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Diversity-Oriented Teachers for Vocational Education. Analysis and Modelling of Competence Requirements for Teacher Education and Training

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Abstract

Context: Changes in the context of a diverse labour market pose major challenges for European VET. VET research can make an important contribution by sharing proven approaches. Dealing with diversity is addressed by different concepts that focus on individual factors or diversity as a whole. The perspective on diversity and the distribution of roles in educational institutions vary depending on the concept. Inclusion and exclusion are interrelated, and inclusive competences help to reduce exclusion. Sensitisation and professionalisation of VET staff are therefore necessary. The article examines the competence requirements for an inclusive approach to diversity in teacher education for vocational schools.

Approach: The aim of the paper is to formulate dimensions for a framework for teacher education at VET schools in the context of diversity orientation in order to contribute to inclusive, equitable and quality vocational education/training. In a qualitative literature analysis, a theoretical classification of the concepts of competence, the structure of competence models and their conceptualisation in teacher education in general and those focused on diversity-orientation took place. In an analysis of teacher education models, competences related to managing diversity and inclusion were derived. The categories „attitudes”, „knowledge”, and „skills” were found to be target-orientated for the assignment of competence requirements.

Findings: The results can be classified well along the defined main categories. Attitudes and internalised values (1) influence motivation, while readiness to act, self-efficacy and self-regulation are crucial for the implementation of appropriate strategies in the classroom. Teachers' knowledge (2) can be divided into basic knowledge areas, such as inclusive education and diversity-oriented didactics, and specialised knowledge. The latter is relevant in specific situations or for specific learners. Skills and abilities (3) can be divided into the fields of organisational development, cooperation with partners and diversity-oriented methodology and didactics.

Conclusion: The presented framework for competence dimensioning and structuring can help in curriculum development in teacher education. Inclusion-oriented dealing with diversity requires a combination of competences that have to be developed situationally. It is recommended



to consider inclusion and diversity as a cross-cutting competence for all teachers. Future research projects should focus on the acquisition of sub-competences in different phases of teacher education and their impact on teaching. Intersectional knowledge should be considered in the reflection and further development of teaching concepts. For this, evidence-based research and international exchange can contribute to an inclusion-oriented approach to diversity.

Keywords: vocational teacher education, diversity, inclusion, competences

1 Initial situation and problem definition

Changes in the European labour market, such as the number of vacant positions, new findings concerning the interdependence between social background and educational success, as well as new target groups resulting from the influx of refugees in recent years and the programmatic claim of inclusion of people with disabilities (Euler et al., 2020) pose societal challenges connected to diversity for European VET. International comparative VET research can make a decisive contribution here by sharing proven approaches and learning from each other (Pilz, 2017). At this point, ambiguous conceptual understandings in the context of diversity as well as a multitude of different approaches in dealing with diversity prove to be difficult.

Neither on diversity nor on inclusion can a theory deficit be stated (Boger, 2019; Kuhlmann et al., 2018; Schimek et al., 2022; Sturm, 2023). Dealing with diversity is taken up by different concepts that either address individual diversity factors (e.g. disability, ethnic-cultural background) or diversity as a whole (e.g. broad understanding of inclusion, diversity management). The perspective on diversity, the distribution of roles in dealing with diversity as well as the associated changes in VET institutions and structures are also seen differently, depending on the underlying concept and understanding (Kimmelman et al., 2022). An interdisciplinary analysis by the team of authors points to opportunity-based professional action as a common point of reference for both concepts in reducing educational discrimination processes. Inclusion and exclusion have a mutually dependent relationship. Inclusion-oriented professional competencies enable to deal with structural contradictions as well as exclusionary tendencies and thus to reduce risks of exclusion. An inclusion-oriented approach to diversity is therefore of importance for participation in educational processes (Pool Maag et al., submitted).

