

## **Compatibility potential of vocational education and higher education in competence orientation**

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### **1 Starting point labour market and lifelong learning**

Knowledge-based jobs in the main occupational areas of manufacturing as well as primary and secondary service areas are increasing globally. The trend toward higher qualification of skilled workers and managers promotes the discussion about the extent to which the vocational professionalization of this qualification can be designed along academic requirements in connection with higher education (WOLF 2010; FRANZ / VOSS-DAHM 2011). In industrialized countries, education, in all its subsystems, is increasingly demand-oriented and sustainably developed based on the requirements of lifelong learning and the labour markets (cf. RAFFE 2003).

### **2 Framing conditions and developments in education policy**

In the context of the European policy processes on lifelong learning in education (Bologna 1999, Copenhagen 2002, Maastricht 2004,) the stakeholders of all education and training sectors in Germany have agreed to promote transparency and comparability of qualifications and the permeability of education pathways by the descriptions of competences and learning outcomes in education programmes (BMBF / KMK / AK DQR 2011). This will be processed by taking into account education sector-specific perspectives and objectives. The national discourse on permeable education systems and pathways (cf. DEUTSCHER BILDUNGSRAT 1970) has been qualitatively upgraded by the competence-oriented shift to learning outcomes as has been recommended Europe-wide (BJORNAVOLD 2008<sup>2</sup>, cf. WOLTER 2010).

Essential political, legal and instrumental framing conditions have supported this development. By addressing professional competence as the qualification objective for academic degree programmes, the European Bologna process meant an important paradigmatic step forward. This has significantly extended the intersection with vocational education and training objectives. (cf. BREUER 2005).

Amendments to federal state higher education acts have contributed to a competence-oriented permeability of education pathways at the interface between vocational education and training and higher academic education (KMK 2002/2009). The Federal Ministry of Education and Research (BMBF) is carrying out a programme on the development of instruments and methods for the recognition of occupational competences within academic study courses since 2006 (ANKOM). In addition, the current Ministry programme "Open University" promotes

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<sup>2</sup> As all education sectors have agreed on the definition of learning outcomes, which „...describe what learners know, understand and are able and ready to do on completion of a learning process“. (BMBF/ KMK/ AK DQR 2011).

the link between VET and academic HE qualifications (BMBF 2011). At the beginning of the last decade, examination regulations developed for nationwide use in VET advanced IT education programmes assumed an equivalence between operative and strategic qualification profiles and the academic bachelor / master degrees to shape the transfer between the education sectors (BMBF 2002).

At the end, the EU education ministers had projected a competency-oriented European Qualifications Framework (EQF) in the Maastricht declaration (2004) across all education sectors which should promote the transparency between VET qualifications and academic Higher Education qualifications as well as the permeability between both education sectors. In addition the Council of Europe and the European Commission have confirmed the compatibility of the EQF and the Bologna Degree Framework in the autumn of 2010.

Based on long-term stakeholder discussion processes in politics, education practice and research in Europe and in Germany, the competence-oriented shift to learning outcomes has reached consensus in education policy (BJORNAVOLD 2008). In spite of this agreement, which focused in Germany on the development of a cross-education-sector national qualifications framework in the last decade (BMBF/ KMK/ AK DQR 2011), no criteria for learning-outcome-oriented curricula or examination requirements has been developed up to now, which are compatible between VET and academic higher education (cf. BUHR et al. 2008). Facing the differences especially with regard to the concept of qualification, VET and academic higher education both have to tackle the challenge to apply the compatible potential of the competence reference in the design of their qualifications<sup>4</sup> to a full extent. This is demanded by the education policy objectives of permeability and lifelong learning as well as by the requirements of the labour market.

This paper assumes that when qualification goals are defined as described, there will be no fundamental barriers between the academic requirements of discipline-centric higher education systems and an orientation toward vocational requirements. Indeed, in both educational sectors there is already a potentially compatible competence-related orientation for the design of educational pathways and qualifications, both implicit, and, to some extent, explicit, which represents a considerable prerequisite for the design of the permeability of educational pathways between vocational and higher education.

