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ITB-Forschungsberichte 52/2013
März 2013

Universität Bremen

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Institut Technik und Bildung (ITB), Universität Bremen, 2013

ITB-Forschungsberichte 52/2013

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ISSN 1610-0875

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Verantwortlich für die Reihe: Peter Kaune

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Zusammenfassung:

In den 1990er-Jahren wurde damit begonnen, das System der dualen Berufsausbildung zu restrukturieren. Dies führte zu einem Paradigmenwechsel, der die Arbeitsprozessorientierung in das Zentrum der Neugestaltung stellte. Es überrascht, dass dieser Schritt getan wurde, weil der duale Ansatz mit den Betrieben als Vertragsgeber für Auszubildende ja erwarten lässt, dass immer sehr praxisnah und damit entlang von Arbeitsprozessen ausgebildet wurde. Das schien jedoch nach Auffassung von Bildungsplanern und Sozialpartnern nicht mehr der Fall zu sein. Zumindest – so der Tenor – wurde die Ausbildung den betrieblichen Anforderungen nicht mehr gerecht. Im Artikel werden die Gründe für die Notwendigkeit der Reformierung des beruflichen Ausbildungssystems beleuchtet. Darüber hinaus werden zentrale Reformschritte zur Zukunftssicherung des Ausbildungssystems (mit dem „dualen" System als Dreh- und Angelpunkt) vorgestellt und diskutiert, wobei die Arbeitsprozessorientierung im Mittelpunkt steht. Eine knappe kritische Betrachtung erfolgt zudem aus der Perspektive des Übergangssystems, welches als Parallelsystem neben dem „dualen" System entstanden ist.

Abstract:

In the 1990s, the system of dual vocational education and training (VET) witnessed the beginning of a restructuring, leading to a paradigm change away from emphasizing the holistic nature of the concept. Instead the work-process orientation was now considered the core asset of the concept. This step came as a surprise because the dual approach with the companies as the contractors for apprentices had implied that training had always been carried through in a practice oriented way on the basis of work-processes. Both educational planners and social partners were apparently convinced that this was no longer the case. It was generally agreed: Vocational training could no longer cater to the requirements of the industry. This article attempts to shed more light on the reasons for the necessity of a reform of the vocational education and training system. In this context central reform steps necessary to secure the future of the VET system (with the "dual" system as pivotal point) will be presented and discussed by focusing on the work-process orientation. Finally, some critical reflection will be added regarding the "transition system" which has more and more emerged as a parallel system of the "dual" system.

Keywords:
"Dual" system, work-process orientation, work-process analysis, vocational identity, social partners, academisation.

1 Introduction

The significant economic change which Germany like other industrialized countries has undergone in the past 20 years and the fact that around half a million young person's remain in the so-called "transition system" [1] (see Bildungsbericht 2010) increasingly makes one ask whether skilled work and occupational concepts have been transformed to such an extent that the traditionally successful means of acquiring qualifications by way of vocational training, primarily via the dual system, has become obsolete (cf. Hanf 2011: 51). However, there is still a shortage of apprenticeships (only about 25% of the companies offer training) which has increasingly led to a critical situation on the training market. Because these processes have persisted for a long time now, we have to ask whether they are indicative of a fundamental transformation in the system, i.e. whether a change in the institutional composition of the vocational education and training system is taking place, or whether it is more of a reflection of temporary crisis symptoms which will sort themselves out on their own as the need for skilled workers is rising. It is also true that many of the demands in favor of structural change of vocational education and training are based on the fact that the companies are currently in the process of developing and changing work organization, products, and work processes. This calls for answers of the vocational education system.

Furthermore: Modernization of vocational education and training in general and the dual system in particular have been the subject of intensive discussion for several years. The reform debate indicates increasing advocacy for sticking to the concept of

