

Entenmann, S., Euler, D., Frommberger, D., Li, J., & Schmees, J. K., (2023). Linking technical and vocational education and training with higher education, and possible consequences for development cooperation. In C. Nägele, N. Kersh, & B. E. Stalder (Eds.), *Trends in vocational education and training research, Vol. VI. Proceedings of the European Conference on Educational Research (ECER), Vocational Education and Training Network (VETNET)* (pp. 88–95). <https://doi.org/10.5281/zenodo.8208378>

Linking Technical and Vocational Education and Training with Higher Education, and Possible Consequences for Development Cooperation¹

Entenmann, Steffen

steffen.entenmann@giz.de, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Euler, Dieter

dieter.euler@unisg.ch, University of St. Gallen

Frommberger, Dietmar

dietmar.frommberger@uni-osnabrueck.de, Osnabrück University

Li, Junmin

junmin.li@uni-koeln.de, University of Cologne

Schmees, Johannes Karl

johannes.k.schmees@ntnu.no, Norwegian University of Science and Technology

Abstract

Context: In many countries, the historical relationship between general and higher education on the one hand and TVET on the other can be seen as each side separating itself from the other. From a global perspective, approaches have emerged where TVET meets higher education. These developments can change the relationship between the two sectors. This paper discusses the spectrum of options from creating new permeability between the two sectors and points out possible consequences for development cooperation.

Approach: To investigate the variety of forms in different countries linking TVET with higher education, we use a heuristic that includes four dimensions, namely objective, organisation, programme and system. The heuristic is applied to the development of academisation and tertiarisation in the People's Republic of China and the Palestinian territories.

Findings: In China, the entrance examinations regulate the permeability between the pillars of the secondary and tertiary level TVET system. There is a considerable development in permeability within the TVET system between upper secondary and tertiary levels. In the case of the Palestinian territories, the Al-Quds University can be taken as an example of a step-by-step way to integrate practice-oriented dual studies into existing university structures. Establishing a link between education and practice is a higher priority than establishing stronger links between TVET and higher education.

¹ A detailed German contribution of this proceeding paper is published with the title „Verknüpfungen von beruflicher und hochschulischer Bildung und mögliche Konsequenzen für die Entwicklungszusammenarbeit“ in the journal „Zeitschrift für Berufs- und Wirtschaftspädagogik“, vol. 118, no. 2022/4, pp. 698–718, doi 10.25162/ZBW-2022-0027.



Conclusion: As the two case studies demonstrate, awareness is developing in particular countries that linking these two sectors of the education system can bring benefits. Initial ideas and limitations regarding the expansion of initiatives in development cooperation will be stated.

Keywords: academisation; development cooperation; hybrid vocational education and training; Palestinian territories; People’s Republic of China; permeability

1 Introduction

In many countries, technical and vocational education and training (TVET) is often viewed less favourably and considered less attractive compared to higher education. Historically, there has been a growing divide between general and higher education, on one hand, and TVET, on the other. Each sector has pursued its own distinct goals and objectives. Higher education generally focuses on the scientific basics and theories in each profession, the training of critical thinking skills and the development of analytical and problem-solving capacities, while TVET has been perceived as practical and focused on the training of technical skills only. While higher education and TVET respond to different societal needs, higher education and its „more prestigious” university degrees were traditionally reserved for a privileged group only, while the status of TVET became lower – especially over the last decades.

Globally, convergences and linkages are emerging between the sectors, also in countries with very different education structures. Various approaches have emerged at the intersection of TVET and higher education. While these approaches have not eliminated the divide, they offer new possibilities for redefining the relationship between the two sectors. These approaches span a range of options, including creating greater permeability between TVET and higher education, transferring credit points, and developing programmes that integrate TVET and higher education in one qualification (Wolter, 2019). This way, higher education becomes more relevant for the (local) industries while at the same time (higher) forms of TVET can benefit from the status of higher education.