The authors (Miesera et al., 2023; Pool Maag et al., submitted) suggest international comparative analysis focusing the wider interpretation of inclusion in dealing with diversity. Common to all concepts is the goal of achieving equal opportunities for all learners, regardless of diversity factors. This presupposes the use of the learners' potential (potential orientation instead of deficit orientation) and requires a fundamental sensitisation and professionalisation of VET staff (Zoyke, 2016; Bach, 2018), with a view to the challenges and opportunities of diversity as a cutting-cross category. However, this requires more research on diversity-oriented professionalisation of VET staff. This is where the present study comes in and investigates the following research question:

How to model competence requirements for an inclusive approach to diversity in teacher education for vocational schools? Based on this question, the aim of the paper is to formulate dimensions for a framework for VET teacher education in the context of diversity orientation in order to contribute to inclusive, equitable and high-quality education/training.

2 Methodology

Qualitative research is oriented towards social reality and provides methods to better understand complex processes and structures (Flick et al., 2019). This article deals with the constructs of diversity, competence models and teacher training in VET, the complexity of which can be found in different conceptual understandings on the one hand and appears even more complex

in their relational contexts on the other. A qualitative literature analysis was chosen as the research method, the systematics of which were mapped in four steps.

In a first step, (1) a literature search was conducted on the keywords competence, competence models, teacher education in general, and for VET, diversity, focusing on current literature from the year 2000 onwards.

In addition, (2) the quality of the sources was checked in collaborative online sessions of the research team. For this purpose, the criteria system proposed by Döring and Bortz (2016) was adapted to the objectives of the article and the intersubjective comprehensibility, relevance, consistency and limitations of the studies were used as review criteria. The data obtained in this way were summarised in a table.

Subsequently, (3) content analysis (Mayring, 2010) was applied by deriving categories inductively from the existing material. This step was carried out by paraphrasing, generalisation to a previously defined level of abstraction and a multi-level reduction of the text passages. From the analysis of the teacher competence models, the categories „attitudes“, „knowledge“ and „skills“ proved to be target-oriented for the assignment of competence requirements.

In a parallel analytical step, (4) competences connected to dealing with diversity and inclusion were derived in a comparable analysis from models in teacher education and training. In order to pick up the described approach of an inclusive dealing with diversity, both perspectives were included by integrating competence models in the context of diversity (factors) and inclusion at the same time. Also, both general education and vocational training models derived within the DACH¹ countries as main research context of the contributing researchers were included to broaden the base of analysis. Identified competences were paraphrased and summarized into units within the three-categorical structure.

Comparisons in the sense of interpersonal validation are recommended as a quality criterion of qualitative research (Döring & Bortz, 2016). Here, the communicative validation of the document analysis forms the process to check the validity of the analysis (Flick et al., 2019; Lamnek, 2010). This process took place with the involvement of the researchers and thus represents a form of expert validation. The results of the document analysis were evaluated with regard to their suitability, value and validity within the research group.

3 Theoretical contextualisation of competences in teacher education

It is assumed that the professional competences of teachers have a decisive influence on the learning performance of students against the background of the dynamics of a diversity-oriented field of action. In the understanding of this paper, professional competence is not exclusively oriented towards cognitive aspects, but also includes the social dimension of learning as well as the development of attitudes towards inclusion and participation. In the following, the understanding of competence underlying teacher education is first elaborated. Based on this, the models are discussed in the context of diversity and inclusion and characteristics are differentiated that can be derived from this as dimensions for the curricular anchoring of competences for teacher training in the context of the requirements of an inclusion-oriented approach to diversity in vocational education and training.

3.1 Competence and competence modelling in initial teacher education

Historically, the term competence can be found in its origins as early as the 1970s in Chomsky (1973), who understands it as the implicit knowledge that a speaker possesses and that enables him to form and understand grammatically correct sentences. Chomsky sees this as a connection between inner resources and acting, the „performance“, which depends on the situation for

¹ DACH Germany (D), Austria (A), Switzerland (CH)

its success. Theoretical concepts of competence (Roth, 1971; Reetz, 1990) define the concept of competence as basic personal-character skills, task-oriented and socially-oriented skills and include the importance of „learning arrangements that combine situational complexity with action orientation, at the same time promote motivation and encourage independent learning“ (Reetz, 1990, p. 20). This view includes a characteristic of holism that is sufficient for today's understanding of the term.