[1] The "transition system" encompasses school, intercompany and state-funded extra-company measures for training youth who have neither found access to the dual system nor continue their career in school-based education. The so-called transition system is an institutional form of training to cater to this group of young adults. The system aims at preparing them for entry into actual vocational education and training programs. When it was created at the beginning of the 1970ies, the system only enjoyed marginal importance and mainly encompassed the one-year's school-based preparatory programs of "Berufsgrundbildungsjahr" (basic VET) and "Berufsvorbereitungsjahr" (preparation for VET). Up to 2004, the system witnessed continuously rising numbers of participants. At the same time its contents were differentiated more or less beyond any control (cf. Chapter 4.2). This differentiation more and more alienated the transition system from the vocational education system. Therefore the system can no longer really play its assigned role as a construct for the preparation for VET. Instead it has developed into a melting pot for poorly educated and socially problematic young adults. The dysfunctionality of this system poses a great challenge to the modernization of VET, above all within the framework of the educational policy concepts and measures within the European Union (cf. Neß 2007). The German government spends a lot of efforts to reduce the number of young people in the transition system with some success. Over the last five years, the number of persons entering the VET system decreased by 94.000 (22,5%). Nevertheless, 324.000 persons have started a transition system qualification in 2010 (Berufsbildungsbericht 2010).

vocational professionalism ("Beruflichkeit") and for targeting a higher degree of flexibility in vocational training with regard to skilled work. One of the most persistently articulated demands is that occupational profiles should be formulated on an outcome based basis addressing future-oriented needs. These occupational profiles should encompass the core of action-oriented outcome based vocational competence and create the basis for suitable forms of examination.

This article examines in detail the stage that reorganization and restructuring of occupational profiles and curricula for the dual system in Germany have reached after around 15 years of restructuring. It questions whether the repeated demands from the perspective of educational policy for more flexibility, a European alignment, internationalization and future orientation have at least partly already been met. However, this task can only be met on an exemplary basis within the framework of this article.

2 Research background

The leading discussion which will be elaborated in this article is based on the insights from three research projects conducted by the "Institut Technik und Bildung" – (ITB) at Bremen University. The areas are the following: [2]

- Discussion of the question whether it is necessary to provide training for "service occupations" in the occupational field of metal technology (cf. Spöttl/ Hecker/ Holm/ Windelband 2003). [3]
- Discussion of the question in which way companies should apply the training ordinances and how they could safeguard the quality of infirm training (cf. Scheib/Windelband/Spöttl 2009). [4]
- Discussion of the sustainability of the dual vocational education and training system in Germany (cf. Spöttl/Bremer/Grollmann/Musekamp 2008). [5]

The literature concerning innovative developments of the VET-System between 2007 and 2012 was also used. The first two studies (period: 2003 to 2008) encompassed 36 case studies of companies. Hence, research was carried through in the learning environments of schools and companies and interviews with the social partners were conducted. The selection of companies was done on the basis of explorative studies in relevant fields and is indicated in table 1. Apart from these qualitative studies, quantitative studies were conducted in around 90 companies and 250 representatives of the social partners. The studies aimed at getting an idea of how future vocational education and training could be shaped in the light of strongly globalized production concepts and of how the individual companies safeguard a satisfactory quality of training. The educational planners of the Bundesinstitut für Berufsbildung (Federal Institute for Vocational Education and Training – BIBB), the social partners and the representatives of the federal ministries involved in training made use of the results as part of their considerations regarding the shaping of VET as a whole and above all regarding the shaping of occupational profiles.

The third study, the discussion of the sustainability of the (dual) vocational education and training system in Germany, focused on numerous expert workshops. The most important objective was to determine the opportunities for a sustainable development of VET apart from the Bologna reforms at the universities, above all with respect to the high importance of new forms of work organization in larger companies which often leads to a loss of workplaces. The results should above all open up opportunities for the social partners to take their future stand with regard to issues of shaping VET.

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[2] The two authors coordinated the projects and they were also involved as researchers.

[3] The project was funded by Bundesinstitut für Berufsbildung – BiBB.

[4] The project was funded by Bundesministerium für Bildung und Forschung.

[5] The project was funded by Heinrich-Böckler-Stiftung.

The innovations in VET described in this article are based on the insights from the studies mentioned above and on further discussions with the social partners. An analysis of the current literature was added to these empirically based findings. The sociological position which formulates the call for school-based VET ("Verschulungsthese") as a consequence of the knowledge society is well documented in the current literature and ordinances (cf. Baethge et al. 2007). It has been subject to an intense discussion in Germany. This article will not explicitly reflect this thesis. It is presumed that knowledge workers[6] are already well enough qualified through VET-systems. The more interesting question is the impact that the Bologna processes will have on VET in the future.

