *Nurse Educ Pract*, 54, 103124. <https://doi.org/10.1016/j.nepr.2021.103124>
- Grant, L., & Kinman, G. (2012). Enhancing Wellbeing in Social Work Students: Building Resilience in the Next Generation. *Social Work Education*, 31(5), 605-621. <https://doi.org/10.1080/02615479.2011.590931>
- Grant, L., Kinman, G., & Alexander, K. (2014). What's All this Talk About Emotion? Developing Emotional Intelligence in Social Work Students. *Social Work Education*, 33(7), 874-889. <https://doi.org/10.1080/02615479.2014.891012>
- Lewis, G. M., Neville, C., & Ashkanasy, N. M. (2017). Emotional intelligence and affective events in nurse education: A narrative review. *Nurse Educ Today*, 53, 34-40. <https://doi.org/10.1016/j.nedt.2017.04.001>
- MacCann, C., Jiang, Y., Brown, L. E. R., Double, K. S., Bucich, M., & Minbashian, A. (2020). Emotional intelligence predicts academic performance: A meta-analysis. *Psychol Bull*, 146(2), 150-186. <https://doi.org/10.1037/bul0000219>
- MacCann, C., & Roberts, R. D. (2008). New paradigms for assessing emotional intelligence: theory and data. *Emotion*, 8(4), 540-551. <https://doi.org/10.1037/a0012746>
- Mikolajczak, M., Luminet, O., Leroy, C., & Roy, E. (2007). Psychometric properties of the Trait Emotional Intelligence Questionnaire: factor structure, reliability, construct, and incremental validity in a French-speaking population. *J Pers Assess*, 88(3), 338-353. <https://doi.org/10.1080/00223890701333431>
- Nathanson, L., Rivers, S. E., Flynn, L. M., & Brackett, M. A. (2016). Creating Emotionally Intelligent Schools With RULER. *Emotion Review*, 8(4), 305-310. <https://doi.org/10.1177/1754073916650495>
- Neubauer, A. C., & Hofer, G. (2022). (Retest-)Reliable and valid despite low alphas? An example from a typical performance situational judgment test of emotional management. *Personality and Individual Differences*, 189. <https://doi.org/10.1016/j.paid.2022.111511>
- Olderbak, S., Semmler, M., & Doebler, P. (2018). Four-Branch Model of Ability Emotional Intelligence With Fluid and Crystallized Intelligence: A Meta-Analysis of Relations. *Emotion Review*, 11(2), 166-183. <https://doi.org/10.1177/1754073918776776>
- Petrides, K. V., & Furnham, A. (2020). Trait emotional intelligence: psychometric investigation with reference to established trait taxonomies. *European Journal of Personality*, 15(6), 425-448. <https://doi.org/10.1002/per.416>
- Raven, J. C., & Court, J. H. (1998). *Raven's progressive matrices and vocabulary scales*. Oxford Psychologists Press Oxford.
- Sauli, F., Wenger, M., & Fiori, M. (2022). Emotional competences in vocational education and training: state of the art and guidelines for interventions. *Empirical Research in Vocational Education and Training*, 14(1). <https://doi.org/10.1186/s40461-022-00132-8>
- Singh, N., Kulkarni, S., & Gupta, R. (2020). Is emotional intelligence related to objective parameters of academic performance in medical, dental, and nursing students: A systematic review. *Educ Health (Abingdon)*, 33(1), 8-12. [https://doi.org/10.4103/efh.EfH\\_208\\_17](https://doi.org/10.4103/efh.EfH_208_17)
- Storme, M., Tavani, J.-L., & Myszkowski, N. (2016). Psychometric Properties of the French Ten-Item Personality Inventory (TIPI). *Journal of Individual Differences*, 37(2), 81-87. <https://doi.org/10.1027/1614-0001/a000204>

Vlachou, E. M., Damigos, D., Lyrakos, G., Chanopoulos, K., Kosmidis, G., & Miltiades, K. (2016). the Relationship between Burnout Syndrome and Emotional Intelligence in Healthcare Professionals. *Health Science Journal*, 10(5.2). <https://doi.org/10.4172/1791-809X.1000100502>

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Tütlys, V., Kaminskienė, L., Tikkanen, T., Gerdien-Bruin, M., Sloka, B. & Ümarik, M. (2023). Vocational aspects of empowering at-risk VET students in the Baltic countries and Norway for employment and lifelong learning. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 450–457). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7822779>

## Vocational Aspects of Empowering At-risk VET Students in the Baltic Countries and Norway for Employment and Lifelong Learning

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### Abstract

This article investigates the ways in which vocational education and training (VET) can enhance social inclusion of young people at-risk, both in terms of combating school dropout and promoting transitions between various (social) learning contexts, such as school-work transition in the Baltic countries and Norway. The study draws on a *socio-ecological approach* (Evans, Waite & Kersh, 2011), emphasising that individuals are learning, developing, and acting in a complex system of various social environments and structures, actors, and interrelationships (Jacobsen & Wilensky, 2006; Evans et al., 2011). A mixed-method study by applying a complementary qualitative and a quantitative methodology had been applied. A qualitative, narrative interview study approach is applied to study at-risk youth in VET schools. The study has been targeted to young people, aged 16-24 years, in VET, identified (by their teachers/school leaders) as student at risk in the VET establishments of the Baltic countries and Norway. Research confirmed that at-risk VET students in the most cases notice and value the empowering provided by the vocational education and work experience. These empowering effects include socialization and finding one's place in society and labour market, acquired trust in themselves, received support from the VET teaching staff and acquired positive and meaningful learning experiences.

## Keywords

vulnerable students, empowerment, participation, vocational education and training, factors which support and hinder learning and participation, Baltic countries, Norway

## 1 Research problem and goal

This study is conducted in the framework of the Baltic Research Programme Project “Vocational education and workplace training enhancing social inclusion of at-risk young people” (No. LT08-2-LMT-K-01-010). The main research goal is to investigate the ways in which vocational education and training (VET) can enhance social inclusion of young people at-risk, both in terms of combating school dropout and promoting transitions between various (social) learning contexts, such as school-work transition in the Baltic countries and Norway. The overall research objectives of this study include: 1) exploring how at-risk young people themselves experience and understand their opportunities, prospects and limitations in the context of VET, and what and how are the institutional factors affecting their prospects; 2) analysing existing best practices, particularly those, which involve innovative approaches, methods, tools for supporting social inclusion and preventing dropout, in VET institution, workplace contexts and by local institutions providing learning opportunities; 3) conducting “Educational Learning Lab intervention” in all partner countries, in order to pilot and evaluate innovative approaches, methods and technology-based tools for supporting both at-risk youth to develop their key skills (vocational and personal) and teachers in VET to advance their instructional approach and practices. This conference paper focuses on the third goal of the study and its outcomes. This article is focused on the findings related to the first research objective.

## 2 Research methodology and methods

The study draws on a *socio-ecological approach* (Evans, Waite & Kersh 2011), emphasising that individuals are learning, developing, and acting in a complex system of various social environments and structures, actors, and interrelationships (Jacobsen & Wilensky, 2006; Evans et al., 2011). For VET students and apprentices, these environments may comprise parents, teachers, supervisors, peers, as well as digital spaces. The socio-ecological approach serves as a basis for the data analysis, enabling the understanding of the role of various social environments that young people are involved in, their learning trajectories, as well as identifying the factors that enable the development of their competences and sense of agency.

Vocational education and training and work create specific context for the acquisition, enrichment and exploiting of social capital for the NEETs and other socially disadvantaged youth groups. Vocational socialization of youth oriented to employment historically has been one of the fundamental missions of the institutionalised, school-based VET provision since its emergence in the industrial societies since the XIXth century. The potential and capacities of VET in exercising *such vocational socialization* and the content /extent of this socialization are defined by the different arrangements, settings and approaches of curriculum design, organization of theoretical and practical training, pedagogical relationships, guidance and assistance to students. *Autonomy and empowerment* of young people are usually at the centre of focus here, but their attainment involves a lot of contradictions. For example, modular competence-based VET curricula due to its flexibility and practice orientation can be regarded as propaedeutically effective and accessible to at-risk VET students (Mulder, 2017; Pilz et al., 2018) in the same time noticing their shortfalls in providing powerful knowledge and solid future oriented qualifications fostering employability and resilience to labour market shocks (Allais, 2016; Young, 2008; Young & Muller, 2013; Wheelalan, 2017). Similarly, strengthening of *the work-based learning* provision for the at-risk young people can

significantly contribute to their *employability and resilience*, but it also depends on *the quality of involved pedagogical relationship and provision of the individualised pedagogical support and guidance* (Billett, 2016). Here the understanding the perceptions of the empowering influence of VET by the at-risk VET students is particularly important and relevant, in seeking to align VET interventions and measures targeted to the empowerment and resilience of the at-risk students to their life projects and enhance the agency of students in learning, working and development of their capacities.

A mixed-method study by applying a complementary qualitative and a quantitative methodology had been applied. A qualitative, narrative interview study approach (Thomson, 2009) is applied to study at-risk youth in VET schools. The study has been targeted to young people, aged 16-24 years, in VET, identified (by their teachers/school leaders) as student at risk in the VET establishments of the Baltic countries and Norway.

The study executed in Lithuania includes 22 face-to-face and online interviews with at-risk VET students in the 4 VET centres of the country located in Vilnius, Kaunas, Alytus and Smalininkai executed in the period from September 2021 to February 2022, as well as 3 focus groups with VET teachers, social pedagogues and other members of teaching staff in the 3 VET centres located in Vilnius (organised online because of pandemic restrictions), Kaunas (live) and Smalininkai (live) by involving 9 participants in total (6 VET teachers, 2 social pedagogues and 1 psychologist).

In Estonia there were executed 20 online interviews via Zoom with VET students, NEET students (3) all over Estonia in the period from September 2021 to May 2022. There was also held an expert interview with a person working for Youth Guarantee initiative and with a long term experience in studying and working with young people in status of NEET, as well as two focus groups with VET teachers, social pedagogues, internship specialists. Interviews were also done via zoom because of the COVID19 restrictions.

In Latvia there were held 22 face-to-face and online interviews with at-risk VET students in the 3 VET centres in the period from September 2021 to February 2022 and three focus groups with VET teachers, social pedagogues and other members of teaching staff in the 3 VET centres.

In Norway there were held 17 face to face interviews with at-risk VET students in the two VET establishments and two focus groups with VET teachers, social pedagogues and other members of teaching staff. Interview questionnaires include the questions asking to evaluate the role and place of the vocational education and work experiences for the empowerment of at-risk students to learning and employment.

Data analysis process comprised of three phases. First, based on the interview guide, there were identified jointly dimensions in the data, covering aspects in the students' interviews, accounting for hindering and supporting factors for completing VET. Second, the analyses along these dimensions were carried out separately in each country. Finally, the findings were compared across the four countries.

### **3 Institutional factors of empowerment of at-risk students in the Baltic countries and Norway**

Specificities of institutional settings of skill formation systems and VET provision in the countries are to be considered in explaining the differences of factors which support and hinder empowerment of VET students and learners reported by the research participants. Political and institutional attitudes to and approaches of dealing with at-risk and disadvantaged youth in VET in the countries should be also considered here.

Empowerment and social integration of at-risk youth in the VET systems of Baltic countries are strongly influenced by the combination of the market orientation and priorities to fostering employability, provision of the equal access to the school-based public VET system

and efforts in providing systemic support to socially disadvantaged or at-risk young people by referring to the EU strategies of skill formation and employment (Tütlys et al 2022).

For example, initial VET in Lithuania has been regarded as a part of state-funded education. The VET Law declares inclusiveness and accessibility of the provision of training as integral part of the goal of VET provision by stressing that VET should aim „to create conditions for the persons with different needs and abilities to acquire vocational qualification and competencies (...) as well as key skills needed for the self-establishment and competition in the changing labour market, lifelong learning...” (Lietuvos Respublikos Seimas, 2023). There is also declared goal to create conditions for the recognition of competencies and qualifications acquired in the different ways and to ensure accessibility and quality of VET. The first declared principle of VET system is equal opportunities – VET system is socially just, ensures equality of persons independently from their sex, race, ethnicity, language, social origin and status, religion or beliefs; guarantees access to acquisition of qualification and additional competencies for every person. However, this Law also contains provisions which in some ways narrow or limit the implementation of the above indicated principles and declarations. For example, there is provision concerning the access to state-funded VET, which indicates that state funding of initial VET is limited to the training programmes and pathways leading to the acquisition of the first vocational or professional qualification. It means, that graduates of VET programmes cannot apply for the second and further state-funded vocational training programmes, except applying for the continuing training programmes delegated by the State Employment Service.

Due to the domination of the orientation of VET policies in the Baltic countries to the economic goals related to the competitiveness of human capital and market needs, institutional accessibility of training and support for employment at the national level often is not accompanied with the sufficient social, pedagogical and psychological support because of shortage of teaching auxiliary staff capacities (Tütlys et al 2022). Very often it leads to the stronger reliance of at-risk students on themselves (assuming higher personal responsibility for creating future life), as well as on support from their families, kinship, relatives and friends in the learning and employment contexts. Lack of social support pushes VET students to get employed in unskilled and low-skilled jobs thus compromising the quality of studies and chances of graduation. This risk can hardly be counteracted by still quite fragmented work-based learning opportunities provided by the market-oriented, but school-based VET systems of the Baltic countries.

Empowering and inclusion of youth through VET and lifelong learning pathways are established and important priorities in the VET policy agendas and practices in the Nordic countries, as a part of Nordic welfare state model (Albæk et al, 2015; Anvik and Waldahl, 2017; Follesø, 2015; Frostad et al, 2015; Nilsson, 2010). In case of Norway the VET provision is supported by the well-established and strong social welfare mechanisms, what reduces the need of the support for at-risk students from their families, relatives and friends in the processes of learning and employment, but also weakens development of their autonomy and readiness to assume personal responsibility for learning and employment. Systemic and sustainable accessibility of the work-based learning significantly contributes to increasing the possibilities for such young people to get employed in the skilled job positions.

#### **4 Results, conclusions and recommendations**

In general, research confirmed that at-risk VET students in the most cases notice and value the empowering provided by the vocational education and work experience. These empowering effects include socialization and finding one's place in society and labour market, acquired trust

in themselves, received support from the VET teaching staff and acquired positive and meaningful learning experiences. There have been identified country related specificities of these attitudes of students. For example, the students in Lithuania and Latvia tend to stress the empowering effect of VET in contrasting to lack of such empowerment in the general education, as well as indicate the meaningfulness of vocational learning for their future plans. Some students in Estonia indicate the lack of support and significant difficulties in orientation in the VET environment what impedes their empowerment for learning and employment.