Consequently, the boundaries between these two education sectors are becoming increasingly blurred. Vocational schools, for example, are encroaching upon the territory that was traditionally reserved for higher education institutions. Meanwhile, universities of applied sciences and even some universities are offering advanced TVET courses to compete with specialized TVET institutions (Dunkel & Le Mouillour, 2013). In certain European countries, this convergence is even more pronounced, with universities offering advanced vocational programmes, leading to well-established qualifications like Executive MBAs, and in some cases, even vocational PhD programmes are offered (Dunkel & Le Mouillour, 2013). Additionally, hybrid institutions are emerging in some countries. This indicates that new connections and linkages are forming between the two sectors.

We adopt Dieter Euler’s approach, which identifies an area of convergence between higher education and TVET (Euler, 2021), to distinguish between the two education sectors mentioned earlier and the resulting emergence of an intersecting or converging area. The differentiation between the two education sectors and the resulting emergence of an area of intersection or convergence is illustrated in Figure 1 below.

Figure 1

An area of convergence emerges between higher education and TVET (based on Euler 2021, p. 43)

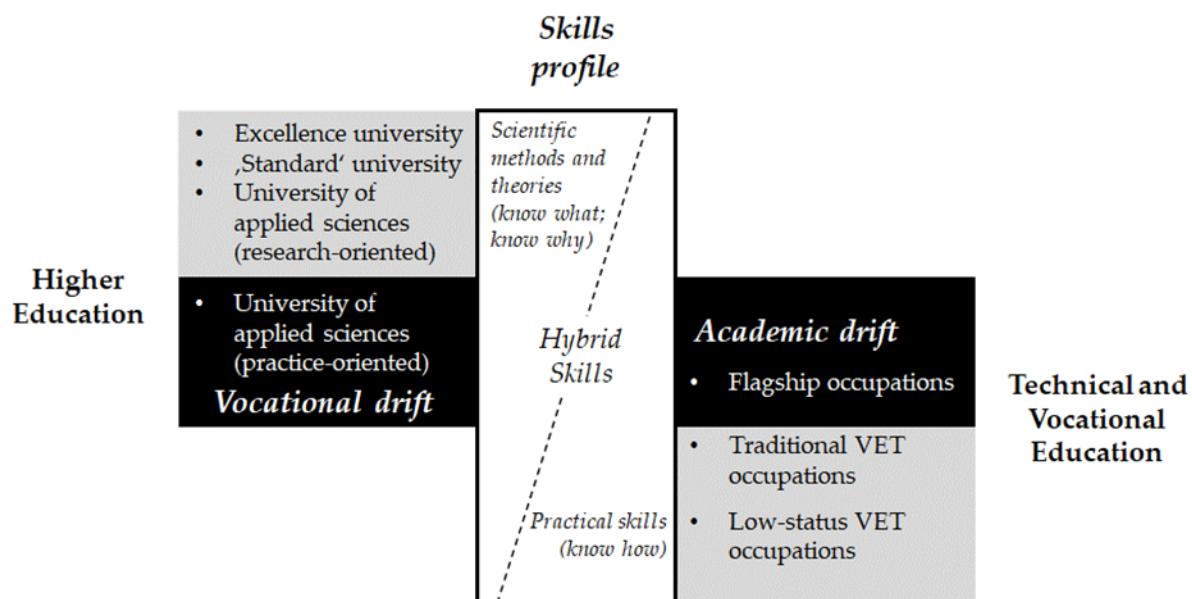


Figure 1 illustrates the persistence of both traditional research-oriented universities and vocational-oriented higher education institutions. There is a growing overlap between these institutions and the vocational end of the TVET spectrum, particularly in certain disciplines and faculties. Some areas of TVET are also experiencing a shift towards academic pursuits. The skills profiles across these different levels exhibit blurred lines and transitions, emphasizing the need for a balance between theoretical knowledge and practical skills. The term „hybrid skill” captures this dynamic, although it may not always accurately reflect the specific skills profile. As higher education and TVET courses increasingly cover similar subject areas, the distinction between them becomes less clear in terms of learning content, acquired skills, qualifications, and employment prospects. However, the pillar structure of the education system remains intact.