In the context of educational policy goals and prevailing circumstances this paper discusses further educational academic considerations and approaches on action orientation with regard to broader, compatible understandings of action and practice for both educational sectors. Finally, there are discussions of the catalytic potential of instrumental approaches for transparency and comparability of qualifications (with a focus on qualification frameworks),

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<sup>4</sup> In this paper the term qualification is understood as a formal outcome as an assessment and validation process, which is obtained when a competent body determines that an individual has achieved learning outcomes to a given standard (cf. BMBF/ KMK/ AK DQR 2011). This comprehension of qualification includes the requirements for examinations and curricula. This differentiates from a holistic comprehension of this term, that includes in the German speaking countries explicitly all competences relevant for an occupational activity (BREUER 2005).

as well as of the interface between qualifications which promote competence-related compatibility and permeability between the two educational sectors.

Qualifications and institutional types of Higher Education are not differentiated in this paper, because occupation- and application-oriented Bachelor degrees and universities of applied sciences as well as master degrees and research universities have to follow the same scientific and discipline-related paradigms according to the politically ‘opening’ implemented by the Bologna process (EU 1999).

### **3 Conceptual differences and paradigmatic intersections in education**

Up to now, some conceptual differences have had to be taken into account in terms of compatibility. The design of VET focus on the demand for occupational middle skills and management workforce, whereas the higher academic education traditionally focused on scientific enabling as well as on graduate and post graduate career pathways (cf. TEICHLER 2003). Likewise, universities have predominantly provided discipline-specific and knowledge-based competence achievement, while VET has focused on action-oriented capability in functions, tasks and processes. Both education sectors articulate in their different ways the comprehension of practice as a central reference point in education and training and in the design of qualifications.

Until now, there has not been a homogenous theoretical approach discussing a compatible competence-oriented design of qualifications at the intersection of VET and academic HE. Additionally, research in relevant pedagogy disciplines is still in the initial phase in this respect. Further, the occupation- and economy- oriented pedagogy disciplines have focused their R & D activities predominantly on competence-related aspects within the initial and advanced VET of skilled workers e.g. master craftsmen and certified supervisors and specialists (cf. ARNOLD/ LIPSMEIER 2006 and SLOANE/ TWARDY/ BUSCHFELD 2004). Not just the VET specific disciplines but higher education pedagogy has now started R & D work to promote the design of competence-oriented academic degree programmes above the current qualification objective “acquisition of scientific competence“(cf. PLETL/ SCHINDLER 2007, S. 35, and BRENNER/ NIEHS 2008).

One of the most important starting points for a cross-education-sector approach is the intersection of “action orientation” (“Handlungsorientierung”) in both VET and HE. All stakeholders in science, practice and education policy have agreed on an educational objective “acquisition of complete action competence” (“Erwerb vollständiger Handlungskompetenz”; cf. SLOANE/ TWARDY/ BUSCHFELD 2004).

This policy-based development is by no means new to German VET. For quite some time, it has been designing training profiles and programmes explicitly along occupational tasks, functions and processes based on legal regulations for initial and advanced dual VET at both the federal level and state levels (BMBF 2005, KMK 2007). Prospective ordinances for initial VET qualifications will be developed and designed on the basis of cross-sector competence standards (HENSGE/ LORIG/ SCHREIBER 2009). The qualification objective is the

achievement of ‘complete occupational competence’, which is described by technical, social and human competences, including methodological, communication and learning competences (KMK 2007). The learning outcomes in occupational profiles are described in knowledge, skills and abilities, following a holistic comprehension of competence, which includes societal participation and personal development (cf. WEINERT 2001).

In occupational pedagogy, competence is theoretically understood as the capability to perceive, design and transform a situation appropriately (cf. FRANKE 2005). Didactic concepts focus on the acquisition of competences in a reflective manner to support problem-solving and a practical solution for actions undertaken (cf. ARNOLD 1993). Following the acquisition of occupational competence, the major qualification objective is, in current German VET, designed in ordinances, curricula and didactics along occupational action areas. Action areas can be understood as correlating complexes of tasks in occupational action situations. To overcome the traditional subject-related didactics, cross-subject learning areas based on industry action areas have been designed for vocational schools in the mid-nineties. (cf. KREMER 2002). Curricula and examination requirements in advanced German VET have also been designed around action areas.