The development of teachers' professionalism and competences has been researched inter-disciplinarily in educational science since the beginning of the 1990s (Bromme, 1992). Based on Shulman (1986), the central competences of teachers in the area of professional knowledge include the application of subject knowledge as well as content knowledge, pedagogical knowledge and curricular knowledge in the teaching context.

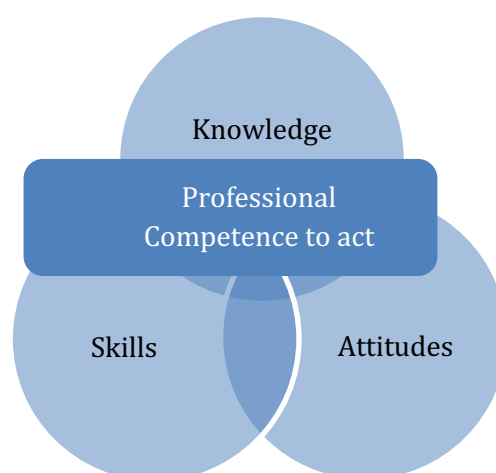
These path-breaking concepts triggered a series of different definitions of terms that are significant for the context of educational science, respectively for competence modelling. In the sense of an understanding of competences that is relevant for teacher training, competences are not only knowledge and skills, but comprehensive abilities that have a relation to concrete task or requirement contexts (Hacker, 2006; Moser, 2014). They describe both cognitive and non-cognitive dispositions (Weinert, 2001a; Weinert, 2001b) and thus correspond to an understanding of human holism (Erpenbeck & Heyse, 1996; Arnold & Schübler, 2008). Competences are context-dependent, which implies that they can also be acquired in corresponding contexts. In most definitions, self-organisation disposition emerges as an essential characteristic, which includes the self-organised acquisition of knowledge in order to be successful in new open and complex situations (Erpenbeck & von Rosenstiel, 2007). A common element of competence definitions is the ability to act. Acting competently means mobilising individual resources and orchestrating them in a complex situation (Rychen & Salganik, 2003). These characteristics clearly distinguish themselves from theoretical models and teaching/learning arrangements that aim at pure knowledge transfer. Diverse teaching/learning environments are often complex, situations are often unpredictable and therefore require situational skills using cognitive and non-cognitive resources. Future teachers, respectively those of vocational schools, the relevant group for the topic in this article, must acquire competences in their training. The concept of competence discussed here fulfils these requirements and is therefore used for the further discussion, in which the question arises as to how competences can be modelled in order to achieve the training goals of a diversity-oriented teacher education.

In their function, competence models in teacher education are the basis for curriculum development, didactic-methodical design of training courses, can be used in assessment procedures and are relevant as accreditation and evaluation measures. Schaper (2009) categorises competency models of teacher education with regard to the scope of the range of impact and the construction methodology and provides a framework for classifying models in relation to tasks or requirements of educational programmes. For example, models cover the entire scope of teachers' activities (Oser & Blömeke, 2012; Blömeke et al., 2008; Krauss & Blum, 2012) or refer to different sub-areas such as diagnostic competence (Aufschnaiter et al., 2015). A broad spectrum of competence dimensions, including e.g. both cognitive and non-cognitive ones, can also be found in Blömeke et al. (2012), whereas other authors base their modelling on partial facets, such as behavioural competences (Heinzer et al., 2009). Many models refer to Weinert's (2001b) concept of competence, which includes cognitive skills as well as motivational-volitional and social skills, although some models focus on different directions of this triad. Klieme and Leutner (2006) define competencies as „context-specific cognitive performance dispositions that functionally relate to situations and demands in specific domains“ (Klieme & Leutner 2006, p. 879). Baumert and Kunter's (2006, 2011) model is widely used in the German-speaking area and describes the competencies of future teachers in terms of multiple aspects that include motivational, self-regulatory orientations and beliefs as well as knowledge areas such as subject

knowledge, subject didactic knowledge, pedagogical knowledge, organisational and advisory knowledge. The findings of Baumert and Kunter are based on empirical studies of a teaching subject. This is where criticism comes in, since the model already depicts correlations in a very differentiated way. This raises the question of a generally valid application possibility for competence models of teacher training that can be applied to very complex situations, as is the case in diverse teaching/learning environments. Nevertheless, the distinctive differentiations for basic considerations, which can be further developed by means of inclusion and exclusion procedures, can be useful for a competence model for a diversity-oriented teacher education. Baumert and Kunter pay little attention to the aspect of action orientation, which develops generically and is therefore also important for teachers beginning their careers. Neuweg (2015) accentuates action orientation as a component of competence, which is expressed independently of the inclusion of motivational aspects in the situational mastering of challenges, is context-dependent and both learnable and transferable to new situations.