This is the background to our opening question – to what extent do these trends open new prospects and opportunities for development cooperation? In this paper we explore the developments of the linkage between TVET and Higher Education in some detail, with a view to presenting and explaining general trends and concrete examples of the People’s Republic of China and the Palestinian territories.

2 Heuristic and Methodology

To examine the diverse forms of linkages between TVET and higher education in different countries, we utilize a heuristic that encompasses four dimensions: objectives, system, organisation and programme.

The objectives dimension focuses on addressing the societal needs for educational system permeability. By integrating TVET and higher education in different ways, bridges can be built to allow individuals with vocational qualifications to access higher education. This dimension also considers creating new pathways for socially disadvantaged groups to benefit from higher education. Similarly, higher TVET can provide new opportunities for school leavers who have completed their general education.

The systems dimension establishes the framework within which the education system operates and within which the other dimensions develop. The different forms of linking TVET

and higher education are embedded within an existing education system, which may have varying degrees of permeability.

The organisational dimension examines the educational institutions that offer hybrid courses. These courses can be provided by existing TVET and/or university facilities. It is observed that organisations are expanding their profiles significantly and incorporating hybrid courses. Additionally, new (hybrid) educational institutions can be established, combining TVET and higher education.

The programme dimension focuses on the specific structure of hybrid education courses that encompass both TVET and higher education elements. Existing TVET programmes can be supplemented with elements of general education or higher education. This aspect is particularly relevant for promoting educational system permeability, allowing individuals to transition between different sections of the education system. It is also possible to incorporate relevant occupational elements within university degree courses, either parallel or sequentially (Deisinger, 2015).

Our heuristic serves three main purposes: Firstly, they provide a framework to describe the current state of linkages between TVET and higher education in a particular country. Secondly, they facilitate comparisons between different systems. Thirdly, they enable professionals to systematically think of new forms of linkages in a particular system.

In this paper, particularly the first two purposes are illustrated. To examine and categorise the forms of linkages between TVET and higher education, case studies from China and the Palestinian territories are employed. The study involves analysing documents such as government reports, recommendations, regulations, requirements, and research studies. The results were extensively discussed during an expert workshop attended by researchers specialising in the academisation and tertiarisation of TVET, as well as experts from development cooperation working in the respective countries.

3 Analysing the linkages between TVET and Higher Education

The heuristic presented will now be used in this section to categorise the *status quo* in specific country contexts, and subsequently to identify development options. To this end, two very different contexts, the People's Republic of China and the Palestinian territories, have been taken to illustrate the overarching approach taken by the heuristics.

3.1 People's Republic of China

In China, the TVET system is predominantly school-based but lacks respect compared to higher education (Hao & Pilz, 2021). The focus on higher education creates pressure on the employment system, although there is a demand for skilled workers in practical occupations (Chan, 2015). China has Higher Vocational Colleges and recently introduced Vocational Universities (Hao, 2012). The government invests in expanding Higher Vocational Colleges to raise the social standing of TVET. These colleges accept school leavers who meet the requirements for tertiary vocational courses. TVET at the tertiary level lasts two to three years and offers over 200 programmes (MoE, 2019). As Vocational Universities have only been introduced in 2019, the structure and programmes are still in development. That is why the study focuses on the former form of Higher Vocational Colleges.

If we apply our heuristic to the development of tertiary TVET in China, the objectives dimension presents a complex picture. The government aims to ensure a supply of skilled specialists, improve employment rates for academic graduates, and enhance the social standing of TVET through academisation and tertiarisation. The restructuring of vocational upper secondary schools into tertiary Higher Vocational Colleges is expected to make TVET more appealing to a new student body. On an individual level, there is a desire to attain higher-level education (Hao & Pilz, 2021). The differentiated policy for entrance to tertiary TVET provides an

opportunity for young people who lack access to universities to pursue vocational academic-level education, increasing their chances of securing better jobs and improving their social status.