The Federal Higher Education act of 1976 has already confirmed that German academic Higher Education may prepare its graduates for occupational tasks beyond the academic context (BMBF 1976), although this was never been appropriately adapted in the design and didactic of study programmes at that time. The Federal act tried to address the societal function of universities to educate and train students more than ever for the non-academic labor market. This was implemented as a consequence of the opening up of academia for the baby boomer generations. It wasn’t until Bologna Process for European Higher Education in 1999 that the qualification goal “acquisition of occupational competence” in the design of academic degree programs was explicitly agreed upon. As a consequence, the German Federal States (KMK 2003, 4ff) followed this change of perspective by defining and implementing Bachelor degrees as qualifications which prepare students for occupational areas and requirements through the acquisition of relevant competences (cf. JAHN 2007; HABEL 2003; BÖHLE 2010).

A pertinent conceptual anchor in Higher Education in all disciplines is the ability to apply scientific findings and methodologies in occupational tasks and situations (KÖHLER 2004, 32). This corresponds with the mandatory qualification objective ‘acquisition of occupational competence’ for consecutive Bachelor and Master degree programmes and it has enabled the discussion of the task change for Higher Education in the aspect of action orientation.

Within the context of the action-oriented acquisition of competence in academic Higher Education, the traditional differentiation between science as a cognitive complex on the one side and practice on the other as the quintessence of an action-related context outside of academia must to be critically discussed. WILDT (2007) proposes an extended perception of the notion of practice and practice-oriented learning to appropriately address the employability objective for academic graduates. The cognitive complex of science should be

interpreted in relation to practice both outside and inside of academia. The potential to generate and acquire competence in academic practice must be made explicit, which both addresses academic internal requirements and which is transferable to academic external practice as well as action areas in all societal sectors. This extension of a holistic notion of competence is compatible with the qualification goal of vocational education and training.

In order to address this extended perception, SCHAPER (2012) proposes to define competence in science as the capability to act appropriately, responsibly and successfully in the requirement areas, which are characterized by high complexity, novelty, uncertainty and the need for high quality solutions. Competence should be applied on the basis of knowledge, skills, abilities, motivational orientation and ethical attitudes. In particular, this includes capabilities to apply scientific concepts to complex requirements, scientific analysis and reflection as well as the generation and design of new, innovative concepts and problem solutions. Furthermore, this includes the ability to use scientific knowledge, concepts and methods to reflect on and regulate one's own analytical and problem-solving actions. This means an "action-theoretical" comprehension of competence, which understands science-specific activities as actions that are applicable to non-academic requirements as well.

The contradiction between the systematic orientation of scientific disciplines and the occupational action orientation has not been solved per se by the modularization of academic degree programs implemented in the Bologna process to combine subject areas technically (cf. KMK 2003). GERHOLZ and SLOANE (2008/2011) attempt to demonstrate the conceptual compatibility of learning fields and action fields using a discipline systematic based on a bachelor degree program in business administration.

Learning fields are understood as structuring units of scientific action situations, which refer to different subject perspectives. As in vocational education and training, action situations can be understood as problem-solving situations, which can be interpreted and designed along the criteria of complexity, transparency, interdependence and dynamics (FÜRSTENAU 1994, 21). In this way, problem-oriented research-based learning can be interpreted as an action, for which the learner for himself is responsible. Following this perspective, the shift from teaching to learning in higher education can be regarded as supporting the acquisition of competence (WELBERS/ GAUS 2005).

In both education sectors, generic competences are regarded as essential prerequisites for the acquisition of a holistic competence as well (WILDT 1997; cf. MERTENS 1974). Generic competences are based on knowledge, abilities and attitudes, which are multifunctional and versatile across domains. They enable individuals to apply technical knowledge and capabilities in complex and difficult occupational situations in new and unknown situations (SCHAPER 2012; cf. WILDT 2010).