Figure 1

Categories of competences



With respect to the construction methodology, models can be normative, for example derived from educational theories or curricula, or empirically based on requirement analyses (Klieme et al., 2003; Terhart, 2002). In order to do justice to the specificity of diversity-oriented didactics, this study focused on diversity-oriented competences with regard to the area of its impact. However, these include both cognitive and non-cognitive aspects. In terms of the construction methodology, a normative approach was taken by deductively deriving diversity-oriented competences of teachers from existing models and theories.

Competency level models contain different degrees of proficiency of a skill, indicate its levels or degrees of difficulty and refer to measurement or assessment, such as the MT21 competency model by Blömeke et al. (2008). These models are more likely to be found in school performance tests (PISA,² TIMMS³) than in teacher training. Competence structure models are used to describe the required competences for certain domains of a task area, which can also be mapped in a further dimension. For teacher training in VET, Frey (2004) gives an example that initially maps subject, methodological, social and personal competence on one level (horizontally) and vertically divides individual skills, bundled skills, abilities and overall competence into a hierarchy.

² Programme for International Student Assessment

³ Trends in International Mathematics and Science Study

3.2 The understanding of competence for an inclusive approach to diversity

In order to formulate a framework concept for anchoring competencies with a view to an inclusion-oriented approach to diversity, the research team first conducted an analytical examination of existing competency models that take up this perspective as part of the professionalism of teachers. The following table shows the examined models structured according to their focus.

Table 1
Structure in the context of diversity and inclusion

Model focus	Sources
Broad inclusion	Bach, 2018 Buchmann, 2020 Filipiak, 2020
Narrow inclusion	Bach et. al., 2018 Zoyke, 2016 European Agency for Development in Special Needs Education, 2012
Diversity/Heterogeneity	Buchmann, 2020 Holzinger et al., 2019 Vock and Gronostaj, 2017
Specific diversity characteristics	Kimmelman, 2010 (Cultural Diversity)

The model focus of the broad understanding of inclusion outlines the variety of diversity dimensions. Representatives of this view are Bach, Buchmann and Filipiak. Further on the societal level and thus with additional competence dimensions, Buchmann sees a diversity-sensitive inclusive VET as the implementation of a „real utopia“ as a societal transformation process (Buchmann, 2020). In her opinion, it is not enough to „re-evaluate and relate the partial logics that have been relevant in the vocational school context and the professional body of knowledge in terms of educational theory“ (Buchmann, 2020, p. 147 f). For societal transformation, subject knowledge and curricular knowledge are necessary in addition to professional knowledge of transformational knowledge. In contrast, Bach (2018) sees it as problematic that education policy has established social transformations with the corresponding reforms towards an inclusive vocational education and training system as a normative claim without having planned concrete measures for implementation. Against this background, she urges research that shows how inclusion-related professional competence development can be designed within the framework of teacher education so that this claim does not remain just an ideal. She criticises that „without investing correspondingly wide-ranging resources in mainstream vocational schools, [inclusion] can hardly succeed (Bach, 2018, p. 163). Filipiak (2020) extends Baumert and Kunter's (2011) model by adding „performance“, which locates pedagogical action in the components of readiness and planning, and thereby places the engagement with action and problem-solving situations in the context of a broad understanding of inclusion. This concept of an inclusion-oriented teacher education is similar in its essential features to the current competence models of teacher education and is suitable as a model that relates in its function to the competence acquisition of teachers. At the same time, efforts are needed to promote the competence development of teachers.