The permeability within the Chinese TVET system is regulated by entrance examinations at different education levels. The central university entrance examination holds significant importance for academic careers. The points obtained in these examinations determine admission to elite universities, average universities, technical and vocational universities, or direct entry into the labour market. China's TVET system includes an entrance examination for tertiary level TVET, allowing graduates of vocational upper secondary schools to access academic TVET. The political intention is to develop a path from secondary education to tertiary TVET and emphasise TVET within the education system. Consequently, there has been an improvement in permeability within the TVET system between upper secondary and tertiary levels due to academisation and tertiarisation (State Council of the People's Republic of China, 2019, 2021).

Regarding the organisational dimension, Higher Vocational Colleges offer tertiary-level TVET within existing educational facilities. These facilities undergo restructuring along with changes in curriculum focus and responsibilities. However, criticism arises due to the marginal difference in curricula and training profiles between the new Higher Vocational Colleges and former vocational upper secondary schools (Li & Pilz, 2011).

In terms of the programme dimension, both traditional TVET and higher education in China are predominantly theoretical. The distinction lies in the level of TVET qualifications attainable. The upgrading of vocational upper secondary schools to Higher Vocational Colleges signifies a deeper acquisition of technical competencies and a curriculum upgrade from a medium qualification level to a higher vocational qualification level.

3.2 Palestinian territories

In the context of the Palestinian territories, higher education holds a high reputation. However, the unemployment rate among university graduates is high, reaching around 54%, as degree programmes often do not align with the actual needs of the economy. Employers frequently face challenges finding suitable candidates for job vacancies. In response, efforts have been made to make both higher education and TVET more practice-oriented.

Several universities in the West Bank have developed models to collaborate with the private sector and make Bachelor's degree programmes more practice-oriented. In particular, Al-Quds University in East Jerusalem, in partnership with more than 250 companies and with the support of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and the Baden-Wuerttemberg Cooperative State University, offers five dual studies programmes. Within these programmes students alternate between the university and the training companies.

Drawing on the heuristic proposed here, institutions across all education sectors, including universities, vocational schools, and relevant ministries, as well as the private sector and development cooperation, are striving to establish stronger linkages between education programmes and practical needs in response to societal demands (objectives dimension). This priority even surpasses the need for stronger connections between TVET and higher education. Due to the already high rate of academisation in the Palestinian territories, the permeability between different levels of education is probably not the most urgent issue (system dimension).

Regarding the systems dimension, efforts have been made by policymakers, educational institutions, and the international donor community over the past 20 years to strengthen TVET and increase its attractiveness. The establishment of a National TVET Commission aims to consolidate responsibility for TVET, currently distributed among various ministries such as the Ministry of Labour and the Ministry of Education. There have been suggestions to establish a new „TVET University” under the National TVET Commission, but no clear concept for the

structure of hybrid formats offered by this institution has been developed so far. Ongoing developments in the programme dimension of the heuristics used here will remain relevant.

In terms of the organisational structure, Al-Quds University can be taken as an example of a step-by-step-way to integrate practice-oriented dual higher education studies into existing university structures, for example through a Dual Study Deanship that establishes and maintains relationships with training companies. Also, a steering committee was established, in which representatives of the private sector suggest amendments of the curricula etc. to the university management. Vocational schools in the Palestinian territories often face low interest due to factors such as lack of accreditation, absence of remuneration, and limited collaboration with the private sector. From a development cooperation perspective, higher education plays a crucial role, not only in producing graduates ready for practical employment but also in bridging the gap between industry needs and the innovative capabilities of universities through students who alternate between university and industry.

Important characteristics of the dual study programmes (programme dimension) include for example that the practical in-company training accounts for 40% to 50% of the dual study programmes and that trilateral training agreements are being signed by the training companies, the students and the university. Soft skill and communication training became increasingly important elements of the curricula, as these skills are in strong demand by the training companies.

4 Implications for development cooperation

The current situation calls for a structured reflection on the linkages between vocational and higher education. However, it is important to consider the specific education policy context of each country, as education sectors and their relationships can vary significantly. Therefore, the following considerations are general in nature and do not provide a concrete concept for any particular country.