In vocational education and training, these competences are taught as an integral part of occupational competence. They are embedded in qualification and occupation profiles by relevant learning objectives and outcomes (cf. BBiG 2005; KMK 2007). They are highly recognized, especially in science education, as a prerequisite for the ability to adapt to

numerous occupational areas beyond one's own discipline. However, in many degree programmes they are not yet explicitly integrated in curricula and didactic approaches. Many university departments for didactic affairs are offering discipline-non-specific programmes with generic competences. According to KOHLER (2004), these competences could be integrated into study-propaedeutic programmes as a prerequisite for an action-oriented science transfer.

Summarizing the above-discussed intersections in the comprehension of competence orientation in both education sectors, a dichotomy of work following science requirements versus occupational requirements cannot be concluded as a non-compatible contrast per se (cf. MARKOWITSCH 2004 and REIN 2011a).

#### **4 Cross-sector instrumental and qualification approaches catalyzing competence-related compatibility**

Qualifications frameworks have been developed worldwide as instruments to promote transparency and comparability of competences and learning outcomes. At the same time, they serve to promote the permeability of education and career pathways as well (ETF 2009).

A qualifications framework for academic qualifications has been developed for Germany in the middle of the last decade (KMK 2005) on the basis of both the standards of the Bologna-Process (EU 1999) for the development of a European Higher Education Area with the degree formats Bachelor, Master and Doctorate and those of the so-called Dublin Descriptors (EU 2002). Discipline non-specific descriptors describe on the three levels in five categories the learning outcomes for the degrees. Following the logic of the competence-related shift to learning outcomes, these descriptors and categories are designed for the transfer of learning outcomes and promote an operationalization of action orientation in academic higher education.

In the categories knowledge and understanding learning outcomes are defined for the extension and deepening of discipline-specific knowledge as a prerequisite for the generation and transfer of knowledge based on the application of instrumental, systemic and communicative competences. This qualifications framework has been designed using the comprehension of science as a cognitive complex. However it emphasizes knowledge-action orientation as a prerequisite for a transfer inside and outside of academia (KMK 2005, 4).

The capability to extend and to deepen knowledge to instrumental and systemic skills as well as to judgments and problem-solving as autonomous action which addresses requirements in academic disciplines and practice could also be taken into account for the development of occupational learning outcomes (KMK 2005). This assumes that a dispositive extension of occupational competence could be promoted, which is necessary for occupational action areas with advanced complex requirement levels. Appropriate approaches for the development of learning outcomes could be promoted which aim at an action-oriented capability in

occupational functions, tasks and processes as well as at discipline-specific and knowledge-related acquisition of competence.

The German education stakeholders did not follow the option to integrate General Education and Vocational Education and Training into the qualifications framework for academic Higher Education. Based on the Maastricht declaration of the EU education ministers (EU 2004) the German Qualifications Framework for Lifelong Learning (BMBF/ KMK/ AK DQR 2011) has been developed as a national cross-sector extension to the European Qualifications Framework for Lifelong Learning (EQF; EU 2008). Taking into account relevant scientific expertise from both education sectors, the German Qualifications Framework (DQR) enables, for the first time, a cross-sector referencing of qualifications that will essentially facilitate an orientation to the benefit of all users of the German education system (GEHMLICH 2009; SLOANE 2008 et al.; cf. REIN/ HANF 2008 and REIN 2010). In the requirement structure, the DQR describes professional and personal competences on eight levels in the categories of knowledge and skills as well as in social competence and autonomy.

Politically initiated, the development and implementation of the DQR for the first time has enabled a precedent-setting cross-sector agreement on an action-oriented definition on competence describing the "... the ability and readiness of the individual to use knowledge skills and personal, social and methodological competences and to behave in a considered, individual and socially responsible manner. Competence is understood in this sense as comprehensive action skills" (cf. BMBF/ KMK/ AK DQR 2011). The DQR defines the central category "competence" as a holistic capability to act which is relevant for both education sectors. Learning is explicitly action-oriented as described within the category "autonomy" (BMBF/ KMK/ AK DQR 2011, 4).