**Table 1**

Factors which support and hinder empowerment and participation of vulnerable students in learning and employment in the Baltic countries and Norway

Factors which support empowerment and participation of vulnerable students in learning and employment			
Lithuania	Latvia	Estonia	Norway
Supportive family relationships. Individualized pedagogical and psychological support from teachers, supervisors and peers in the VET schools (much less in the general education establishments). Meaningful and work-practice related learning with clear objectives, systemic career counselling. Active engagement of the VET students in the students' council activities. Possibilities to develop skills and to get socialized in the international students exchange programmes (Erasmus+).	Supportive family relationships. Personalized socio-pedagogical support from education institution by providing support person (class educator – <i>grupas audzinātājs</i> ) who deals with different learning and life problems of students. Possibilities to develop skills and to get socialized in the international students exchange programmes (Erasmus+).	Stable family background and supportive family relations. Flexible VET curricula, which enables meaningful learning and development of key skills. Career counselling delivered by psychologists. Mentoring of vulnerable students (to help students build resilience and prepare them for new independence and responsibilities by helping prepare them for living on their own).	Emotional support from the family and friends. Meaningful learning in the VET school, feeling the relevance of learning and seeking for results. Pedagogical and psychological support from the teachers. Feeling accepted in the workplaces during the apprenticeship training and work-based learning.
Factors which support empowerment and participation of vulnerable students in learning and employment			
Lithuania	Latvia	Estonia	Norway
Unsupportive family relationships. Lack of support from the teachers (experienced in the general education). Learning detached from the work practice. Insufficient volume of practical training. Loneliness at school. Complex pathways of education and acquisition of vocational qualifications	Difficult family situation. Lack of support from the teaching staff. Poverty in the low-income families, especially in the rural areas.	Low interest in the study field; previously experienced school bullying, low self-esteem, depression, anxiety and problems with mental health. Lack of support of teaching staff in the VET schools; lack of creativity in the curriculum.	Unstable and unsupportive family situation. Bullying experience in the previous stages of education. Negative cultural and relational experiences from studying in VET school. Learning irrelevant for the work practice.



defined by the regional differences of labour market and accessibility of VET in the regions (challenge in the rural areas and smaller towns). Poverty and employment in the low-skilled jobs often leading to dropout.		Higher interest in getting general education diploma rather than VET qualification. Difficulties in searching for places for practical training (this responsibility is delegated to students). Employment in low skilled jobs during studies.	Isolation, feeling excluded, bullying experience in the VET establishment. Loneliness and feeling abandoned in the workplace learning settings, lack of support from peers, supervisors and co-workers during the practical training.
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What regards work experience and employment the research disclosed controversial implications of work for the empowerment of at-risk students, especially in the Baltic countries. Some students tend to appreciate the access to practical training in the real work environments offered by the modernized and equipped VET centres in the all countries involved in this study. Students from the rural areas (Lithuania) indicate the shortage of high-quality practical training in the work process, especially what regards experiences of work-based learning. Employment of at-risk students in the low-skilled or unskilled jobs during their studies present significant risk of leaving the studies because of workload and lack of time for studies (Lithuania, Estonia), while some employed students. Although students recognize that the main reason of such employment is necessity to find the source of subsistence for themselves and material support for their families, some of them outline the positive impact of such work experience for their self-esteem and for development of personal work ethics.

These research findings have important implications for VET policy learning and development of policies and practices targeted to empower vulnerable VET students. First of all, they disclose that despite of the differences of the institutional settings of the VET provision, VET teaching staff remains a central factor of support for such students in the all countries. This implies necessity to ensure the availability of sufficient volume of VET teaching staff and their capacities to deal with the challenges and problems of the vulnerable VET students, what remains a significant challenge in some of the countries, involved in this research study, like Lithuania. Secondly, work-based learning and apprenticeship rather expectedly emerges as significant factors which supports learning and participation of the vulnerable students in the all countries involved in this study, which could potentially become a remedy against dropping-out caused by unskilled and low-skilled employment of these students during their studies in the Baltic countries. Again, the main challenge here is to expand accessibility of quality apprenticeships for the vulnerable learners, what requires significant efforts from the policy makers, social partners and VET providers.

## 5 Disclaimer

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## References

- Albæk, K., Asplund, R., Barth, E., Lindahl, L., von Simson, K., & Vanhala, P. (2015). *Youth unemployment and inactivity. A comparison of school-to-work transitions and labour market outcomes in four Nordic countries*. In *TemaNord 548*: Copenhagen: Nordic Council of Ministers.
- Allais, S. (2016). Occupational standards setting in the English-speaking world: a dysfunctional product for export?, In *Bohlinger, S., Dang, T. & M. Klatt (Eds.), Education Policy: Mapping the Landscape and Scope*, (pp. 435-459). Peter Lang.
- Anvik, C. H., & Lietuvos Waldahl, R. H. (2017). Excluded Youth in Iceland, the Faroe Islands and Norway. *Nordisk Velfärdsforskning [Nordic Welfare Research]*, 2(1), 17-29.
- Billett, S. (2016). Beyond Competence: An Essay on a Process Approach to Organising and Enacting Vocational Education, *International Journal of Training Research*, 14 (3): 197–214. doi:<https://doi.org/10.1080/14480220.2016.1254365>.
- Evans, K., Waite, E., & Kersh, N. (2011). Towards a social ecology of adult learning in and through the workplace. In Evans, L., Waite, E. & N. Kersh (Eds.), *Towards a social ecology of adult learning in and through the workplace* (pp. 356-370). SAGE Publications Ltd.
- Follesø, R. (2015). Youth at Risk or Terms at Risk? *YOUNG: Nordic Journal of Youth Research*, 23(3), 240-253.
- Frostad, P., Pijl, S. J., & Mjaavatn, P. E. (2015). Losing All Interest in School: Social Participation as a Predictor of the Intention to Leave Upper Secondary School Early. *Scandinavian Journal of Educational Research*, 59(1), 110-122. doi:10.1080/00313831.2014.904420
- Holte, B. H., Swart, I., & Hiilamo, H. (2019). The NEET concept in comparative youth research: the Nordic countries and South Africa. *Journal of Youth Studies*, 22(2), 256-272. doi:10.1080/13676261.2018.1496406
- Jacobson M. J., Wilensky U. (2006). Complex systems in education: Scientific and educational importance and implications for the learning sciences. *The Journal of the Learning Sciences*, 15(1), 11–34.
- Lietuvos Respublikos Seimas (2023). Respublikos profesinio mokymo įstatymas. Suvestinė redakcija. 2023-01-02. <https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.45299/asr>
- Loogma, K., Ümarik, K., Sirk, M. and Liivik, R. (2019). How history matters: The emergence and persistence of structural conflict between academic and vocational education: The case of post-Soviet Estonia, *Journal of Educational Change*, 20, 105–135.
- Mulder, M. (2017). Competence theory and research: a synthesis. In Mulder, M. (Ed.), *Competence-Based Vocational and Professional Education. Bridging the Worlds of Work and Education*, (pp 1071-1106), Springer.
- Nilsson, A. (2010). Vocational education and training – an engine for economic growth and a vehicle for social inclusion?, *International Journal of Training and Development*, 14(4), 251-272.
- Pilz, M., J. Li, R. Canning, Minty, S.(2018). Modularisation Approaches in Initial Vocational Education: Evidence for Policy Convergence in Europe?, *Journal of Vocational Education & Training*, 70 (1): 1–26.
- Tütlys, V., Buligina, I., Dzelme, J., Gedvilienė, G., Loogma, K., Sloka, B., Tikkanen, T.I., Tora, G., Vaitkutė, L., Valjataga, T. and Ümarik, M. (2022). VET ecosystems and labour market integration of at-risk youth in the Baltic countries: implications of Baltic neoliberalism", *Education + Training*, 64 (2), 190-213.
- Young, M. (2008). *Bringing Knowledge Back In: From Social Constructivism to Social Realism in the Sociology of Education*. Routledge: London.

Young, M., Muller, J. (2013). On the powers of powerful knowledge, *Revue of Education*, 1, 229-250.

Wheelahan, L. (2017). Rethinking skills development: moving beyond competency-based training. In Warhurst, C., Mayhew, K., Finegold, D., Buchanan, J. (Eds.), *Oxford Handbook of Skills and Training* (pp. 636-651), Oxford University Press.

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Tyson, R. (2023). Lehrkunstdidaktik and its potential for vocational didactics. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 458–462). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7822271>

## Lehrkunstdidaktik and its Potential for Vocational Didactics

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### Abstract

This paper focuses on the German didactical theory *Lehrkunstdidaktik* (The-art-of-teaching) and its potential to enrich vocational didactics. A brief outline is given of the central conceptual scheme of The-art-of-teaching: its exemplary-genetic-dramatic approach to pedagogical cases. Following this two cases from vocational didactics are presented and discussed from the perspective of The-art-of-teaching. In conclusion it is argued that The-art-of-teaching is a didactical theory well suited to enrich vocational didactics and, in turn, to demonstrate the general educational value of some pedagogical cases taken from the vocational field.

### Keywords

Lehrkunstdidaktik, the-art-of-teaching, vocational didactics, vocational bildung

### Background

The German didactical research tradition *Lehrkunstdidaktik* (mostly translated as “the art of teaching”) has grown from the Bildung-oriented didactics of Martin Wagenschein (eg. Aeschlimann, 1999; Berg, 2003, 2004, 2009; Wagenschein, 1991). Central to it is the development of so-called *Lehrstücke* (pedagogical cases). These cases are meant to engage with a particularly rich subject matter, a “timeless theme from our history”, something that holds an unusually strong potential to develop deeper understanding in a subject and its context. As a method for this a so-called exemplary-genetic-dramatic approach is used where the case that is developed focuses on some exemplary topic (ie. a topic of unusual pedagogical richness), explores its history and how we have understood it in the past as well as present. Finally, the dramatic element emphasizes the compositional aspect, that this case be in a sense “staged” by the teacher in such a way as to involve the students in a process of exploration and experience.

A typical pedagogical case that has been well researched and repeatedly “staged” (Emden & Gerwig, 2020) is based on the famous physicist Michael Faradays lectures for children and youth, *The chemical history of a candle*. In these lectures Faraday uses a candle to explore the circulation of carbon but in such a way as to unlock for the participants the richest and deepest understanding of the subject-matter. Over the years a wide repertoire of didactical cases has developed within this practice-oriented research tradition, many as the center of doctoral theses in education.

In evaluating the work done within the “art of teaching” school of didactics the well-known German scholar of education, Wolfgang Klafki wrote (in the foreword to Berg & Schulze, 1997, p. 14f., my translation):



For me it is beyond any doubt that the concept proposed in “the art of teaching” is an original contribution to contemporary didactics. ... As far as I know there is, within German didactics, no other school that has realized the oft raised need of a cooperation between educational theory and educational practice. This holds with regards to scope, the long period of time during which research has been conducted and the width of participants from practitioner to researcher. Above all it is the intensity in the detailed and repeated planning, the “dramatic” staging and the variations that spring from this and give rise to ever new ways of enacting the “piece”.

In any education concerned with the development of deeper understanding among students, with a preparation for engaged lifelong learning as well as transitions between vocational education, work, and higher education this approach warrants interest. However, for the most part this school of didactics has remained a German-speaking affair and, even more relevant to the present context, there are no discussions or didactical cases that the author of this paper is aware of, where vocational didactics are included in “the art of teaching”. This despite many vocational tasks harboring promising potential in this direction (see Tyson, 2017 for some initial discussions within a similar framework but without explicit connections).

## Aim

The aim of this paper is to:

- a) Provide a brief theoretical look at “the art of teaching” discussing its core concepts and their relevance for vocational didactics.
- b) Present two empirical case studies where vocational tasks have been used in an exemplary-genetic-dramatic way and to discuss how these could function as templates for further research and practice in the field.

## “The art of teaching” – theoretical foundations and relevance for vocational didactics

“The art of teaching” is a school of didactics originating with the German professor of science-didactics Martin Wagenschein (1896-1988) (cf. Westbury et al. 2000, for an English introduction). He developed a perspective on educating for understanding that proceeded from the exemplary, what is today called a “Lehrstück” or pedagogical case<sup>47</sup> (Berg 2003).

Wagenschein was mainly involved in the didactics of natural science and mathematics where he advocated for what has become known as a Socratic-genetic-exemplary method – in later varieties revised to an exemplary-genetic-dramatic.

An exemplary pedagogical case is chosen because it places one of “humanities star-moments” (*Sternstunden der Menschheit*, after the famous novel by Stefan Zweig of the same title), or epochally typical themes of humanity.

The genetic element is about going back to one of the historical origins of a phenomenon, in science often the time when the phenomenon in question was first considered from a scientific point of view. This is done to find that point in history where a question first became relevant to human beings and to explore why this was.

The dramatic element is central because each pedagogical case is constructed around a developed dramaturgy with an initial question that catches the students’ attention and awakens their interest. It also implies that each pedagogical case can be described in text as a kind of drama and thus be passed on for others to stage. In this way, it is argued, we could over time amass a large collection of educational dramas to stage by teachers.

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<sup>47</sup> Called “staging lessons” on the website [lehrkunst.org](http://lehrkunst.org), pedagogical case is more connected to established vocabulary in English and covers the two salient factors: it is a “piece” (Stück) or case of some educational content, and it is pedagogical in the sense of being concerned with teaching for understanding and development (ie. Bildung).

Close to 60 pedagogical cases are available (as of spring 2023) at [lehrkunst.org](http://lehrkunst.org). They cover almost every subject-area and are primarily focused on students at the secondary- and upper secondary level. None, however, seem to be concerned with vocational education or to be based on a vocational task that is transformed into a general educational task. Examples of pedagogical cases are Aesop's fables, Geometrical proofs with Euclid, Dostoyevsky's *Grand Inquisitor*, Goethe's metamorphoses of plants and Mörike's *Mozart*. A couple, *The Walk* with Robert Walser and *Universal grammar* with Noam Chomsky, are available in English. Almost all contain a brief synopsis and then a longer description covering between 20 and 70 pages where the case is described more extensively. Each pedagogical case is normally between 10 and 25 lessons and has been developed in cooperation with colleagues and researchers.

The field of vocational didactics contains at least two areas that clearly overlap with “the art of teaching”:

1. Many vocational tasks easily integrate the exemplary and the genetic elements of “the art of teaching” since most of them have developed within a concrete context.
2. Vocational training and vocational courses are often given in blocks and periods rather than single lessons, something that is generally conducive to pedagogical cases.

### **Theoretical perspectives and method**

The study compares and discusses didactical frameworks incorporating case study research as a way of expanding theoretical perspectives further (Tyson, 2017). The research design is based in Flyvbjerg's phronetic perspective (Flyvbjerg, 2001) where the aim of social science research is to enable wiser practice. Methodologically the study is largely an amalgam of theoretical research and case study research where the two case studies were documented using interviews and action research respectively.

None of the cases presented were explicitly developed within the framework of “the art of teaching” rather they are presented as cases that could profitably be contextualized within that framework and thereby expanded on. Given the format of the paper, the cases are presented in condensed form.

### **Case study #1 Bookbinding**

The first case focuses briefly on how a vocational task can be transformed into an “art-of-teaching” case. It is taken from the craft of bookbinding and was documented through a series of four action research cycles. Each cycle encompassed 14 lessons of 80-minute length (given twice a week for 7 weeks) and involved both lectures and the practical work of making the books in question. The participating students were around 15 years of age at the time and in Swedish secondary school (9<sup>th</sup> grade).

In bookbinding there are several different kinds of books that can be made. These vary over time and across cultures. In choosing which books to include in a bookbinding project it is possible to create a contrasting effect that illustrates powerfully the difference that culture, materials, and tools have in the shaping of an object.

In this case the standard European book-format, the codex, is compared to the East-Asian book as it was traditionally made in China and Japan. It turns out that down to the details these craft-pieces are opposites. Owing to differences in the fibres used to make paper, European paper has always been comparatively thick whereas East-Asian paper is generally very thin. European books have hard covers made of cardboard or wood; East-Asian books have soft covers. European books have the paper folded at the spine, East-Asian books have it folded at what, from a European perspective, constitutes the books front. The text is written horizontally in European books and vertically in East-Asian books. It is written with hard feather-pens in European books and with soft brushes in East-Asian books. Space does not permit a full

exploration of the case, suffice it to say that by contrasting these two cultural artifacts an exemplary, dramatic, and genetic effect is possible to achieve.

In this case the aim was to take an element of a traditional craft and make it available to students involved in general education, ie. to enrich their education with a task from a vocational field that was unusually rich in Bildung-potential.