The narrow understanding of inclusion focuses on the dimension of disability or „special needs“. This is specified in the transnational model of the European Agency for Development in Special Needs Education (2012), which was developed within the framework of the

international project „Teacher Education for Inclusion (TE41)“. The areas of competence refer to (1) attitudes and beliefs (2) knowledge and understanding (3) skills and abilities, explicitly mentioning the appreciation of diversity, support for all learners, the ability to cooperate and the readiness for personal development in the sense of lifelong learning. This model is very differentiated with 124 descriptions of competences. Following this model, Bach and colleagues confirm that inclusion-related attitudes and beliefs are attributed an action-guiding dimension. Knowledge, beliefs as well as motivational and self-regulatory characteristics and skills are seen as crucial for professional action of teachers in diversity and inclusion contexts (Bach et al., 2018; Zoyke, 2016). Specific tasks such as learning process analyses or initial diagnoses also require specialised knowledge and cooperation in multi-professional teams. According to Bach et al. (2018), competent professional action requires the successful mastering of three levels, whereby the first level focuses on general inclusion-related requirements for all teachers in the education system, the second level describes specific inclusion-related requirements for all teachers in VET (e.g. learning location cooperation) and the third level contextualises domain-specific inclusion-related requirements for and attitudes of teachers of certain vocational disciplines.

Holzinger et al. (2019) take up a model focus on diversity with an appreciation of the diversity of learners in their competence development concept, it includes the support of all learners, cooperation with others as well as personal professional development and is characterised in the dimensions of „knowledge“, „acting“ and „attitudes“. With characteristics of an action-oriented educational context, it explicitly presents professional development as a generic element that is important for sustainable teacher education. Also corresponding to a diversity-oriented understanding are the competence requirements for teachers by Vock and Gronostaj (2017), in which they address the differences found in heterogeneous learning environments with regard to socio-economic background, migration background, educational language, flight experiences, disabilities and special educational needs, illness as well as gender differences, intelligence and prior knowledge. From this, the necessity of diagnostic and didactic competences, subject didactic knowledge as well as corresponding beliefs and values is derived. Weaknesses of this model can be seen in both the low theoretical grounding and the lack of empirical evidence. Nevertheless, it seems to be useful for the practical implementation of a quality diversity-oriented teaching.

The following competence-theoretical professional understanding of an inclusive approach to diversity is based on the assumption that the competences of professionally active teachers are formed by their attitudes, experiences, convictions, values and motivation. Particularly important are: Knowledge, attitudes and action (Bach, 2018; Buchmann & Bylinski, 2013). This approach is based on the premise that „pedagogical professionalism takes place in the three phases of teacher education (studies, preparatory service, in-service teacher training)“ (Bach 2018, p. 164).

3.3 Competence requirements for teachers for an inclusive approach to diversity

As outlined, the models structure the requirements of diversity-sensitive inclusive vocational education and training. The competence dimensions derived from them for teacher training in different ways with reference to normative framework conditions and empirical results. Nevertheless, the competence requirements can be assigned to the presented tripartite division in the sense of a holistic competence to act (see Fig. 1).

Table 2

Competence requirements for VET teachers in context of an inclusive approach towards diversity

Model focus	General competence models	Competence models with focus on inclusive diversity
Attitudes	Subject-relatedness Holism Self-organisation e.g. Erpenbeck & v. Rosenstiel 2003; Moser, 2014	<ul style="list-style-type: none"> • Positive Attitudes towards diversity and inclusion • Positive internalised values/convictions towards diversity and inclusion • Readiness to act inclusively in own teaching settings • Self-efficacy in implementing inclusive educational strategies also in critical situations • Self-regulation for a critical reflection and readjustment of own strategies or decisions
Knowledge	Performance dispositions that functionally relate to requirements in specific domains e.g. Klieme & Leutner 2006; Baumert & Kunter, 2006, 2011	<ul style="list-style-type: none"> • Basic elements of an inclusive education • Inclusive didactic approaches and learning settings • Pedagogical-psychological knowledge about individual learning, learning in inclusive groups and learners needs • Inclusive organizational structures, processes and cultures • Tools and procedures for diagnosis of learners' special needs • Coaching strategies • Special needs education
Multidimensional skills	Multi-dimensional property that is requirement-related and subjected to acting or performing. e.g. Neuweg, 2015; Oser & Blömeke, 2012	<ul style="list-style-type: none"> • Organisational: e.g. sensitive perception of diversity, development of inclusive structures and processes • Social: e.g. diversity related networking, multi-professional team work, team teaching • Pedagogical: e.g. diversity-sensitive teaching (individual and group promotion), diagnosis, individual learning assistance