In many countries, TVET is typically divided into two areas. Firstly, there is school-based TVET, which caters to a relatively small percentage of each year group and focuses on learners who have not obtained university entrance qualifications. Secondly, there is the informal sector, where TVET is often primarily acquired through practice learning. Moreover, higher education is often criticised for not sufficiently training practical skills. Many higher education institutions struggle to bridge the gap between the skills profiles of their graduates and industry requirements, which often include appropriate communication, analytical skills and the ability to identify and solve problems. While certain faculties with direct professional relevance, such as medicine, law, engineering, and economics, offer practice-oriented courses, resistance within universities can hinder the embracement of labour market needs in the curricula.

To address these challenges, stronger links between TVET and higher education can pursue different objectives based on different starting points. One objective is to provide learners from families with a lower level of education access to perceived higher-quality educational opportunities, for example by opening up higher education to TVET graduates or to provide vocational pathways on their tertiary level as in the Chinese example. However, an academic drift of TVET will only indirectly mitigate the lack of adequately trained persons in technical professions, which is often a significant problem in developing countries. By linking TVET to higher education, the quality of TVET can be enhanced through stronger theoretical and academic content for more specialised technical skills.

Higher education as well as TVET potentially benefit from a stronger exposure to professional environment (practice-integrated higher education approaches). For higher education, the learners may for example, develop the necessary communication skills and can get an orientation about practical problems on which they can then focus on in the academic parts of their programmes as in the example of Palestinian territories. Integration of practical elements

potentially makes certain higher education programmes more relevant and increases the employability of the graduates without fundamentally changing the core structures of universities.

Given the difficult initial conditions and the limited experience with pilot projects, ideas regarding the expansion of initiatives in development cooperation are still in a preliminary status. Further-reaching considerations could include the following principles in particular:

- Hybrid education courses should align skills profiles with labour market demands; it is important to consider that universities, often funded through fees, are primarily influenced by the demands of fee-paying parents; in development cooperation, raising awareness among parents about post-graduation employment opportunities can enhance the practical relevance of training programmes.
- In the context of sustainable development, TVET and higher education should address capacity gaps in areas where there might (still) be limited labour markets: training skilled specialists in key sectors such as the digital economy, renewable energy, and financial technology is crucial for establishing and developing these sectors. Utilising applied research and innovation transfer in universities can further support this goal within the framework of development cooperation.
- Education courses should be accessible to learners from disadvantaged backgrounds, with appropriate support provided when necessary; besides providing equal access to learning opportunities, it is also important to consider gender-inclusive job opportunities and foster their creation during student and apprentice training; without adequately equipped workplaces and an enabling corporate culture, efforts to increase women's employment, including at managerial levels, may not succeed.
- Universities require suitable quality assurance mechanisms to protect the reputation of practice-integrated higher education. Parallel promotional activities should be conducted to enhance the attractiveness of TVET courses; this can be achieved by providing information about the potential benefits of hybrid educational concepts.

Overall, these recommendations aim to bridge the gap between vocational and higher education, align education with labour market needs, promote inclusivity, and enhance the practical relevance of training programmes.