### **Case study #2 Making an iron cube**

In the process of documenting the vocational education biography of crafts-master Wolfgang B. (cf. Tyson 2015) a longer narrative was recorded where he spoke of a task his father, who worked in the metal-industry in Stuttgart, gave him for his 16<sup>th</sup> birthday (fully discussed from a vocational didactical perspective in Tyson 2016). In the narrative he describes how he received a rough iron cube and some tools as a gift with the task of making a perfectly angular cube with perfectly smooth surfaces. In the process, not only did he develop the skills in question but also describes how he gained a wider understanding of the materials and tools in question as well as developing dispositional capacities such as care, exactness, and meticulousness. Finally, he was also introduced to fields of knowledge implicitly present in the task. These ranged from geometry (the platonic bodies) to physics (the metal expanding and deforming from the heat of the hands) to cultural history (the Vikings and their steel as well as their settlement at Hedeby). In this way the case illustrates how a particular vocational task, treated in a pedagogical way (i.e., from a Bildung-perspective, eliciting as much meaningfulness as can be imagined from it), can become everything that “the art of teaching” conceptualizes and more. Whereas the pedagogical cases developed thus far mostly engage with teaching for a deeper understanding this case also includes development of dispositions and skills together with a wider, understanding-oriented contextualization of the task.

### **Results**

This study and discussion are, perhaps, a first, minor, contribution to the enrichment of vocational didactics through an important and well researched Bildung-oriented didactical perspective. Parallel to this it might also serve to highlight the potential of vocational tasks to contribute also to general education and to “the art of teaching” in a more general sense, thereby demonstrating that vocational education, far from being “just for those learning a job”, contains aspects and elements that are of a much wider importance from a didactical or curriculum point of view.

### **References**

- Aeschlimann, U. (1999). *Mit Wagenschein zur Lehrkunst*. Doctoral dissertation, Marburg.
- Berg, H. C. ed. (2009). *Die Werkdimension im Bildungsprozess: Das Konzept der Lehrkustdidaktik*. h.e.p Verlag.
- Berg, H. C. (2004). Framework and example of a definite “Inhaltsdidaktik”. *Journal of Social Science Education* 3(1), 25-37.
- Berg, H. C. (2003). *Bildung und Lehrkunst in der Unterrichtsentwicklung*. Oldenbourg.
- Berg, H. C., & Schultze, T. eds. (1997). *Lehrkunstwerkstatt I. Didaktik in Unterrichtsexempeln*. Luchterhand.
- Emden, M. & Gerwig, M. (2020). Can Faraday’s *The Chemical History of a Candle* inform the teaching of experimentation? An hermeneutic approach for teaching scientific inquiry from a proven historical exemplar. *Science and Education* 29(3), 589-616.
- Flyvbjerg, B. (2001). *Making social science matter*. Cambridge University Press.

- Tyson, R. (2017). *The Rough Ground. Narrative explorations of vocational Bildung and wisdom in practice*. Doctoral dissertation, Stockholm University, Department of Education.
- Tyson, R. (2016). Yrkesutbildning eller yrkesbildning: vad lär vi oss egentligen? En introduktion till empirisk yrkesbildningsdidaktik. *Nordic Journal of Vocational Education and Training*, 6(2) 1-16.
- Tyson, R. (2015). *Vocational Bildung in action*. Licentiate thesis, Stockholm University, Department of Education.
- Wagenschein, M. (1991). *Verstehen lehren*. Beltz.
- Westbury, I., Hopmann, S., & Riquarts, K. eds. (2000). *Teaching as a reflective practice. The German didaktik tradition*. Lawrence Erlbaum Associates, Publishers.

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## Outside-in: Public-Private Partnerships Upgrading the Institutional Equilibrium in Morocco, the Netherlands and Serbia

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### Abstract

In this comparative paper on growing public-private partnerships for skills development in Morocco, the Netherlands and Serbia, we refer to the thematic conference issue: historical pathways of institutional development of skill formation in different orientations and systems to the social justice, market economy and socio-economic development.

### Keywords

skills alignment, public-private partnerships, institutional arrangements, innovative education practices

### 1 Public-private partnership in skills formation

Education systems have high degrees of institutionalisation. When education systems underperform, actors will express their ambition to change practices, especially when there is a need for skilled labour. Fast-changing technological requirements in work processes, a skewed demographic composition, unevenly spread labour mobility and austerity in government spending have all raised the need for public education to adapt.

In Vocational Education and Training (VET)<sup>48</sup> we observe an increasing use of Public-private partnerships (PPPs), which lead to changes towards a new institutional equilibrium. These changes may be initiated by governments or semi-public institutions alone; by the public actors in alliance with companies and educational institutes and schools; and, last but not least, institutional innovation may be spurred by associations, companies and chambers of commerce on a local level.

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<sup>48</sup> For the purpose of this paper, we use VET as short for: vocational education, continuous vocational education and training, skills development, skills for work, labour-market oriented education and training, including components of non-formal learning.



We define PPPs for skills development as mechanisms for coordinating action and sharing responsibility for skill production at national, regional or at school level between public and private actors.<sup>49</sup> Our analysis on VET shows the importance of formulating, designing, financing, managing and/ or sustaining engagements of common interest with a view to producing results at the level of outcomes (impact) in addition to outputs.

As we will illustrate below, we are aware that PPPs in education is a controversial issue because of the risk of privatization of education<sup>50</sup>, but in this paper we aim to show how a skills challenge or a mismatch between supply and demand does lead to renewal of VET-systems. Our ambition is to analyse the institutional developments that aim to improve the alignment of the demand for skilled labour and the quantity and quality of the labour supply, in response to the above-mentioned challenges. These problems are often wicked; they can have many causes, and improving or solving an issue implies addressing several interconnected conditions, including the existing institutional equilibrium. Overcoming these issues calls for cooperative efforts at different levels of aggregation by companies and schools in a particular branch of the economy, first and foremost in relation to local labour markets, but also in relation to collective skill formation as a whole. Hence, what can be achieved in a particular country is influenced by institutional checks and balances and to the system's resilience and capacity to be permeated by innovative solutions (ETF, 2020a).

We present brief case-studies of the emergence of PPP for vocational skills development in Morocco, Netherlands and Serbia. The three countries have different socio-economic contexts and VET systems, thus we look at specific forms of PPP they have developed in VET against the background of their respective institutional conditions, namely key system governance features and social dialogue tradition and practice. The rationale for comparing three different country contexts lies with their common experience of government and/or companies having failed to invest in skills formation, which subsequently has led to an innovation in partnerships followed by an upgrading of the education system.

We aim to show how the 'outside-in' mechanism works. To this purpose, we show how in a dissimilar social-economic contexts, strategies to enter and improve the existing institutional equilibrium have interesting similarities. Our respondents validated the importance of the new innovative networks of regional cooperation between schools and companies outside the existing public school system in the first instance, whereas afterwards the newly established structure permeated the regular VET system.

## **2 PPPs for skills development – a paradigm shift**

The literature on Public-Private Partnership originates from the analysis of public work and public infrastructure. Roads, dikes, bridges, swimming pools only emerge from public investment and procurement, when markets and states fail and public service provision underperforms. Recent conceptualization of public governance and public policy administration suggests a shift in the conceptualisation of PPPs from the traditional definition that focuses on infrastructure delivery and management to an understanding of PPPs at the level of long-term programme and policy outcomes. This is relevant in the domain of skills production. Busemeyer and Trampusch (2014) place the political economy of skills production in a development of state-related, market-related and social -partnership based skills systems, but lack a detailed analysis of interaction between markets and states leading to public private partnerships (ETF, 2020a).

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<sup>49</sup> We follow the study of the European Training Foundation (ETF) that monitored progresses in VET systems and policies in 14 countries (ETF, 2020a).

<sup>50</sup> One important reference for the critics to PPP in education is the human right approach, see for example: de Koning, M. (2018), Abidjan Principles (2019).

More generally, no adequate definition nor a new consensus on the concept of PPPs exists in the skills domain, as follows from the following three arguments:

- The OECD, World Bank and EIB definitions all reflect PPPs where the main motivation of the private sector to engage in a partnership is direct financial gain. These definitions, which inform the national laws of both groups of countries in the study, do not fit with PPPs geared to outcomes or long-term benefits for society.
- Partnerships are the focus of the 17th Sustainable Development Goal (SDG). However, while the SDGs encourage PPPs as one systemic issue, they do not provide a definition of the concept in education or training.
- PPPs can be perceived as a threat to education, viewed as a public good and a fundamental human right. The PPP model is seen as a vehicle for privatising education supply, bringing concerns about possible failures in quality, equity, accountability and social cohesion. These critiques chiefly concern the sphere of basic and compulsory education, whereas VET and skills development have their own specificity and history of public-private relationships.

From these findings, we seek to reach a more systematic understanding of the scope and functioning of these partnerships, and of their potential to establish a direction for public-private cooperation in VET. This can be framed as a paradigm shift from the New Public Management model that originated in the United Kingdom in the early 1990s to one closer to New Public Governance (Osborne, 2010; Osborne and Stokosch, 2013) and Public Value Creation (Moore, 1995; O'Flynn, 2007).

With this theoretical shift, the notion of value for the stakeholders has emerged to highlight that value is the result of multiple contributions along the chain of value generation. In that perspective, value is rather a collective creation, for it depends on different sources of inputs at different stages. The value for the stakeholder approach argues that the benefits should return to all those concerned. This notion is coupled with a vision of the value creation as long-term process, as opposed to the shareholder value approach that rather focuses on maximising short-term returns for those in the last leg of the value creation process, while it tends to disregard those who contributed earlier on in the entire (longer) value chain (Mazzucato, 2021).

The lenses of the value for the stakeholders' framework make us to consider the learners as relevant stakeholder in the VET and skills development system. The investment in learning programmes is made to generate good quality skills, technical and key competences, relevance for the labour market and personal development that benefit the learner, and eventually the competitiveness and innovation of the enterprise. In this framework, therefore, PPPs in VET are meaningful arrangements if they foster the quality and relevance of skills; in other words, if they generate value for all contributors: the public partner that represent the community or state, the private partner and the learner.

The New Public Governance and Public Value Creation paradigms operated a shift of focus on the outcomes of public expenditure, without neglecting the efficiency. In domains such as VET, indeed programme partnerships offer a means to implement policies if they are outcome-driven, i.e. with states, schools and companies bringing in resources to establish training centres and/or enhancing learning practices in response to technological change and labour market needs. Public-private boundaries have evolved over the past 30 years; however, while the creation of public value is not the sole responsibility of governments, the state should lead on standards of public value delivery set at high level. In order to make PPPs to work, it is fundamental that the public sector possesses due capacities, plays as catalyst, and remains accountable for the value created along the path and policy outcomes.

### 3 A schematic analysis of PPP-development in three countries.

But how does this work in practice? We distinguish between the emergence of these PPPs and their institutionalization. In the scheme below we define various dimensions of PPPs-emergence and development. We analyse both the type of innovation, the contextual factors as well as the dimensions of the emerging PPPs. Contextual factors include the nature of the existing regulative pattern in a particular country, the degree of centralisation and decentralisation of policy preparation and the existence of social-dialogue. The emergence dimension refers to the source of innovation, the kind of PPP that is established, its resources and form of monitoring and evaluation.

**Table 1**

Dimensions in PPPs emergence and development: case-study comparison in Morocco, the Netherlands and Serbia

	MOROCCO	NETHERLANDS	SERBIA
TYPE OF INNOVATION			
CASE-SOURCE OF INNOVATION/ LEADERSHIP	(1) DMIs (delegated management institutes), notably the IFMIAs in the automotive sector  (2) CMCs, Cités des Métiers et Compétences	Platform Beta technics, later: Katapult	(1) IFVC (2) FACTS (3) E2E (4) HORES
ROLE PPP – KIND OF PPP	Both (1) and (2) are PPPs oriented to VET provision and resources enhancement. The DMIs model was established in the years 2000s.  The CMCs are a complementary model of the 2020s	Existing, now in a new manner	(1) Traditional PPP.  (2)-(4) VET specific PPP
POLICY CONTEXT			
CENTRALISATION/ DECENTRALISATION OF GOVERNANCE POLICY	Centralised, but decentralisation advancing steadily	Decentralised under a coordinating governance mechanism	(1) Centralised (2) Semi-centralised (3) Semi-centralised (4) Semi-centralised

SOCIAL DIALOGUE	Yes, in place and in TVET is advanced in priority sectors. Employers are active but unions less so.	Yes, but PPPS develop in extended form via top-sector policy	Little to zero
LEGAL ARRANGEMENTS-REGULATIVE CLIMATE	(1) Law on delegated management institutes, March 2006.  (2) Roadmap on VET, April 2019, for stronger responsibilities of the regions and involvement of private sector	Conditional	(1) PPP Law and Public Procurement Law  (2) & (3) Dual Education Law  (4) Adult Education Law
FINANCIAL ARRANGEMENTS INVOLVEMENT INTERNATIONAL PARTNERS	The state finances the infrastructure, the private sector contributes via the national tax on VET.  International donors support individual institutes/centres.	EU	(1), (2) & (4) private investments.  (3) private investments (40-50%) and donor support (50-60%)
RISK MANAGEMENT-DIVISION OF RISKS AND RISK MANAGEMENT MEASURES	Risks are shared, states grants are based on outputs, monitoring councils are in place. In the case (2), monitoring councils at regional level yet to be established.	Via organized evaluation procedures	Taken predominantly by the private partners
<b>IMPACT OF PPP</b>			
NATURE OF THE RENEWAL	Both (1) and (2) have become stable PPP models.	Pilots, funded by public money with private partnership	(1), (2) & (4) stable and developing.  (3) pilot, with a prospective of formalisation
CAPACITY OF PARTNERS AND	Growing capacity of both private and public sector	Growing capacity through funding resources and bringing	Defining the content and provision of

CAPACITY BUILDING MECHANISMS	actors. Capacity to learn lessons and improve.  The model (2) is part of broader decentralisation reform, leading to revisit roles and capacities of central and regional levels.	partners together under one roof	training according to the partners' needs; growing capacities of the partners.
MONITORING/ FOLLOW-UP AND SUSTAINABILITY : COSTS/ BENEFITS FOR STAKEHOLDERS	Inter-ministerial cooperation and PPPs are stabilising, in framework of multi-level governance development. Closeness to skilled labour demands, greater autonomy, and accountability mechanisms	Extended exchange, new recruitment opportunities	(1) appropriate goods to be procured.  (2)-(4) properly skilled labour force for employers
MONITORING/ FOLLOW-UP SUSTAINABILITY : COSTS/ BENEFITS FOR LEARNERS	(1) tracer studies show high graduate employment rates.  (2) in 2023, it was too early to have results	New Experience	(1) extended skills  (2)-(4) high job-placement rate

#### 4 The emergence and institutionalisation of PPPs over time

The start of a PPP requires cooperation between public and private actor that engage in common understanding. The establishment of partnership regularly follows a stepwise approach of establishing partnerships: start-up, institutionalisation, consolidation and further evolution. These steps may be speeded up or delayed, or they may occur simultaneously. What we find in each of the three countries under scrutiny in this paper is a quite clear outside-in mechanism.

##### *Stage one: start-up phase of specification and conceptualisation*

In the start of a PPP, pioneering and gathering ideas occurs to create something new first outside the current education system, formulating starting principles and allocating resources. At this stage, political entrepreneurs of all kinds will inductively create awareness, specify the main goals and conceptualise the common ambitions of a PPP. Their motivations and preferences include getting the labour market figures and the business case right (at least for the case involved), making themselves better known to potential partners, securing funding and sharing their analysis of the risk distribution for the collaborative project.

*Stage two: institutionalisation phase of cooperation by designing and building the PPP model*

At this stage, the actors design a more complete concept of cooperation, formulating the exact project targets, building work processes and further developing the division of labour between the management team and the training processes on the workforce, thus providing educational leadership and defining tasks and responsibilities. This stage includes the design of training programmes, the recruitment of students and the implementation of instruction. Once the PPP has been set up, management will plan new activities and monitor the first year's results in accordance with an agenda for the further development of the project in the medium-to-long term.