It is assumed that the DQR will result in important long-term and cross-sector effects on competence-related qualification developments based on its cross-sector-designed structuring elements: level indicators, competence categories and descriptors, and terminology. This has been already methodologically evident in the referencing tests along cross-sector qualification areas. The Federal Ministry of Education and its federal state counterparts have facilitated this effect in their agreement on the compatibility of higher levels between the qualifications framework for higher education and the DQR (BMBF/ KMK 2011, 5f).

Qualifications frameworks are taken into account in competence-oriented equivalence comparison procedures between occupational and academic qualifications as well. Based on amendments to Federal State acts on Higher Education to recognize occupational competences in academic study programmes in the last decade (KMK 2002/2009), the Federal pilot scheme ANKOM (BMBF 2006 ff) promotes recognition procedures and instruments in numerous projects (BUHR et al. 2008). The competence categories and descriptors of the EQF are used as cross-sector reference instruments for comparative purposes and in some projects to describe learning outcomes of the selected and tested qualifications along levels in a cross-sector compatible way as well (GIERKE/ MÜSKENS 2008).

In addition, qualification types and programmes with cross-sector doctrine and competence-compatible design of curricula and examinations have to be taken into account, addressing requirements of both the occupational labour market and the academic education and career pathways at the same level. Research on the ‘Dual Study Programmes’ have confirmed the promising development potential of these qualification formats for cross-sector and action-oriented learning promoted by the shift to learning outcomes. The programme has been planned and controlled by the Federal and Federal States Commission on Education Planning (BLK 2008, 33 and RÄBIGER 2007, 208). Bachelor programmes for professionals (cf. KOCH/ MEERTEN 2010), equivalent advanced VET qualifications as well as short-cycle programmes implemented in numerous other countries (cf. BAILEY/ MATSUZUKA 2003, EURASHE 2011. REIN 2011b) provide similar potential.

## 5 Outlook

In this paper, the “Academisation in VET” has been discussed with respect to aspects of competence-oriented compatibility between vocational and higher education. The inherent conceptual intersection of both education sectors in the qualification goal of acquisition of competence as capability to act has been considered along both conceptual consideration and instrumental approaches in the context of national and European political objectives and framing conditions in education. Academic Higher Education has traditionally focused explicitly only on discipline requirements and the encouragement of scientific training whereas entry-level and advanced VET have focused until now explicitly on non-academic requirements. De facto, Higher Education generates the ‘capability to act’ based upon discipline-specific and generic competences for non-academic requirements as well. The continuing high labour market acceptance of academic graduates and their comparatively low unemployment rate in past decades are important indicators which support this evidence (cf. IW 2010). This paper assumes that the shift to learning outcomes, addressing compatibly both academic and occupational requirements in the development of qualifications, will make a cross-sector ‘capability to act’ explicit (cf. BIRTHWHISTLE/ MCKIERNAN 2010). This facilitates the visibility of the intersection and compatibility of Vocational and Higher Education. In addition, transparency instruments like qualifications frameworks, equivalence comparisons, and interface qualifications like Dual Study Programmes can promote a competence compatibility by their cross-sector defined objectives and concepts as catalysts.

Research and development will need to tackle some challenges regarding greater explicit compatibility of VET between Higher Education that appropriately takes the objective intersection ‘competence acquisition’ into account. The central question is how this objective can be implemented and achieved in the development and design of qualifications while avoiding a loss of sector identity or even a convergence?

To which extent might the non-academic oriented occupation concept change, as a result of a more academically compatible design in advanced VET programmes? Which indicators and criteria for the design of occupational learning outcomes which compatibly address



occupational and academic requirements are appropriate and what is their conceptual and theoretical foundation? Will occupational domains such as business administration be more relevant for the cross-sector oriented development of qualifications? What are the didactic requirements for a competence orientation compatible for both VET and the academic education? Finally, what are the effects of a compatible competence orientation on the recognition of occupational competences in academic programmes, promoting the permeability of the education and training pathways?

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