References

- Chan, W.T. (2015). Higher education and graduate employment in China: Challenges for sustainable development. *Higher Education Policy*, 28, 35-53. <https://doi.org/10.1057/hep.2014.29>
- Deißinger, T. (2015). Verberuflichung und Verallgemeinerung – internationale Perspektiven und die Frage nach der Tertiärisierung der beruflichen Bildung. In B. Ziegler (Ed.), *Verallgemeinerung des Beruflichen – Verberuflichung des Allgemeinen?* (pp. 57–80). Gütersloh.
- Dunkel, T., & Le Mouillour, I. (2013). Berufsbildung auf höchstem Niveau – europäische Erfahrungen. In E. Severing & U. Teichler (Eds.), *Akademisierung der Berufswelt?* (pp. 143–168). Gütersloh.
- Euler, D. (2021). Shaping the relationship between vocational and academic education. Socioeconomic trends and their implications for the future of apprenticeships. In Cedefop/OECD (Eds.), *The next steps for apprenticeship* (pp. 39–49). Luxembourg.
- Frommberger, D., & Schmees, J. K. (2021). Bridging vocational with upper secondary and higher education: international developments. In C. Nägele, N. Kersh, & B. E. Stalder (Eds.), *Trends in vocational education and training research* (pp. 64–72). <https://doi.org/10.5281/zenodo.5415726>
- Hao, T., & Pilz, M. (2021). Attractiveness of VET in China: A study on secondary vocational students and their parents. *Journal of Education and Work*, 34(4), 472–487. <https://doi.org/10.1080/13639080.2021.1946492>.
- Hao, Y., (2012). The reform and modernization of vocational education and training in China. Discussion Papers, Research Group Globalization, Work, and Production SP III 2012-304, WZB Berlin Social Science Center.
- Li, J., & Pilz, M. (2011). Berufsbildung in der Volksrepublik China. In C. Kreklau & J. Siegers (Eds.), *Handbuch der Aus- und Weiterbildung* (219. Supplementary delivery, August 2011), (pp. 1–24). Deutscher Wirtschaftsdienst.

- MOE (2019). Vocational teaching standards in higher vocational education and training [gaodeng zhize xuexiao yhuanze jiaoxue biao zhun]. 18.02.2022. http://www.moe.gov.cn/s78/A07/zcs_ztzi/2017_zt06/17zt06_bznr/bznr_gzjxbz/
- MoHe (2021). Decision of the Minister of Higher Education and Scientific Research No. (13/5) for the year 2021 regarding the instructions for the additional standards for dual education programs (in Arabic). <http://www.aqac.mohe.gov.ps/Portals/0/Laws/13.pdf?ver=2021-07-12-095936-690>. 20.09.2022
- State Council of the People's Republic of China (2019). National implementation plan for VET reform [guojia zhiye jiaoyu gaige shishi fang'an]. http://www.gov.cn/zhengce/content/2019-02/13/content_5365341.htm. 18.02.2022.
- State Council of the People's Republic of China (2021): The General Office of the Central Committee of the Communist Party of China and the General Office of the State Council have issued the „Opinions on Promoting the High-Quality Development of Modern Vocational Education and Training”. [zhonggong zhongyang bangong ting guowuyuan bangong ting yinfa „guanyu tuidong xiandai zhiye jiaoyu gao zhiliang fazhan de yijian]. http://www.gov.cn/zhengce/2021-10/12/content_5642120.htm. 21.06.2022
- Wolter, A. (2019). Abschied vom Bildungsschisma. In D. Euler, V. Meyer-Guckel, & E. Severing, (Eds.), *Studienintegrierende Ausbildung. Neue Wege für Studium und Berufsbildung* (pp. 21–41). Essen.

Biographical notes

Dr Steffen Entenmann is project manager and technical advisor for education, vocational education and training and labor markets at Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. His professional focus lays at the nexus between scientific research, education and economic development, especially with regards to the sustainable use of natural resources.

Dr Dieter Euler is Professor Emeritus for Educational Management and Business Education at the University of St. Gallen, Switzerland. He studied Management, Business Education and Social Philosophy at Cologne University and the London School of Economics and Political Science (LSE). His main topics are educational innovations, social competencies, pedagogical university development, digital media didactics and design-based research.

Dr Dietmar Frommberger is Professor of Vocational and Business Education at the University of Osnabrück. His research and teaching focuses on structural developments in vocational education and training, vocational education and training in international comparison, and initial and continuing training of vocational education and training personnel.

Dr Junmin Li is a senior researcher at the Chair of Economics and Business Education at the University of Cologne, Germany. Her research is concerned with international comparative TVET research, school quality development, in-company training, learning task and the integration of refugees into the labour market.

Dr Johannes Karl Schmees is a Postdoctoral Fellow at the Norwegian University of Science and Technology, Trondheim, Norway. His research focuses on international and comparative VET.