*Stage three: consolidation phase of operating and sustaining the initiative*

At this stage, the task is to consolidate engagement and initiatives by enabling and sustaining the operation of the initiative. Apart from the execution of 'running' the project, it will be necessary to strengthen assessment, monitoring and evaluation of activities and to find new financial resources, which may include the growth of sales in order to become independent from the principal subsidies provided by donors. Also likely to become important at this stage is the identification of any potential valorisation of projects, including the management of intellectual property, the spreading of educational results, the application of learning analytics, benchmarking against other initiatives or traditional learning practices, and networking for further exploration. The parties can develop the quality of their own practices and improve the coverage and learning potential for students and companies.

*Stage four: Scaling-up and evolution phase of further cooperation leading to integration in the established education structure*

In order to spread and sustain an initiative in the future, it will be necessary to continue the engagement of common interests and develop the initiative along new directions of teaching and learning. The cycle of further specification and conceptualisation thus restarts again. This may prompt the exploitation of existing resources as well as further inductive exploration and renewal of the initiative and the start-up of new projects, including the empowerment of staff and students to secure the project's sustainability, undertake the innovation of processes and forge new partnerships.

Here the outside-in mechanism appears: successful initiatives merge due to cross-fertilisation with the 'established educational structure' that appears to become permeable and absorbent in building a learning value chain of projects that appear to be successful and worthwhile continuing. Project evaluation and budget allocation indicate whether the joint experience in the past is strong enough to carry on with the initiative, or whether new forms of public-private entrepreneurship are needed to initiate new practices, that later become integrated in existing school system too.

***Morocco: Training Institutes for Professions in the Automotive Sector (IFMIAs), and Cities of Professions and Skills (CMCs)***

The creation of IFMIAs for the automotive industry in 2013 was framed by Morocco's National Pact for Industrial Emergence 2009-2015, a strategy to foster key sectors of the economy. The strategy paid due attention to the skills creation and continuous development as a factor for quality employment of individuals and competitiveness of the enterprises. To this end, the government and sector associations established Delegated Management Institutes (DMIs), namely technical and vocational centres of excellence created through state budget and whose management was entrusted to the concerned industry branch. DMIs were also established in other sectors of national relevance, such as the aeronautics, electronics and others.

The IFMIAs are founded by state budget while the private sector contributes indirectly through the national tax on VET. They receive additional funds through conditional grants

depending on the outputs. IFMIAs are established as companies, have autonomy of decision on spending and recruitment and are managed by professionals of the automotive sector through a Board of Directors, a President and a Development Council. Some IFMIAs have pursued ISO 9001 certification of their management practice, adopting continuous improvement and risk management approaches. Accountability and financial autonomy are key principles. A tracer study in 2019, showed graduate employment rates of 88% or more depending on the qualification, in at least two of the institutes.

Since 2019, a further model of PPP for skills is in place in Morocco – the *Cités des Métiers et Compétences* (CMCs). They are an outcome of the enhanced regionalisation policy, which has pushed the devolution of responsibilities on public policies from the central to the sub-national level, namely to the country's 12 regions. The technical and vocational education is embedded in such policy, based on the recognition that proximity to territorial specificities and economic specialisation adds value to skills development. CMCs offer education and training at secondary and post-secondary level, namely *techniciens et techniciens spécialisés*, tuned to each region's specific labour market demands. In early 2023, a total of 7 out of 12 CMCs were built and 3 were operational and effectively providing education.

CMCs are governed by a Board that comprises 3 parties: the employer federation representing the relevant sector, the Office for VET and Employment (OFPPT) and the Regional Council. The CMCs are legally established as companies where the private sector holds 51% of the shares and is Chair of the Board. Such a governance arrangement reflects the strategy of increasing the demand orientation of TVET in a twofold manner: on one hand, the engagement of the private sector in the decision making, far beyond a consultative role, on the other, the territorialisation for the system to cater for the diversity of learning needs across regional labour markets.

A comparison between the DMIs and CMCs models shows complementarity and differences. We observe complementarity whereby DMIs such as the IFMIAs are connected to sectors of national relevance, whereas the CMCs are embedded in the regional economic fabric to address territorial level's demands. The two types of institutions are PPPs and in both cases private sector actors in a given industry play a key role, but there are differences. Notably, CMCs boards comprise three actors, an arrangement that requires greater interaction and responsibility sharing with the public actors – although the private sector holds the majority – compared to the DMIs.

In summary, the PPP approach is relatively recent but progressively gaining space in the TVET system in Morocco. It has started with the DMIs, which have gone through the four stages of development, have expanded to new sectors, have graduated many cohorts of students, and reached financial sustainability. Currently, DMIs have high reputation, education is fee-based but students compete to enrol. Signals point to the full institutionalisation of DMIs, and their success to bring the PPP approach from outside to inside the system. CMCs show that PPPs in VET in Morocco are accepted and are situated at development stage two: they are being institutionalised, with only few having started the very first school year and the monitoring mechanism not yet in place. They introduce a strong regional dimension and, due to their Board composition, may potentially steer greater public and private actor co-work over the teaching and learning process, in comparison to DMIs. Hence, they demonstrate further public-private entrepreneurship, as well as capacity to learn lessons and diversify.

These innovative PPPs have been sustained by social partnership in TVET, which in Morocco is stronger than other countries in Northern Africa and Middle East. In the '90s of last century and the 2000s, social dialogue has been a source of frustration due to lack of solutions to the skill mismatch; however, it has never stopped and eventually led to innovative PPPs, such as the DMIs and CMCs. Within VET, employers engage more actively than employee representatives in the dialogue with the government.



### ***The Netherlands: 160 PPP centres in VET and HPE schools***

In the Netherlands, the turn to public-private partnership started in 2010-2011 when a new industrial policy was initiated under the label of the Topsector-approach. Ever since, joint projects have been proposed allowing for new combinations at the border of VET and of HPE between schools and external partners, supported by government agencies. This new approach is characterised by an experimentalist governance approach, though with variation depending on the policy context; in the VET-context the characteristics of cooperation are more bureaucratic in nature, in HPE more network-prone, whereas an increasingly experimentalist governance was probed in both sectors during the course of the 2010s (Moerman, 2020) .

The existing private initiatives in *both upper-vocational and higher professional education* have not altered and keep their deep historical roots, originating in cooperative forms and networks originating from the guild structure of the mediaeval period. The 1919 Craft Education Act entailed the first dimensions of partnership in the modern era. After the Second World War, vocational and higher professional education has become well established in two separated systems: a system of senior secondary professional level (MBO), issued by the WEB Act of 1996, and a separate system of higher professional level education (HBO), founded in the WHO-Act of 1986. In the legislative process associated with these most recent reforms, schools were attributed substantial autonomy and within the process of scale enlargement a process of merging and rationalisation of schools has occurred.

These current initiatives of new forms of Public-private partnership aim to connect both upper secondary vocational education and higher professional education with innovations in labour and product markets. Within this overall ambition there are three concrete goals:

1. To increase the number of technical students (mathematics, engineering, science and technology, STEM) and to enhance educational innovation in the context of regional development;
2. To innovate the practice of professions and production processes;
3. To encourage life-long learning.

In order to reach these goals, the PPP-instrument has been chosen, on the supposition that the speed of change needed to enhance innovation in schools, could only be derived with help of external or outside incentives. Three different models have been initiated; Centers for Vocational Craftmanship in VET, Centres of Expertise in HPE, next to a programme for Regional Investments funds in VET. In each of them, in spite of the organizational differences, a returning issue for the PPP-projects is: How to (re)develop the education system to equip young learners (and adults learners) with the right tools and innovation skills (STEM, entrepreneurship, creativity) to succeed in the reality of 21th century labour markets? The centres aim to promote and stimulate innovation in vocational and professional education and to contribute to the transformation of these educational institutes: students solve real-world challenges or questions and work at innovative solutions to strengthen social and economic competitiveness. The cooperation facilitates the access of companies to knowledge development in the educational institutes and vice versa schools are better aware of new technologies and work practices in companies.

The organisational basis for these innovations date back to 2004, when the three of Ministries Economic Affairs, Social Affairs and Education established the Science and Technology Platform (Platform Bèta-Techniek, PBT), with the overall aim to enhance the number of students in science, technology, engineering, and mathematics (STEM). Since its start, several recruitment campaigns and programmes for innovative cooperation between companies and education institutes have been initiated and new types of educational programmes have been propagated, to promote technical and technology-oriented education at all levels in all types. In 2019, the Platform Bèta-Techniek (PBT) has been merged into a wider

organization,<sup>51</sup> whereas the new spin-off Katapult (established in 2016) aims to serve as engine, broker and stimulator to multiply the several initiatives.

The main facilitating task of the platform has been to enhance new cooperative forms of innovation, always in the open environment of schools. The available funds were to be granted for joint proposals outside the primary process of schools and companies. The platform supported the take-off and monitored the performance of the projects which were characterised by ‘open-ended goals’ under a shared framework in which multiple stakeholders interact. Monitoring was crucial for evaluating the endurance of the approach, when the results are too disappointing project need to stop after evaluation of the board.

PPPs have been initiated above all in the domains of the Topsector approach: water management, biobased economy, creative sector and IT, high-tech systems and the like. In a second stage also health care and the basic programmes of VET have become domains for engaging in PPPs. The evidence of about 160 PPP-projects is mixed, especially in the field of live long learning the results are disappointing, whereas the influx of new student in technology sectors has increased somewhat but far less than was hoped for. Notwithstanding in particular sectors success have been reported for the professionalisation and unexpected innovations (Moerman, 2020). In the field of digitalisation for example, projects such as ‘Make IT work’ in Amsterdam and the ‘IT-programme’ in Rotterdam have started from a small initiative and become integrated step-by step in regular vocational education at all levels, whereas the Centre of Expertise in ‘personalised learning with ICT’ (Han university of Applied science) has become a national centre for research of digital learning processes and professionalisation of teachers in all educational sectors. In the recent National Growth Fund competition, Katapult was granted another 250 million Euro for establishing new Public-private partnerships in the Netherlands.

***Serbia: Institute of Field and Vegetable Crops, Cluster FACTS, Education to Employment scheme, and HORES Academy***

Even though formal structures have been institutionalised in the Council for Vocational Education and Adult Education, the social partners’ actual influence on decision-making, specifically on VET policy, is limited. In **Serbia**, there is a firm legal basis for PPP development, but social dialogue reflecting the former Yugoslavian economy, is not well-developed in the field of skills development. There appear to be sufficient legal opportunities to create the institutional conditions for PPP in spite of more restricted access to financial resources and limited evidence, motivation and awareness of former traditions of mutual cooperation and joint social partnership.

The PPP cases, which are mainly VET provision-oriented, have developed at the local level in response to labour-force demand. One case, the Institute of Field and Vegetable Crops (IFVC), is production-oriented, where the development of skills is an associated need. Two of the cases (Cluster FACTS, which is related to the preparation of specialists for the fashion industry, and E2E, an innovative scheme for the transition from education to employment) have proceeded in accordance with the Law on Dual Education. The other case (HORES Academy, training specialists in the hospitality sector) is based on the Law on Adult Education. The motivation of both parties – private and public – is strong in all of the PPPs and their level of sustainability is high.

The case of **IFVC** is in fact a classic PPP where the private partner provides services to the public party and remuneration is linked to the performance. However, for this cooperation the

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<sup>51</sup> In 2019, three separate organizations all active in the technological domain PBT, TechniekTalent.nu and TecWijzer are being merged into a joint ‘Platform Talent voor Technologie’ (Platform Talent for Technology).

skills development is not an objective *per se*, but a concomitant need for reaching the primary goal related to business. IFVC produces and imports high quality seeds of different crops but due to limited plots of own land, it is unable to ensure the volumes demanded by the market. Therefore, IFVC orders small farms and individual producers to grow the crops on their lands. Institute provides the partners with seeds which are only to be used for growing the plants. No other means are provided by IFVC. The farmers make their own investments for purchasing fertilisers, medications, water, energy, machinery and tools beforehand, and allocate considerable plots of their land, thus taking considerable risks. At the same time, for ensuring necessary quality of the produced seeds, the Institute, in advance, organises the farmers' capacity building which covers all agro-technology aspects and processes related to growing the ordered plants. In addition, IFVC trains the farmers also for more productive growing of other crops.

The Fashion Apparel Cluster Serbia (Cluster **FACTS**) is an Association which unites 20 private companies from the fashion and garment production sector, three higher educational institutions, and a Fashion Platform of young fashion designers. FACTS promotes the member companies' export and brings together the producers (and designers) and the education sector. Initiative of cooperation with education comes from the private sector and is conditioned by a considerable shortage of skilled labour force. Under dual education scheme, practical training of more than 100 students from 3 VET schools (data for 2019) is organised at the FACTS's member companies and covers at least 60% of the total amount of curricula. This dual training is a part formal education, therefore, the VET schools are not simply recipients of the private sector sponsorship but fully-fledged partners who also bear responsibilities. During the internship, the trainees are paid by the companies who decide the amount. One of them pays the student ~45 € per month, provides free lunch and transportation. Selection of the students is also done by the employers. Some students are provided with opportunity to be interns in the member-companies' shops, sometimes even with higher remuneration.

The Project *Education to Employment* ("E2E") is a joint initiative of the Serbian and Swiss Governments who are co-funders of the project with almost equal shares. One of the project's components is focused on skills development, specifically of unemployed young people through provision of the German model of dual education, adapted to the local conditions. The project has a specific architecture: in every region, local partners (usually civil society institutions) are selected and play a role of mediators ("Brokers") between the E2E and the local partners, particularly those who provide dual education courses. The Brokers are responsible e.g. for promoting the project and its activities, for attracting and mobilising youth to be involved in those activities, for training the practical training mentors, as well as for monitoring and evaluating the trainings. Theoretical part of the training is delivered by accredited VET providers (public VET schools or any authorised private training providers), while the practical part is implemented in the private companies.

In order to launch a course, E2E shall receive application from a local "consortium" consisting of a VET provider and a company. Development of training proposals and preparation of applications is assisted by the regional Brokers. If the proposal is assessed as relevant and credible, E2E authorises the Broker to conclude a formal agreement with the VET provider and the company. Then, the training is financed from the E2E Opportunity Fund, again through the Broker. This allows the latter to develop their capacities, to become more financially independent and influential, and also motivated to attract and promote more courses.

**HORES** is a Business Association for Hotel and Restaurant that associates under its umbrella hotels, restaurants, casinos, suppliers and other entities, and protects and promotes the common and professional interests of its members. Permanent shortage of qualified labour force in the hotel and catering business impelled HORES to establish its own training institution – the HORES Academy. The main activity of the Academy is one-day and multi-day seminars

and longer-term courses for sector-specific occupations which are free to the participants. Training programmes of the HORES Academy are developed in close collaboration with employers aiming to correspond to their needs, requirements and preferences. At the same time, the trainings are organised on the basis of the Adult Education Law and the Ministry of Education has provided HORES Academy with accreditation. This means a possibility to apply for funding using the calls of the Ministry of Tourism.

Summarising, it can be stated that although the discussed four cases are rather different by their structure and by the types of involved parties, they have a number of similarities: 1) partnerships were established either at the initiative of the private partners or the latter were heavily engaged at different stages and aspects; 2) the relations between the parties are stable, clearly contracted and derived from the mutual interest; 3) all cases lead to considerable results in terms of skills development; 4) the private partners directly invest their own funds and provide also in-kind contribution, they also take a considerable part of risk; 5) certain accountability to the public partner is in place. At the same time, any solid monitoring and/or evaluation schemes seem still lacking.

## **5 Conclusions: outside-in mechanisms in PPPs**

When we aim to understand processes of innovation in education we should be aware of the regularly conservative nature of teaching and learning as an ongoing practice that is highly institutionalised in curricula and annual planning. Education systems are thus not easy to change. They consist of vested interests and routines that cannot be altered on a daily basis.