The authors of the analysed models all emphasise the prominent role of corresponding attitudes by teachers. Attitudes are a broad category of different personality traits, some of which influence each other. While attitudes and internalised values/convictions influence the basic motivation to participate in an inclusive oriented diversity-based education, readiness to act, self-efficacy and self-regulation are decisive for a sustainable implementation of corresponding strategies in one's own actions as a teacher.

Relevant knowledge categories can be classified according to the broadness of the areas of activity affected (pedagogical key activities versus special tasks/positions) and differentiated

by whether it is knowledge of general value for the activities of all teachers or special knowledge or expert knowledge that teachers only need for certain learners, positions or situations. The basis of the knowledge acquisition of teachers are fundamental areas of knowledge about inclusive education in connection with a diversity-oriented implementation of individual didactic approaches. More complex knowledge areas, on the other hand, pick up complementary knowledge that is crucial in key positions, such as diagnosis competences or psychological knowledge about learning and learners needs. The share of special educational knowledge (in the sense of knowledge about certain diversity characteristics, areas of support or concepts for dealing with it) can be seen as the top in the competence models, counted among the expert knowledge of few teachers.

Necessary skills and abilities of teachers can be located along three areas of action in connection with the implementation of an inclusion-oriented approach to diversity in vocational schools: (1) diversity-oriented organisational development and anchoring of structures, (2) cooperation with internal and external partners in the sense of an inclusion-oriented approach to diversity and (3) diversity-oriented methodology and didactics (comp. Pool Maag et al. submitted).

4 Discussion, limitations and outlook

Aiming for inclusive, equal opportunities and high-quality vocational education and training is an important starting point for tackling the challenges ahead in European countries. The framework presented in this article for the dimensioning and structuring of corresponding competences of teachers can be an aid for further curriculum development in teacher education.

The competence requirements can be integrated into existing competence models of teacher education by assigning them to the three basic areas of action competence (attitude, knowledge and skills). At the same time, their complex character becomes apparent in the numerous interrelationships of the competences with regard to their application in concrete situations of action. According to the understanding of the existing competency models, an inclusion-oriented approach to diversity usually requires a combination of competencies that consciously perceives the situation. This requires an equally situationally designed didactic approach in the competence development of teachers.

Furthermore, the specific competences - as has already been shown - are connected with basic pedagogical competences, which means that it is less appropriate to speak of a narrow specific „competence for dealing with diversity in an inclusive way“, but rather of a not clearly delimited, broadly conceived cross-sectional competence. The article shows how inclusion and diversity can be combined in a theoretical, conceptual and action-oriented way with regard to competence requirements for teachers at vocational schools. This interconnected perspective could unite these two traditions in teacher education, which have been separate up to now, and contribute to an anchoring of corresponding competence requirements as a real cross-cutting issue for all teachers.

As the outlined models do not yet allow for empirical differentiation of the competence requirements with regard to competence levels, their generative character must be assumed when integrating the competences into curricula. This means that the competence development process must fundamentally be applied to all phases of teacher training. In the future, however, the concrete successive teaching will require an intensive scientific, data-based examination of the gradual possibility of acquiring partial competences throughout the various phases of teacher training as well as the mode of action of competence acquisition with regard to the teaching process and its changes.

Building on this, there is the opportunity - through corresponding research projects in the sense of action research by teachers - to reflect on and further develop teaching concepts based on intersectional knowledge (interaction of multiple lines of discrimination). Thereby, forms of

intersectionality could be explored that are particularly relevant for vocational education. Teacher education institutions should therefore continue their evidence-based research focusing on the dimensions of diversity in VET in its breadth and depth and in connection with inclusion in this sense.

Comparative efforts at the European level and an associated international exchange (also of best practice models) could make a valuable contribution here towards an inclusion-oriented approach to diversity in all its breadth and diversity.

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