The nature of the cases we discuss in this paper is innovative. The actors bring in resources and new combination of interaction and responsibility in VET in the form of capacity building to generate ideas, to monitor outcomes and to create something new. What we show in this paper is that PPPs that have been on the brink of emerging ten years ago, now prove to be part of the educational system. PPPs can be seen as new initiatives for providing training in a particular region, sector or country, next to ongoing educational practices.

These innovations are to be regarded as bottom-up process. They appear to follow a relative chaotic pattern in local areas but lead to convergence in a later stage. Within varying time horizons, actors engage in three key issues that prove to be relevant: the cooperation dilemmas: how to get started; the requirements and conditions of government legislation and coordination: how to get institutionalised; and the nature of experimental governance: how to become enduring and continuous.

The various stages of the model described earlier in this chapter can be seen in each of the three countries: start-up, institutionalisation, consolidation and evolution. In the first stage of pioneering, a new initiative develops next to or outside from the established educational practice. Both public and private partners need to be prepared to take risks and invest to achieve joint public value that is considered legitimate. The investment lies not only in financial resources, but also in time and human resources and often in equipment, tools and materials as well. This can be beneficial for one or both of the actors, and eventually create impact on the legal, institutional and financial arrangements i.e. changes at system level.

Depending on the political climate and economic cycle, the start-up period will sometimes need to be quite long and it may be hardly visible to the general public. Broker organisations or individuals may pave the way by solving all kinds of emerging problems, helping to set up new adhocracies or innovative organisations by attracting human resources and facilitating team-building, convening and hosting meetings and events, and facilitating social collaboration practices. Underlying agreements and memoranda of understanding can be developed. Helpful incentives may be provided, such as subsidies for pilot programmes that are subsequently ranked and rewarded to enhance recognition and further develop policies and regulations. In

short, political entrepreneurs will play a host of roles as they create a platform for other actors to join.

It should be noted that ambitions will change at a certain point if no progress is achieved. Some initiatives may be sustained, while others will cease or receive a new start. The decision may be taken by the participating organisations or by the government to stop and restart a project, or to initiate something new. More broadly, the practice of social dialogue in VET offers a positive background to innovative PPPs for skills; even in contexts like Morocco and Serbia where the lack of results in social dialogue had been for years a source of frustration.

#### *The relevance of this paper for further study*

The development of PPPs in three countries is relevant also to newest developments, such as the green and digital transitions. At UN and EU levels goals have been set, and governments have approved policies and legislation, however a huge deal of innovation is necessary to implement the twin transition, requiring bottom-up initiative besides the strategies and legislation. There are no unique solutions to innovation, but stakeholder collaboration and creativity is a necessary ingredient.

## References

- Abidjan Principles (2019). Guiding Principles on the human rights obligations of States to provide public education and to regulate private involvement in education. Retrieved from <https://www.abidjanprinciples.org/en/principles/overview>
- Baccaro, L. & Howell, C. (2017). *Trajectories of neoliberal transformation: European industrial relations since the 1970s*. Cambridge, New York, Melbourne, Delhi and Singapore: Cambridge University Press
- Busemeijer, M. & Trampusch, C. (2011). *The political economy of collective skill formation*. Oxford: Oxford University Press
- Ebbinghaus, B. & Weishaupt, J.T. (eds.). (2021). *Crisis corporatism or corporatism in crisis? The role of social partners in managing Europe's Great Recession*. London: Routledge.
- European Training Foundation, (2018). *Reforms in vocational education and training in ETF partner countries*. Torino, Italy. Retrieved from Reforms in vocational education and training in ETF partner countries: A cross-country digest of reform implementation and risks | ETF ([europa.eu](http://europa.eu))
- European Training Foundation (2020a). *Public-Private Partnerships for Skills Development. A governance perspective*. Volume I and Volume II. Torino, Italy. Retrieved from Public-private partnerships for skills development: A governance perspective – Volume I. Thematic overview, ETF ([europa.eu](http://europa.eu)) Public-private partnerships for skills development: A governance perspective – Volume II. Case studies, ETF ([europa.eu](http://europa.eu))
- European Training Foundation (2020b). *Policies for human capital development. An ETF Torino Process assessment*. Torino, Italy. Retrieved from POLICIES FOR HUMAN CAPITAL DEVELOPMENT IN SERBIA, ETF ([europa.eu](http://europa.eu))
- Klein, E.H. (2010). Public-private partnerships: deciphering meaning, message and phenomenon. In G. A., Hodge, C., Greve, & A. E., Boardman (eds.). *International handbook of public-private partnerships* (pp. 68-80). Cheltenham, UK and Northampton, MA: Edward Elgar
- Koning, de M., (2018). Public-private partnerships in education assessed through the lens of human rights. In G., Steiner-Khamsi, & A., Draxler (eds). *The state, business and education*, (pp. 169-188). Cheltenham, UK and Northampton, MA: Edward Elgar. Retrieved from The State, Business and Education – Public-Private Partnerships Revisited | Elgar Online: The online content platform for Edward Elgar Publishing
- Mazzucato, M., (2021). *Mission economy: a moonshot guide to change capitalism*. London, UK: Allen Lane

- Moerman, P. (2020). *Governance regimes and problem-solving capacity: public-private partnerships in Dutch vocational and higher education*. Dissertation. Amsterdam: Amsterdam University
- Moore, M.H. (1995). *Creating public value: strategic management in government*. Cambridge, MA: Harvard University Press
- O'Flynn, J., (2007). From New Public Management to Public Value: Paradigmatic Change and Managerial Implications. *Australian Journal of Public Administration*, 66: 353-366.
- Osborne, D., & Gaebler, T. (2013). *Reinventing government: how the entrepreneurial spirit is transforming the public sector*. Reading, MA: Addison-Wesley.
- Osborne, S. P. (2000). *Public -private partnership: theory and practice in international perspective*. London, UK: Routledge

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## Beyond the Classroom: Exploring Teacher Agency in Making and Breaking Educational Reforms

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### Abstract

Vocational education and training (VET) teachers are at the forefront of educational reforms aimed at shifting learning from school to company environments, also known as dual VET reforms. Yet little is known about their agency in this process. This article thus investigates the agency of schoolteachers impacted by the introduction of dual VET reforms in post-socialist, school-based VET systems. Interview transcripts conducted with VET school teachers, school directors, and VET experts in Albania and Slovakia provide data for the qualitative content analysis. The findings reveal that teacher agency is characterised by a multi-objective optimisation process between teachers' absolute numbers of reimbursed working hours, their professional status and learner's well-being. When navigating their agency through insecure educational reforms embedded within distinct structural and institutional pressures, teachers rely on their experience to estimate what coping strategy to adopt. They either block the introduction of dual VET reforms to maintain the status quo or embrace them as an opportunity to realise their material and professional interests. These insights are key when designing policy and capacity-increasing measure to ensure the buy-in of micro-level gatekeepers in educational reforms.

### Keywords

vocational teachers, dual system, educational and training reform, reform, policy of education, transition economy

### 1 Introduction

Educational change processes are multi-directional, multi-layered, and fragile (Ball, 2006; Schulte, 2018). They depend on the continuous political support of all involved actors and stakeholders (Busemeyer & Trampusch, 2012). Extensive research has focussed on macro-, meso-, and micro-political level actors in explaining the outcome of educational reforms, including incumbent decision-makers and political parties, education bureaucrats, teacher unions, donor and international organisations, and employers as the “consumers” of the education sector (Ansell, 2010; Bruns et al., 2019; Fichtner, 2010; Moe & Wiborg, 2016). However, one underestimated policy-maker – rather than commonly considered policy-taker – in education reforms are schools, specifically schoolteachers (Grindle, 2004).



Despite being critical actors in implementing and translating education reforms, their agency has not received adequate attention. Drawing on Emirbayer and Mische's (1998) perspective, teacher agency is understood as teachers' motivation and creativity that allow them to overcome structural constraints. This refers to a temporally limited process, where teachers choose among different options, make judgements that are informed by the past but also oriented towards the future, and act upon their choices. Then as street-level bureaucrats, teachers can initiate, influence and resist school-level implementation of reforms through blocking and interpreting policy as they see fit (Ball et al., 2012; Lipsky, 1980). Teacher agency studies argue that teacher agency is shaped by various factors like the ecological environment in which they are embedded in, their professional identity, efficacy beliefs, or political interference from teachers' unions (Giudici, 2021; Mizala & Schneider, 2014; Priestley et al., 2015a; Pyhältö et al., 2015). These insights however mainly derive from studies investigating teachers in primary and general education tracks in advanced capitalist democracies. Surprisingly little is known about the teacher agency in vocational education and training (VET) tracks and in contexts where their interests are weakly organised via teacher unions.

The lack of focus on the agency of VET teachers is puzzling since they are the number one educational actors coming under immense pressure due to the rise of reforms aiming to shift vocational learning and teaching in schools to work-based learning in company environments (ADB, 2009; Cedefop & OECD, 2021; European Commission, 2017; Li & Pilz, 2021). Moreover, VET teachers are a unique category of teachers because of their "dual professional identity" from being teachers in upper secondary vocational programmes and being skilled workers in an occupational trade (Sandal, 2021). As a result, many VET teachers consider their role as "proponents of the vocational" (Heikkinen, 1997, p. 215). This paper thus asks: What is the agency of VET teachers? What coping and optimisation strategies do they adopt to deal with structural constraints and pressures they are embedded in?

From a theoretical perspective, the paper speaks to recent approaches that aim to theorise how political processes at the micro-level shape macro-politics and institutional change in education systems. From a practical perspective, the findings shed light on the determinants and drivers of agency within VET schools. This is key for understanding the dynamics underlying educational change or the lack thereof, and thus for formulating policy recommendations to minimise the mismatch between official reforms and the actual practices of VET.

## 2 Teacher agency

There is a long history of teachers initiating, influencing, and resisting education policies (Giudici, 2021; Moe, 2016). A broad literature strand investigates teacher agency, usually exercised by teacher unions, within macro-political policy generation phases, such as formulating official legislative texts that regulate formal education (Bowe et al., 1992; Liebermann, 1997; Moe & Wiborg, 2016). The policy generation phase (e.g., legislative breakthroughs) is irrelevant to this paper. Instead, teachers are studied as individual front-line workers that engage with education policies on the ground. A range of studies on teacher agency focus on the psychological, technological, pedagogical, ethnographic, professional identity and practice, or "day-to-day adult-adult relationships" dimensions of teacher agency (Beauchamp & Thomas, 2009; Eteläpelto et al., 2014; Isopahkala-Bouret, 2010; Molla & Nolan, 2020; Priestley et al., 2015b; Tyler & Dymock, 2021). However, to understand teachers as "institutional entrepreneur" able to create new, reshape or defend existing practices and institutions (Battilana et al., 2009; DiMaggio, 1988), a political-economic lens needs to be adopted. This lens considers the entire structure-, institution- and interest-based dimensions of teacher agency.



This extensive analytical level encompasses the interactions and relationships between actors, negotiations, collaboration, conflict, the distributions of resources, and formal and informal power (Ball et al., 2012). Together, they determine how education policies are interpreted, translated, and implemented – and the according educational institutions are stabilised or challenged for change to happen. Although teachers dispose of relatively high degrees of discretion, autonomy, and hidden agendas, their interests and preferences are still embedded and constructed by institutions and structures (Datnow, 2020; Priestley et al., 2015a). Thus, to identify and understand teacher agency, we need to situate teachers' agency in a dynamic relationship within the respective structures and institutions (Battilana et al., 2009). Therefore, in a first step, we need to identify the structural and institutional features that are significant for VET school teachers. Structures cannot be changed in the mid-term, but institutions can because as informal and formal “rules of the game” (e.g., regulations and practices that shape the VET system) they mediate the relation between structure and agency (Giddens, 1984). In a second step, taking structure and institutions into account, we can then incorporate key analytical concepts from the political-economic literature strands to understand teacher agency, such as commitment problems, collective actions problems, and information asymmetries.

### 3 Research design

I explore the agency of VET school teachers faced with the introduction of dual VET reforms in post-communist countries these factors collectively provide a critical case to explore teachers' agency and their coping and adaptation strategies (Gerring, 2007). Firstly, post-communist countries feature nearly exclusively state-driven and school-based VET systems since state-owned enterprises were privatised and retreated from participating in VET after the fall of communist regimes in the early 1990s (Tütlys et al., 2022). Secondly, meso-level actors like teacher unions are generally weakly politicised in post-socialist contexts (Baboš, 2010; Schoenman, 2014), allowing to better identify and conceptualise VET school teachers' agency without interfering forces from organised interests.

Thirdly and most importantly, several governments in former communist countries launched educational reforms inspired by the dual VET model within policy diffusion initiatives driven by supranational or donor organisations (Cedefop, 2020; Galvin Arribas & Papadakis, 2019). A key feature of the dual VET model is that learners, mostly at upper secondary education level, acquire general and occupation specific skills during school- and company-based learning phases (Gonon, 2014). This institutional arrangement of organising VET is considered beneficial for reaching the double objective of adjusting the VET system to the productive sector and improving youth unemployment. However, shifting an exclusively state-driven and school-based VET system towards a system characterised by strong private sector engagement is extremely difficult due to sticky path dependencies and collective action problems. The buy-in of employers and students is undeniably a necessary precondition for dual VET reforms to succeed and are therefore widely studied (Amesti et al., 2021; Bolli et al., 2021; Chankseliani & Anuar, 2019; James Relly & Laczik, 2022; Mora et al., 2022; Wołodźko et al., 2021). But teachers in VET schools, specifically practical instructors who teach practical learning lessons, are the number one actor at risk losing the most from dual VET reforms: their jobs. The reason is that truly implementing reforms inspired by the dual VET system essentially means shifting learning provided by teachers within schools' environments to learning provided by employees in company premises. Given these pressures, VET teachers are very likely actors to develop agency when faced with the introduction of dual VET reforms.

To explore teacher agency, the empirical analysis investigates the transcripts of semi-structured interviews transcripts conducted with ten schoolteachers employed in eight different VET schools in Albania and Slovakia (see Annex). The data were collected in the framework

of a larger research project investigating the participation of companies in VET, but had a specific interview section dedicated to teachers' role in implementing practices inspired by the dual VET model. Secondary and grey literature and transcripts from thirteen further interviews with VET school directors, VET experts and public authorities designing and implementing VET reforms were additionally consulted for triangulation purposes. Data were analysed thematically using a deductive, yet flexible coding approach (Hsieh & Shannon, 2005). This approach implied starting with a preconceived set of codes to analyse the interview transcripts but adding new and unexpected themes that emerged during the coding process. The selection of Albania and Slovakia allows drawing generalisations about teacher agency in post-socialist contexts with greater confidence. The two countries differ along important background factors (levels of economic development, advancement of political-economic institutions, significance of the VET system). However, they are similar with regards to the recent introduction of reforms and legislation inspired by the dual VET model (introduction of the "Law 15/2017 on VET" in Albania and the "Act n. 61/2015 on VET" in Slovakia).

## 4 Findings

### 4.1 Structural and institutional context

To understand the agency of VET teachers, first, a structural and institutional context analysis was undertaken to understand the context in which teachers are embedded in. In the case of implementing dual VET reforms, structurally, we find that demographic factors, historical legacies from the communist area, and rapid technological changes contribute to an environment in which VET school teachers find themselves in a disenfranchised position.

Firstly, with the decline of large state-owned enterprises and a strong prioritisation of the general education tracks in the 1990s in both countries, many VET schools in the 1990s became redundant (Gordon & Bartlett, 2016). Public authorities feared a loss of public land if former VET school buildings were to be privatised. They resisted these pressures, resulting in several post-communist VET systems being marked by many small VET schools distributed across both countries that have small numbers of students and class sizes and relatively high numbers of different VET programmes – contributing to relatively high and inefficient numbers of teachers (Alb2; ALB9; Vantuch & Jelínková, 2022). Particularly in Slovakia, respondents report that there are strong voices demanding a decrease in the numbers of VET schools and an increased efficiency of school management in terms of the ratio of student numbers, VET programmes offered, and teachers per school (SK2; SK3).

Secondly, private sector actors, such as businesses and business interest organisations, exert a high degree of distrust towards the public sector and in particular the education sector. This distrust can be attributed to cultural and historical legacies, such as a general shift from the public to the private sphere, like family, friends, and neighbours, which came about with the breakdown of the socialist system (Letki, 2018). It can also be attributed to a high persistence of corruption, nepotism, and inefficiency in the education system that continue to reinforce distrusting behaviour towards the education system (Cerna, 2014; Zhllima et al., 2018), as this quote by a school director describes: "So seven to eight years ago, it was really difficult to have a high number of students taken to these businesses because the companies were very sceptical about our school, not only about our school but all the schools in general. They wouldn't even try to approach the school and try. [...] It was not an issue of the school itself, it's an issue of the whole system when it comes to these [dual VET] partnerships" (ALB8). Consequently, only a weak trust structure exists preventing a straightforward resolution of collective action problems and the establishment of public-private cooperative behaviour.

Next to these structural factors that originate in historical legacies, demographic factors interact with teachers' agency. Both countries are experiencing rising life expectancy and declining fertility rates, leading to a rapid ageing of their population and some of the fastest declines in working-age populations (OECD, 2022). These tendencies are further accelerated in Albania, which witnessed a first big wave of emigration after the end of communism and a second big wave since the mid-2010s (Gëdeshi & King, 2018; Mara & Landesmann, 2022). In both countries, all respondents made some reference to these demographic changes, which are dramatically decreasing the youth population. These developments put a lot of pressure on VET schools' survival ability since school depend on per capita financing to cover their costs (energy, teacher salaries, maintenance, equipment, etc.). This statement by a teacher exemplifies these pressures:

“We are very impacted by this [demographic change]. The competition between VET schools is too big. A change of the system is needed because it is not made for that. It now depends on the number of students. We have like six VET school in this region plus gymnasium and we have 40'000 inhabitants, that's too much...” (SK7)

Lastly, technological change interacts with VET school teachers' agency: On the one hand by intensifying the preferences of students and their parents to choose general academic tracks that appear to yield higher returns, and on the other hand, by weakening the linkage between VET teachers' knowledge of industrial technologies and the state-of-the-art technologies of production (ALB1; SK3; SK8).

In addition to structural factors, the institutional environment, specifically the legislation, norms, and rules that govern VET, further interact with teachers' agency. While dual VET reforms are accompanied by substantive legislative changes (e.g., the establishment of social dialogue councils and new financing mechanisms), the main change impacting teachers' day-to-day work is that the organisation of work-based learning on the ground is delegated to VET schools (Cedefop, 2020; Hilpert, 2020). This organisation stands in contrast to traditional dual VET systems, where organised business interests like chambers of commerce and associations take over this coordinative role (Emmenegger & Seitzl, 2020). In Albania and Slovakia, teachers and school directors are therefore the main decision-makers at the local level in charge of organising the provision of work-based learning. This includes identifying and reaching out to potential training companies, matching students with companies, assuring the signing of tripartite training contracts (signed between the school, the training company, and the students' parents), creating networks with employers, informing and monitoring training firms during the company-based training phases, and assuring the quality of VET.

Overall, historical legacies and their resulting path dependencies (i.e., large numbers of small VET schools, widespread distrust of the education system, and the weak image of the VET track), as well as demographic, technological and regulatory change shape and embed VET teachers' position within the education system. The structural constraints suggest that they are in a financially and professionally weakened position. At the same time, the changed institutional elements direct towards increased professional demands and a substantial increase in expectations of their professional role.

## **4.2 Dual VET as an opportunity to realise teacher agency**

Faced with the uncertainties accompanying the introduction of dual VET reforms in this specific post-socialist structural and institutional environment, the analysis reveals that teachers seek to optimise three objectives: their paid workload, their professional status, and learners' well-being. They pursue approaches to at the least safeguard their number of working hours, which can include maintaining their teaching lessons but can also consist of substituting teaching with coordinative tasks to secure their work in the short- to mid-term. Secondly, given their “dual professional identity”, they strive to being recognised as a pedagogical or

occupational expert by students, parents, and companies. Lastly, they consider their student's well-being in this process, which includes protecting students' interests in the world of work.

To realise their agency, teachers adopt and act upon two different strategies. One strategy of teachers is to resist the introduction of dual VET reforms and their according elements and practices by not organising work-based learning phases in company premises. Their underlying logic can be explained by fears that the shift to company-based learning will decrease their working hours, or – the opposite – undermine their right to adequate compensation despite increased workload in organising company-based learning, and thereby further erode their professional standing. For example, in Slovakia the introduction of dual VET first led to massive teacher resistance towards dual VET reforms because the headcount funding was decreased due to the shift of learning taking place in company premises (Vantuch & Jelínková, 2020). This statement highlights the issue: “The problem at the beginning was that if the school signed dual education with the company, their money for the kids were reduced by like 50%, because it was normal that if the students are within the company, 50% of the time, you will receive less money, and the school started to resist that because if I have less money, why should I support that?” (SK3). In Albania, a middle-income country with very low education spending, the increase in workload to coordinate work-based learning with training firms also conflicts with material interests: “If you don't get paid for what you are doing, of course people oppose it.” (ALB7).

Professionally, it can be found that especially mid-career level teachers with around 20 years of teaching experience are most likely actors to resist dual VET reforms. They are not familiar with the advantages of work-based learning, are sceptical of private sector actors' ability to train the skills and competencies foreseen in the curricula, and are concerned that VET students are principally used as cheap labour. They believe that all occupational skills can be acquired in a school environment. Given the weak monitoring and enforcement capacities of reforms by superior actors (e.g., ministries of education and regional education authorities), they have much leeway to resist reforms. This strategy choice is likely attributed to their own negative experience with the world of work, especially not finding adequate or safe employment as a skilled worker during the transition years and then opting for publicly financed and secure teacher position. By considering the past, they choose to maintain the status quo as the most secure strategy to safeguard their material and professional interests and realise their agency.

In contrast, equally driven by material and professional motivations, some teachers adopted an entirely different approach. Instead of resisting the shift to company-based learning, they took the risk and creatively embraced dual VET reforms as a window of opportunity to secure future working hours, student enrolments and VET schools' survival. Considering the past, present, and future structural constraints, VET school teachers utilise dual VET reforms as an opportunity to maintain or even increase the demand for VET and according number of student enrolments, observing that shifting some learning to companies makes the school popular “like a magnet” (ALB3). The teachers who took the risk of engaging with companies realised that potential fears of losing jobs didn't materialise but secured and expanded their workload since new classes were needed. Some also pursued adaptation strategies between maintaining the status quo and embracing dual VET. This entails optimising the number of students that VET teachers send to training companies and those kept in school-based workshops to ensure that VET school teachers can maintain their teaching hours.

Next to material motives reflected in instrumentalising dual VET as a strategy to increase numbers of students, professional motives are also visible. The transformation of practical learning teachers to formal or informal business relationship coordinators appears to be strategy to substitute the potential loss of practical teaching hours in the schools. This role entails a diverse set of tasks such as conducting research on local companies, organising school visits

for companies, providing information on the content of curricula, matching students with companies, promoting the VET track, setting up training contracts, and accompanying, coordinating, and monitoring the learning phases. This substitution of tasks enriches their professional profile content-wise and in terms of workload. Vis-à-vis parents and local companies, it also strengthens and transforms their role towards being experts on pedagogy and learning. Given that post-communist contexts are marked by strong localised communities and a relatively low image of the VET track, engaging professionally with locally respected companies, and successfully integrating local youth in the labour market can increase the teachers' credibility, legitimacy, and prestige.

It can be observed that pre-dominantly early-care and in the case of Slovakia also late-career teachers are the likely actors pursuing the strategy of optimising dual VET to their advantage. In Slovakia, older teachers are familiar with the VET system that existed during socialist times, which was characterised by a strong cooperation between large state-owned enterprises and local VET schools. The impact of the transition on the Slovak VET system was less extreme than on the Albanian VET system. Thus, many teachers in Slovakia with over thirty years of teaching experience report a greater understanding and sympathy of the idea behind reforms inspired by the dual VET system, especially of the advantages of work-based learning phases since many of them also gained mandatory industry experience during socialist times. This is different in Albania, which experienced a highly repressive communist regime, and where teachers were known to be "so strict and rigid, and just want to teach what is in the book" (ALB3). These types of teachers rarely survived the transition period since the Albanian VET track nearly completely eroded, leading to a more significant number of relatively younger teachers compared to the Slovak VET system.

### 4.3 Conditions to realise teacher agency

Two conditions need to be in place for schoolteachers to be able to realise their agency. Firstly, school directors are the central authority in school environments that can support or block the agency of schoolteachers. Equally driven by financial and professional motivations, some school directors resist the shift of learning to company premises. They oppose the additional responsibility and risks arising from students being taught in company premises or fear that the increased cooperation between VET teachers and companies will lead to a loss of their power and professional standing. This quote exemplifies the opposition:

"So therefore, in some parts of Slovakia, the cooperation worked, even before legislative introduction of dual VET [...]. Schools, in case there is a clever director, they are very effective in cooperation. In case there is an idiot, then they are not interested because from economical point of view, the quality doesn't matter for the directors. And so for them, it is much better to not to have a complication. Shifting some work to the company, being responsible if something happens in the company, I will have a problem as a director. So I will push them into my school workshop, and that's fine. You know, money is in my house. No problem." (SK1)

However, some directors, like VET teachers, approach dual VET practices as an opportunity to increase student enrolments and their headcount financing, improve their professional reputation, and secure their political survival. Since school directors are usually appointed by local political authorities or ministry officials, they can increase their credibility and political leverage if they have strong backing by the local private sector, who show interest in the students they educate. Lastly, given that dual VET is high on international and national policy agendas, adopting practices of dual VET is also a potential strategy to access additional financial assistance (e.g., donor or European funding).

Secondly, instituting elements inspired by the dual VET requires cooperation between actors with diverging interests (Busemeyer & Trampusch, 2012). The analysis of the structural

and institutional context that shapes teacher agency already indicated major collective action problems (e.g., weak trust in the education sector, a weak image of the VET system, lack of information about the content of VET programs, weak enforcement measures, weak organisation of businesses' and teachers' interests). They restrict the development of practices inspired by the dual VET model. How can the teachers, who perceive dual VET as a strategy to realise professional and financial motivation, overcome these collective action problems and enforce the commitments of training companies – the fundamental actor needed to realise their agency? The analysis revealed that establishing and nurturing of trust-based relationships with companies is the critical ingredient for cooperation to arise in such low-trust-low-coordination environments. They continuously cultivate trust with companies via regular interactions, face-to-face communication, deliberation, and individualised support to training firms to overcome commitment problems and build local trust networks to make cooperation work. With the establishment of trust-based relationships, the teachers also feel comfortable and confident to flexibly adapt the learning plans according to the needs of the companies and state-of-the-art technologies, and to delegate their know-how monopoly to company instructors.

Altogether, building on trust-based relationships and shifting learning to the company environment in turn can also interact with and shape the structural and institutional constraints. VET schools that support and maintain the shift to company-based learning report that their school was perceived as more attractive by key stakeholders (parents, political actors, the private sector), to increase the VET school track's reputation, to improve the quality of learning and employment prospects for students, and altogether secure the VET track's survival.

## **5 Conclusion and policy recommendations**

Identifying pathways for change in education system requires a thorough understanding of the structures and institutions that shape the agency of vital stakeholders, especially teachers. The analysis of teachers' agency in post-socialist countries indicates that teachers impacted by dual VET reforms have far more capacity and substantial interests to block or drive change than might be expected. Suffering from socialist legacies, demographic changes, and a weak reputation of and trust in the VET system, teachers, together with directors, can instrumentalise the cooperation with businesses to secure their material and professional motivations. They can maintain the status quo or compete for enrolments and funding, transform their professional profile, and improve their professional standing. In the context of the two post-socialist countries Albania and Slovakia, these forces are independent of higher levels of teacher unionisation or interest organisation. Teacher buy-in is therefore crucial as it “can have as much impact on reform outcomes as the actual content of the reform” (Grindle, 2004, p. 119).

On the ground, the engagement of teachers and companies and their cooperative relationships are diverse and accompanied by additional challenges in terms of sustainability, efficiency, accountability, and quality assurance. However, these first years of cooperation observed in the Albanian and Slovak VET schools, and the minor changes they provoked for teacher's professional development, the attractiveness of the VET track, and the integration of students into the labour market, can accumulate, leading to breakthroughs at the provision level, and even transforming the underlying structures and institutions shaping the overall VET systems.

Two policy recommendations can be derived from the analysis. Firstly, it is crucial to avoid reducing funding for schools and teachers, which would backfire on the implementation level. Teacher's incomes and careers are directly or indirectly impacted by dual VET reforms. Instead, the loss of teaching hours and professional standing must be substituted or enhanced. One avenue can be the transformation of the role and tasks of teachers to coordinators of business relationships, enriching their job profile and securing enough working hours. This strategy does not only secure their material interests, but also their professional interests. Secondly, it is

essential to strengthen the capacities of teachers to take over this coordinative role so that they can build trust-based relationships with private sector actors. Taking the seniority level and experience of teachers into account, capacity measures should ensure that teachers feel sure in their communication with companies, and can manage company relations, advertise and promote VET programmes, monitor training phases, and build strategies to deal with problems, conflicts, and commitment issues.

## References

- ADB. (2009). *Good Practice in Technical and Vocational Education and Training*. Manila. Asian Development Bank. <https://hdl.handle.net/11540/2410>
- Amesti, J. de, Bordòn, P., & Bolli, T. (2021). Dual TEVT education in Chile: Why do companies train students? (LELAM-TVET4INCOME Working Paper Series No. 22). Universidad Alberto Hurtado; ETH Zurich.
- Ansell, B. (2010). *From the ballot to the blackboard: The redistributive political economy of education*. Cambridge University Press.
- Baboš, P. (2010). Varieties of capitalism in central and eastern Europe: measuring the co-ordination index of a national economy. *Journal for Labour and Social Affairs in Eastern Europe*, 13(4), 439–458. <http://www.jstor.org/stable/43294018>
- Ball, S. J. (2006). What is Policy? Texts, Trajectories and Toolboxes. In S. J. Ball (Ed.), *Education Policy and Social Class* (pp. 43–53). Routledge.
- Ball, S. J., Maguire, M., & Braun, A. (2012). *How Schools Do Policy*. Routledge.
- Battilana, J., Leca, B., & Boxenbaum, E. (2009). How actors change institutions: Towards a theory of institutional entrepreneurship. *Academic of Management Annals*, 3(1), 65–107.
- Beauchamp, C., & Thomas, L. (2009). Understanding teacher identity: an overview of issues in the literature and implications for teacher education. *Cambridge Journal of Education*, 39(2), 175–189. <https://doi.org/10.1080/03057640902902252>
- Bolli, T., Caves, K. M., Pusterla, F., & Renold, U. (2021). *New Dual Education Program in Serbia. Do Benefits exceed Costs for Participating Companies?* (CES Studies No. 9). ETH Zurich, Center for Education Policy.
- Bowe, R., Ball, S. J., & Gold, A. (1992). *Remorning Education and Changing Schools: Case Studies in Policy Sociology*. Routledge.
- Bruns, B., Macdonald, I. H., & Schneider, B. R. (2019). The politics of quality reforms and the challenges for SDGs in education. *World Development*, 118, 27–38. <https://www.sciencedirect.com/science/article/pii/S0305750X19300336>
- Busemeyer, M. R., & Trampusch, C. (2012). Introduction: The Comparative Political Economy of Collective Skill Formation. In M. R. Busemeyer & C. Trampusch (Eds.), *The Political Economy of Collective Skill Formation* (pp. 3–38). Oxford University Press.
- Cedefop. (2020). Developments in vocational education and training policy in 2015-19: Slovakia. (Cedefop monitoring and analysis of VET policies). Cedefop. [https://www.cedefop.europa.eu/files/developments\\_in\\_vocational\\_education\\_and\\_training\\_policy\\_in\\_2015-19\\_slovakia.pdf](https://www.cedefop.europa.eu/files/developments_in_vocational_education_and_training_policy_in_2015-19_slovakia.pdf)
- Cedefop, & OECD. (2021). *The next steps for apprenticeship (Cedefop reference series No. 118)*. Luxembourg. <http://data.europa.eu/doi/10.2801/085907>
- Cerna, L. (2014). Trust: What it is and Why it Matters for Governance and Education (OECD Education Working Papers No. 108). Paris. OECD. [https://www.oecd-ilibrary.org/education/trust-what-it-is-and-why-it-matters-for-governance-and-education\\_5jxswcg0t6wl-en](https://www.oecd-ilibrary.org/education/trust-what-it-is-and-why-it-matters-for-governance-and-education_5jxswcg0t6wl-en)
- Chankseliani, M., & Anuar, A. M. (2019). Cross-country comparison of engagement in apprenticeships: A conceptual analysis of incentives for individuals and firms.

- International Journal for Research in Vocational Education and Training*, 6(3), 261–283.
- Datnow, A. (2020). The role of teachers in educational reform: A 20-year perspective. *Journal of Educational Change*, 21(3), 431–441. <https://doi.org/10.1007/s10833-020-09372-5>
- DiMaggio, P. J. (1988). Interest and agency in institutional theory. In L. G. Zucker (Ed.), *Institutional patterns and organizations. Culture and environment*. (pp. 3–22). Ballinger.
- Emirbayer, M., & Mische, A. (1998). What is agency? *The American Journal of Sociology*, 103(4), 962–1023.
- Emmenegger, P., & Seitzl, L. (2020). Social partner involvement in collective skill formation governance: A comparison of Austria, Denmark, Germany, the Netherlands and Switzerland. *Transfer: European Review of Labour and Research*, 26(1), 27–42.
- Eteläpelto, A., Vähäsantanen, K., Hökkä, P., & Paloniemi, S. (2014). Identity and Agency in Professional Learning. In S. Billett, C. Harteis, & H. Gruber (Eds.), *International Handbook of Research in Professional and Practice-based Learning* (pp. 645–672). Springer. [https://doi.org/10.1007/978-94-017-8902-8\\_24](https://doi.org/10.1007/978-94-017-8902-8_24)
- European Commission. (2017). *Business cooperating with vocational education training providers for quality skills and attractive futures*. Brussels. Directorate-General for Employment, Social Affairs and Inclusion. <https://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=8053&furtherPubs=yes>
- Fichtner, S. (2010). A laboratory for education reform or a battlefield of donor intervention? Local debates on primary education and the New Study Programmes in Benin. *International Journal of Educational Development*, 30(5), 518–524.
- Galvin Arribas, J. M., & Papadakis, N. (2019). *Governance arrangements for vocational education and training in ETF partner countries: analytical overview 2012-17*. Turin. European Training Foundation.
- Gëdeshi, I., & King, R. (2018). *New trends in potential migration from Albania*. Tirana. Friedrich-Ebert-Stiftung.
- Gerring, J. (2007). Is There a (Viable) Crucial-Case Method? *Comparative Political Studies*, 40(3), 231–253. <https://doi.org/10.1177/0010414006290784>
- Giddens, A. (1984). *The Constitution of Society. Outline of the Theory of Structuration*. Polity Press.
- Giudici, A. (2021). Teacher politics bottom-up: theorising the impact of micro-politics on policy generation. *Journal of Education Policy*, 36(6), 801–821. <https://doi.org/10.1080/02680939.2020.1730976>
- Gonon, P. (2014). Development cooperation in the field of vocational education and training – The dual system as a global role model? In M. Maurer & P. Gonon (Eds.), *Studies in Vocational and Continuing Education: Vol. 12. The Challenges of Policy Transfer in Vocational Skills Development: National Qualifications Frameworks and the Dual Model of Vocational Training in International Cooperation* (1st ed., pp. 241–260). Peter Lang CH.
- Gordon, C., & Bartlett, W. (2016). EDITORIAL: Vocational schooling and social exclusion in the Western Balkans. *European Journal of Education*, 51(3), 295–304.
- Grindle, M. S. (2004). *Despite the Odds: The Contentious Politics of Education Reform*. Princeton University Press.
- Heikkinen, A. (1997). Vocational education as a “life-project”? Reflections from the case of Finland. *Journal of European Industrial Training*, 21(6/7), 213–219. <https://doi.org/10.1108/03090599710171521>



- Hilpert, A. (2020). *Review of Albania's Vocational Education and Training System: including a comparative analysis with selected countries from Central and Western Europe and the Balkan region*. Tirana. UNDP.
- Hsieh, H.-F., & Shannon, S. E. (2005). Three Approaches to Qualitative Content Analysis. *Qualitative Health Research*, 15(9), 1277–1288. <https://doi.org/10.1177/1049732305276687>
- Isopahkala-Bouret, U. (2010). Vocational Teachers between Educational Institutions and Workplaces. *European Educational Research Journal*, 9(2), 220–231.
- James Relly, S., & Laczik, A. (2022). Apprenticeship, employer engagement and vocational formation: a process of collaboration. *Journal of Education and Work*, 35(1), 1–15. <https://doi.org/10.1080/13639080.2021.1983524>
- Letki, N. (2018). Trust in Newly Democratic Regimes. In E. M. Uslaner (Ed.), *The Oxford Handbook of Social and Political Trust* (pp. 335–356). Oxford University Press.
- Li, J., & Pilz, M. (2021). International transfer of vocational education and training: a literature review. *Journal of Vocational Education & Training*, 1–34. <https://doi.org/10.1080/13636820.2020.1847566>
- Liebermann, M. (1997). *The teacher unions: How they sabotage educational reform and why*.
- Lipsky, M. (1980). *Street-level Bureaucracy: "Dilemmas of the Individual in Public Service"*. Russell Sage Foundation.
- Mara, I., & Landesmann, M. (2022). *"Use it or lose it!" How do migration, human capital and the labour market interact in the Western Balkans?* Torino. European Training Foundation. <https://www.etf.europa.eu/en/publications-and-resources/publications/use-it-or-lose-it-how-do-migration-human-capital-and-labour>
- Mizala, A., & Schneider, B. R. (2014). Negotiating Education Reform: Teacher Evaluations and Incentives in Chile (1990-2010). *Governance*, 27(1), 87–109. <https://doi.org/10.1111/gove.12020>
- Moe, T. M. (2016). The Comparative Politics of Education: Teachers Union and Education Systems Around the World. In T. M. Moe & S. Wiborg (Eds.), *The Comparative Politics of Education: Teachers Unions and Education Systems around the World* (pp. 269–324). Cambridge University Press.
- Moe, T. M., & Wiborg, S. (2016). Introduction. In T. M. Moe & S. Wiborg (Eds.), *The Comparative Politics of Education: Teachers Unions and Education Systems around the World* (pp. 1–23). Cambridge University Press.
- Molla, T., & Nolan, A. (2020). Teacher agency and professional practice. *Teachers and Teaching*, 26(1), 67–87.
- Mora, T., Escardíbul, J.-O., & Pineda-Herrero, P. (2022). The effect of dual vocational education and training on grades and graduation in Catalonia, Spain. *Educational Review*, 1–21. <https://doi.org/10.1080/00131911.2022.2076656>
- OECD. (2022). *OECD Economic Surveys: Slovak Republic*. Paris. OECD. <https://www.oecd.org/economy/surveys/Slovak-Republic-2022-OECD-economic-survey-overview.pdf>
- Priestley, M., Biesta, G., & Robinson, S. (2015a). *Teacher agency: An ecological approach*. Bloomsbury.
- Priestley, M., Biesta, G., & Robinson, S. (2015b). Teacher agency: What is it and why does it matter? In R. Kneyber & J. Evers (Eds.), *Flip the System: Changing Education from the Bottom Up*. Routledge.
- Pyhältö, K., Pietarinen, J., & Soini, T. (2015). Teachers' professional agency and learning – from adaption to active modification in the teacher community. *Teachers and Teaching*, 21(7), 811–830. <https://doi.org/10.1080/13540602.2014.995483>

- Sandal, A. K. (2021). Vocational teachers' professional development in assessment for learning. *Journal of Vocational Education & Training*, 1–23. <https://doi.org/10.1080/13636820.2021.1934721>
- Schoenman, B. R. (2014). *Networks and institutions in Europe's emerging markets*. Cambridge University Press.
- Schulte, B. (2018). Envisioned and Enacted Practices: Educational Policies and the 'Politics of Use' in Schools. *Journal of Curriculum Studies*, 50(5), 624–637.
- Tütlys, V., Winterton, J., Markowitsch, J., & Pavlin, S. (2022). Introduction. In V. Tütlys, J. Markowitsch, J. Winterton, & S. Pavlin (Eds.), *Skill Formation in Central and Eastern Europe: A search for Patterns and Directions of Development* (pp. 27–64). Peter Lang.
- Tyler, M. A., & Dymock, D. (2021). Constructing a professional identity in VET: teacher perspectives. *Research in Post-Compulsory Education*, 26(1), 1–18. <https://doi.org/10.1080/13596748.2021.1873404>
- Vantuch, J., & Jelínková, D. (2020). *Vocational education and training for the future of work: Slovakia (Cedefop ReferNet thematic perspectives series)*. Cedefop. [https://cumulus.cedefop.europa.eu/files/vetelib/2020/vocational\\_education\\_training\\_future\\_work\\_Slovakia\\_Cedefop\\_ReferNet.pdf](https://cumulus.cedefop.europa.eu/files/vetelib/2020/vocational_education_training_future_work_Slovakia_Cedefop_ReferNet.pdf)
- Vantuch, J., & Jelínková, D. (2022). Slovakia: skill formation at the crossroads. In V. Tütlys, J. Markowitsch, J. Winterton, & S. Pavlin (Eds.), *Skill Formation in Central and Eastern Europe: A search for Patterns and Directions of Development* (pp. 193–219). Peter Lang.
- Wołodźko, E., Grochalska, M., & Wasilewska, E. (2021). The advantages and disadvantages of Polish dual vocational education from the perspective of students, school representatives and employers. *Journal of Vocational Education & Training*, 1–20. <https://doi.org/10.1080/13636820.2021.1989619>
- Zhllima, E., Imami, D., Rama, K., & Shahini, A. (2018). Corruption in Education during Socialism and the Postsocialist Transition: The Case of Albania. *Region*, 7(2), 51–70. <https://www.jstor.org/stable/26538007>

### Biographical notes

**Linda Wanklin** is a scientific researcher (PhD candidate) in the Swiss Leading House GOVPET at the University of St. Gallen.

## Annex

**Table 1**  
Interview participants

Nr.	ID	Function	Sector	Location	Date	Length
1	ALB1	Professional expert on work-based learning	Donor organisation	Tirana, Albania	25.10.2021	01:19h
2	ALB2	Director	National state agency in charge of VET	Tirana, Albania (online)	25.10.2021	00:36h
3	ALB3	School director	Public VET school	Lezha, Albania	26.10.2021	01:35h
4	ALB4	Teacher	Public VET school	Lezha, Albania	26.10.2021	00:32h
5	ALB5	Teacher	Public VET school	Shkodra, Albania	27.10.2021	01:12h
6	ALB6	School director	Public VET school	Vlora, Albania	1.11.2021	01:00h
7	ALB7	Teacher	Public VET school	Berat, Albania	2.11.2021	00:40h
8	ALB8	School director	Public VET school	Tirana, Albania	3.11.2021	00:45h
9	ALB9	Professional experts on Albanian VET system	Donor organisation (multinational)	Tirana, Albania	4.11.2021	01:17h
10	ALB10	Professional expert on Albanian VET system	Donor Organisation (Switzerland)	Tirana, Albania	5.11.2021	01:09h
11	ALB11	Teacher	Public VET school	Elbasan, Albania	8.11.2021	00:23h
12	ALB12	Professional expert on Albanian VET system	Donor organisation (Austria)	Vienna, Austria (online)	19.11.2021	01:04h
13	SK1	Academic Expert for VET	University	Bratislava, Slovakia (online)	24.03.2022	01:13h
14	SK2	Professional expert on work-based learning	Umbrella employer organisation in charge of dual VET	Bratislava, Slovakia (online)	24.03.2022	00:42h
15	SK3	Secretary General and Coordinator for dual VET	Agency organisation in charge of dual VET	Bratislava, Slovakia	02.05.2022	01:17h
16	SK4	School director	Public VET school	Bratislava, Slovakia	04.05.2022	01:00h
17	SK5	School director	Public VET school	Bratislava, Slovakia	04.05.2022	00:45h
18	SK6	School director and a teacher	Public VET school	Bratislava, Slovakia	06.05.2022	01:10h
19	SK7	Two teachers	Private VET school	Nitra, Slovakia	11.05.2022	00:50h

20	SK8	Two teachers	Public VET school	Piest'any, Slovakia	12.05.2022	01:15h
21	SK9	School director, teacher, company representative	Public VET school	Trnava, Slovakia	13.05.2022	01:05h
22	SK10	Director	National state agency in charge of VET	Bratislava, Slovakia	18.5.2022	01:10h
23	SK11	Regional coordinator for dual VET	Public sector agency	Zilina, Slovakia (online)	26.5.2022	0:53h

Wenger, M. & Lamamra, N. (2023). What Swiss in-company trainers want: Needs, interests, and availability for continuing education. In V. Tütlys, L. Vaitkutė & C. Nägele (Eds.), *Vocational Education and Training Transformations for Digital, Sustainable and Socially Fair Future. Proceedings of the 5th Crossing Boundaries Conference in Vocational Education and Training, Kaunas, 25. – 26. May* (pp. 491–497). European Research Network on Vocational Education and Training, VETNET, Vytautas Magnus University Education Academy, Institute of Educational Science. <https://doi.org/10.5281/zenodo.7822903>

## What Swiss In-Company Trainers Want: Needs, Interests, and Availability for Continuing Education

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### Abstract

Being in-company trainer in a dual VET system is not only about imparting trade-related knowledge or know-how, but also about taking on a pedagogical role. However, this latter role is often neglected, as in-company trainers experience a strong pressure to be productive workers at the same time as they train apprentices. They also have a complex function with several hats. Accordingly, our study looked at their needs and preferences in terms of pedagogical continuing education offerings. Specifically, through an online survey, we asked in-company trainers from all over Switzerland (N=5'079) which continuing education offers would be most relevant for them, as well as the formats, modalities and periods of these courses. Comparisons by sociodemographic variables (such as company size, activity sector or geographical region) were then made to identify specific preferences. Our results should on the one hand better understand the situation and constraints of in-company trainers and, on the second hand, contribute to the development of course offerings that are closer to in-company trainers' needs.

### Keywords

in-company trainers, continuing education, Swiss VET system

## 1 Theoretical framework

Lifelong learning (LLL) is promoted as a central element for the economic, cultural and social development, and is even formalized in the Sustainable Development Goals (SDGs; Comyn, 2018). This is also true in the context of VET (Cedefop, 2020), the training pathway undertaken by 2/3 of young people in Switzerland after compulsory school (Federal Statistical Office, 2022).

In view of this training system's importance in the Swiss landscape, it is relevant to look at the access to continuing education – which is part of LLL – for the persons in charge of training apprentices. On the one hand, VET teachers, whose role is by definition pedagogical, professionalise themselves by attending a quite long pedagogical training (between 600 and 1'800 hours), and regular continuing education courses (Perrenoud, 1994). On the other hand, in-company trainers, who receive short training to the function (40 hours), and whose



implication in the continuing education is largely underestimated. However, their role in training to an occupation is rather central, especially in the context of dual vocational education and training.

### **1.1 Roles and challenges of in-company trainers in a dual VET context**

In-company trainers reflect a complex and fascinating actor in the VET landscape: they are workers, but at the same time they are also pedagogical figures for apprentices. They must therefore be productive, while at the same time finding time to pass on the knowledge of an occupation. This double role means – among others – that in-company trainers experience several challenges linked to their function, such as training apprentices when they have not actively chosen to be trainers, or finding the time needed for training in a context where their activity is rarely set up for this purpose (Baumeler & Lamamra, 2019). Therefore, having access to continuing education is an additional challenge, with characteristics specific to this function.

### **1.2 In-company trainers and continuing education**

As a 2010 Cedefop report illustrates, in-company trainers do not have such easy access to continuing education and, where they do, it is mainly job-related training. In other words, in-company trainers' opportunities for lifelong learning are limited, partly because of their 'hybrid' status (Cedefop, 2010). Indeed, they simultaneously occupy the roles of trainer for apprentices, but also of worker, having to comply with the constraints of labour market. These constraints are quite high in dual VET, due to one specific issue characterizing it, that is the tension between two logics: producing and training (Moreau, 2003). As a result, in-company trainers are seen primarily as workers responding to a production logic and less - if at all - as figures playing a pedagogical role in the VET system (Lamamra et al., 2019). They can at most be recognized as key persons in the professional socialisation of apprentices, but more rarely as pedagogues. Their pedagogical role should however be more highly valued and recognised, in particular through access to continuous education not solely focused on their occupation (Lamamra et al., 2019). In this context, a study has been carried out to identify the needs and interests of in-company trainers in terms of continuing education (in particular, course content, preferred methods and formats, etc.), with a view to developing a targeted course offering.

### **1.3 Research questions**

The study was based on the following research questions:

- Which continuing education courses are relevant for in-company trainers?
- What differences are there among in-company trainers in terms of their sociodemographic characteristics?

## **2 The study**

The content of the survey followed an initial study, first carried out in the German-speaking part of Switzerland and then supplemented by data from the French- and Italian-speaking parts of Switzerland, where interviews on the subject of continuing education has made it possible to identify salient themes (Wenger & Lamamra, 2022).

In addition, an online survey was sent – via professional associations and through all Swiss cantons – to in-company trainers and to owners of training companies. A total of 5'079 people completed the survey ( $M_{age}=41.13$  years;  $SD=11.54$  years; 55.5% of women), which included questions on possible topics for the continuing education of in-company trainers, their format and modality, the periods of the day and year for carrying them out, etc. Sociodemographic questions were also included in the questionnaire (e.g., company size or activity sector, Table

1). Participation was voluntary, and responses to the survey were guaranteed to be anonymous and confidential.

**Table 1**

Respondents' distribution in terms of sociodemographic information

Respondents' distribution (N = 5'079)								
Sex	Women 55.5%			Men 42.7%			Does not wish to answer 1.8%	
Linguistic Area	German-speaking Switzerland 83.7%			French-speaking Switzerland 15.7%			Italian-speaking Switzerland 0.6%	
Activity Rate	Part-time (less than 50%) 2.7%			Part-time (50%-89%) 24.0%			Full-time (more than 90%) 73.3%	
Company Size	Micro (less than 10 employees) 17.9%		Small (10-49 employees) 34.3%		Medium (50-249 employees) 25.6%		Big (more than 250 employees) 22.2%	
Function	Employee with in-company trainer function (40 hour-course completed) 64.1%		Employee with in-company trainer function (40 hour-course not yet completed) 12.3%		Company owner with in-company trainer function 17.5%		Company owner without in-company trainer function 6.0%	
Swiss Region	Leman's Lake 7.8%	Mittelland 38.1%		North-West 4.0%	Zürich 2.9%	East 36.5%	Central 10.3%	Tessin 0.5%
Activity Sector	Agricult. 3%	Industry 11.5%	IT & Tech 8.2%	Construction 16.6%	Trade 6.4%	Hotel-restaurant 6.7%	Managem. & Admin 20.3%	Health & Education 25.8%

## Findings

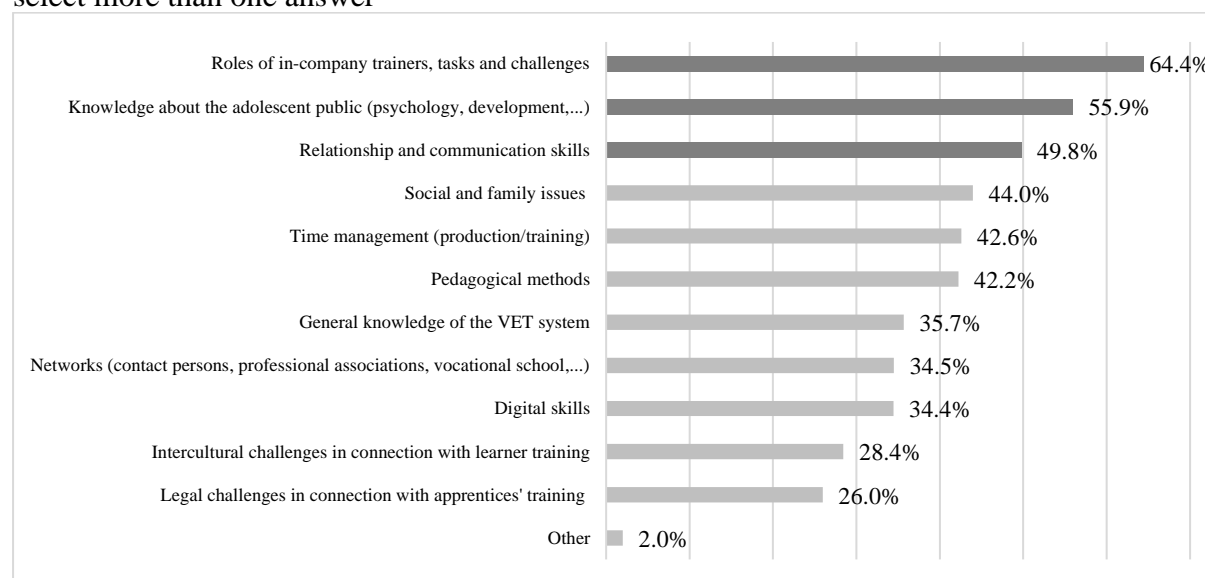
To answer the first research question, that is with regard to the continuing education offers that appear to be relevant to in-company trainers, the most popular were those concerning the *roles of in-company trainers, their tasks and challenges* (chosen by 64.4% of respondents), *knowledge of the adolescent public* (55.9% of respondents) and the *relational and communication skills of in-company trainers* (49.8%; Figure 1). This same “top three” was also found in another question that asked for a ranking of the different continuing education offers. Hence, these results highlight the salience to in-company trainers of their roles in the dual VET system, the relational aspect with apprentices and the issues directly related to the latter. Moreover, the problematic of the *roles, tasks and challenges* of in-company trainers reflects the complexity of the function, which is often not even explicitly clarified in the bill of

specifications. In addition, interest in continuing education on in-company trainers' roles, tasks and challenges underlines the tension between producing and training that is characteristic of their function (Lamamra et al., 2019). The relational dimension of the function, which includes not only transmission of knowledge and know-how, but also support, is reflected in the choice of training courses on *relational and communication skills* and *knowledge of the adolescent public*. This result highlights the relational dimension of the function, central in accompanying and socializing apprentices, as in offering them conditions for successfully achieving their training (Berger et al., 2019; Masdonati & Lamamra, 2009). In this sense, the results illustrate a certain desire to gain greater recognition as a pedagogical figure, and not only as skilled worker, but also to "professionalise" in-company trainer's function (Wenger & Lamamra, 2022).

Another finding to be highlighted is that, in contrast to the trends identified by politics for the Swiss VET sector<sup>52</sup>, in-company trainers have shown relatively little interest for training in *digital skills* (34.4% of respondents) or for intercultural challenges (28.4%) in their answers.

**Figure 3**

Continuing education offers chosen as relevant by in-company trainers. N.B. it was possible to select more than one answer



By carrying out more detailed analyses<sup>53</sup> according to several sociodemographic criteria (second research question), we notice that in-company trainers without a company owner's function<sup>54</sup> selected the different continuing education offers to a greater extent (vs. company owners). This is reflected on the one hand in the number of training courses selected and on the other hand in the continuing education's duration desired. Also, the larger the size of the company, the more answers the respondents selected. This indicates a strong tie between the company's structure, its organisation regarding apprentices training, the position of in-company trainers within the company structure and the possibilities of participating to continuing education. Regarding Swiss geographical regions<sup>55</sup>, in-company trainers in the Lemman's Lake

<sup>52</sup> See for example <https://www.sbfi.admin.ch/sbfi/fr/home/services/publications/base-de-donnees-des-publications/s-n-2019-1/s-n-2019-1c.html>.

<sup>53</sup> Chi-2 tests as well as ANOVAS were performed.

<sup>54</sup> I.e., Both types of employees with in-company trainer function (40 hour-course completed or not).

<sup>55</sup> See <https://www.admin.ch/gov/fr/accueil/documentation/communiqués.msg-id-10585.html>.



region were more interested in training on the roles, tasks and challenges of trainers and in pedagogical methods than those in other regions. The Mittelland region indicated more interest than the other regions in training on time management, while the north-western Switzerland and the Zurich region stood out from the other regions for their interest in continuing education related to adolescents (communication skills, social and family issues, knowledge of the adolescent public). The analyses by geographical region thus reflect different needs in terms of continuing education, linked in particular to the various regional and cantonal organisations of courses to become in-company trainers, but also to different challenges in terms of economic environments, sectors, etc.

Other results reflect the preference of in-company trainers for face-to-face (vs. hybrid or distance learning) courses or exchanges of experience (Table 2). These choices seem to express their need to interact face-to-face and with peers, as their function often leads them to be isolated (especially in micro and small companies). Similar results have previously identified their need of interactions with peer regarding their initial training to the function (40hour-course) (Lamamra et al., 2019). Comparing these same results by professional sector, the results indicate that respondents in the construction, agriculture and industry sectors would particularly prefer the face-to-face format, while in other sectors such as IT or management and administration, the distance and hybrid formats are more strongly selected. This result reflects the diverse realities faced by in-company trainers in different activity sectors, some of whom are accustomed - even more so since the period of the covid-19 pandemic - to the distance and hybrid format, due in particular to the use of computers in their daily work.

When asked what the ideal organisation and duration of continuing education courses (in days per year) would be, in-company trainers seem to prefer full days or half days courses, and on average 2.5 days per year (almost one in three in-company trainers answered 2 days per year; Table 2). By comparing respondents by sociodemographic characteristics, we note for instance that individuals without a company owner's function would like to have longer training period than those with a company owner's function. Also, in-company trainers from medium and large companies, and those from the hotel, health and education sectors also indicate longer training periods. As for the preferred period, respondents with a company owner's function indicate evenings and weekends more than those without this function, which seems to be consistent with the different postures: an owner will indeed need to have her/his employees available during the day, while the latter prefer to keep their free time to themselves, without having to sacrifice it for continuous education.

**Figure 4**

Learning features for continuing education

Learning features (N = 5'079)				
Format	Face-to-face 76.3%	Distance 30.8%	Hybrid 24.0%	
Modality	Course 74.8%	Exchange of experiences 55.5%	Workshop 48.7%	
Organis.	Full days 63.7%	Half days 58.6%	Evenings 17.5%	Weekends 4.2%
Duration	2 days/year 28.3%	1 day/year 19.5%	3 days/year 18.8%	5 days/year 9.5%

### 3 Research significance

The study carried out with the aim of understanding the needs and preferences of in-company trainers in terms of continuing education first of all highlighted the contents, formats, methods and periods (including duration) generally favoured by this population (first research question). In addition, by comparing the respondents according to several sociodemographic criteria, the results provide more precise information about the predilections of each group (second research question). This is very important for continuing education organisers to consider when developing course offerings. Indeed, the aim is to offer 'à la carte' continuing education, as close as possible to in-company trainers' current needs in the field.

Beyond the results providing a clearer picture of the needs and interests of in-company trainers, the large number of respondents to the survey reflects several main issues for research in dual VET. First, this study highlights the need for in-company trainers to be able to benefit not only from updates related to their profession, but also - and even more importantly - from pedagogical further training courses. Second, these results underline the necessity to give these central actors in dual VET a visibility in research, but also in the governance of the system, which is mainly focused on apprentices or companies. Third, results show the need of recognition both for in-company trainers and for the tasks they are in charge of. Finally, different elements presented here go to the direction of a progressive professionalisation of the function, probably more expected by in-company trainers themselves, than by company owners. Indirectly, it also points out the limits of the Swiss "militia system" in the training of apprentices, with in-company trainers wanting more recognition and competence to take on their role.

### References

- Baumeler, C., & Lamamra, N. (2019). Micro Firms Matter. How do they Deal with the Tension between Production and Training? *Journal of Vocational education & Training*, 71(3), 464-481. <https://doi.org/10.1080/13636820.2018.1518922>
- Berger, J.-L., Sauli, F., Wenger, M., & Gross, V. (2019). Evaluer la qualité d'une formation par les perceptions des participant·e·s: premiers résultats d'une recherche dans le contexte

- de la formation professionnelle initiale suisse. In C. Gremion, E. Sylvestre, & N. Younes (dir.). *Actes du 31ème Colloque scientifique international de l'ADMEE-Europe : Entre normalisation, contrôle et développement formatif. Évaluations sources de synergies ?* (pp. 74-81). IFFP et CSE de l'Université de Lausanne.
- Cedefop (2010). *Professional development opportunities for in-company trainers. A compilation of good practices*. Publications Office of the European Union.
- Cedefop (2020). *Vocational education and training in Europe, 1995-2035: Scenarios for European vocational education and training in the 21st century*. Publications Office of the European Union.
- Comyn, P. J. (2018). Skills, employability and lifelong learning in the Sustainable Development Goals and the 2030 labour market. *International Journal of Training Research*, 16(3), 200-217. <https://doi.org/10.1080/14480220.2018.1576311>
- Federal Statistical Office (2022). *Degré secondaire II: choix de formation [Upper secondary level: educational choices]*. <https://www.bfs.admin.ch/bfs/fr/home/statistiques/education-science/indicateurs-formation/indicators/choix-formation-secii.html>
- Lamamra, N., Duc, B., & Besozzi, R. (2019). *Au cœur du système dual : les formateurs et formatrices en entreprise. Résultats d'une recherche et pistes d'action pour les acteurs de la formation professionnelle [Rapport]. [At the heart of the dual system: in-company trainers. Results of a research project and possible actions for VET actors]*. Institut fédéral des hautes études en formation professionnelle IFFP.
- Masdonati, J., & Lamamra, N. (2009). La relation entre apprenti-e et personne formatrice au cœur de la transmission des savoirs en formation professionnelle. [The relationship between apprentice and in-company trainer at the heart of the transmission of knowledge in VET] *Schweizerische Zeitschrift für Bildungswissenschaften*, 31(2), 335-353. <https://doi.org/10.25656/01:8657>
- Moreau, G. (2003). *Le monde apprenti. [Apprentice's World]*. La Dispute.
- Perrenoud, P. (1994). *La formation continue comme vecteur de professionnalisation du métier d'enseignant [Continuing education as a means of professionalization of the teaching profession]* Faculté de psychologie et de sciences de l'éducation: Service de la recherche sociologique. [http://www.unige.ch/fapse/SSE/teachers/perrenoud/php\\_main/php\\_1994/1994\\_10.html](http://www.unige.ch/fapse/SSE/teachers/perrenoud/php_main/php_1994/1994_10.html)
- Wenger, M., & Lamamra, N. (2022). *Premiers résultats de l'enquête TAB. Rapport des analyses descriptives. [Rapport]. [First results of the TAB survey. Descriptive analysis report.]*. Haute école fédérale en formation professionnelle HEFP.

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