Case studies: Probed companies according to sector and size									
Sector / **Size**	Metal and electrical trade	Metal and electrical industry	Car industry and trade	Building sector	Health/ House-keeping/ Care sector	Environ-mental sector	Printing and media	Financial services, banks	**Total**
I 0–19 employees	3	2	1	2		1			**9**
II 20–499 employees	5	6	1		2	1	2	2	**19**
III ≥500 employees		3	4					1	**8**
Total	**8**	**11**	**6**	**2**	**2**	**2**	**2**	**3**	**36**

Case studies: Probed Vocational Colleges		
Municipal colleges (specialized)	Rural colleges (great number of school forms)	**Total**
5	5	**10**

Interviews	
Interviews with experts of associations and trade unions	20

Table 1: Overview of surveyed companies and schools

[6] A Knowledge Worker is a comprehensively qualified person who is able to directly and holistically support corporate work and business processes and to cope with all related tasks.

3 Structure and role of the training system

The German vocational education system consists of three elements. 1) The well-known dual vocational system consists of parallel on-site training and classes at vocational schools. 2) The school-based system, established within the past 40 years as a substitute of the dual system, focuses on health and social service employment (in 2006 2008 1618.81% of apprenticeships were in these fields). It was meant to support the upward mobility of the working class. 3) The third column is represented by the so-called transition system. The transition system is to prepare students without apprenticeship contracts (in 2008, 34,1%) who, after additional training, should be prepared to enter one of the other two systems (cf. Autorengruppe Bildungsberichterstattung 2010; cf. Kupfer 2010: 87). The number of students and apprentices within each of these pillars has not considerably changed during the last five years. For all three elements it has to be considered that the German employment system is characterized by the special term of Beruf or vocation, (cf. Hanf 2011:51), referring to permanent employment in the industrial, trade or handicraft sector "that also comprises social contacts, identity, status, and security, but without the elite status of the term profession in English-speaking countries." (Kupfer 2010: 87)

More than 550,000 apprenticeship contracts are still concluded every year in order to receive training for a Beruf or vocation (cf. Table 2). Around 59,1% (486,221) of these apprenticeship contracts are found in the industry and 27,7% in trade and in handicrafts (Table 3)[7]. However, it is remarkable that the number of contracts concluded in handicrafts has already been decreasing during the last decade. Thus the thesis of the handicraft-sector being the last stronghold of the dual system is not confirmed. At the same time both industry and trade witnessed an increase in the number of contracts.

Year	1995	2000	2005	2007	2009	2010	2011	2012
Contracts	572,774	621,963	550,180	625,885	566,004	560,073	569,379	551,271

Table 2: Development of apprenticeship contracts
Source: BIBB-Statistik Ausbildungsverträge (30.09.)

Year	1995	2000	2005	2007	2009	2010	2011	2012
Industry and trade	262,787	334,418	316,165	367,484	333,404	331,043	342,782	336,622
Handicraft	219,628	199,482	157,025	179,698	155,582	155,178	155,245	147,327

Table 3: Development of apprenticeship contracts in two central economic fields
Source: BIBB-Statistik Ausbildungsverträge (30.09.)

[7]The remaining 13.2% of the apprenticeship contracts are concluded in public services, agriculture, freelance occupations and housekeeping (2010).

The dual system[8] of education cannot be characterized as a rigid training model solely for the labor market. Since the 1950s, the vocational education and training system – and above all the "dual system" [9] –.form a central foundation of the production and social model in Germany. In particular, the emergence of the dual mode of vocational education and training system made it a valuable pillar that shaped the economy's structure. Thelen noted: "Germany's vocational training system has been (…) seen as underpinning the country's high skill, high wage, high value-added ("high everything") economy"(Thelen 2004). However, this is only the predominantly academic notion of the vocational education system. Another characteristic feature of the entire vocational education system in Germany is that it is part of the public education system that prepares young people for their role as educated citizens. This always takes place side by side with the training for the labor market. Hence in addition to training as a qualified skilled worker, the focus is also on the education as citizen. This situation, which involves reflexive learning, shaping-oriented learning, innovativeness and also promotion of practical know-how and skills, complicates policy decisions regarding the future of the training and vocational education system in Germany. Furthermore, the decision making is complex because of the specific prevailing institutional configuration of the social partners and the related responsibilities involved. None of them can simply be disregarded or left out. According to Kohlrausch (2009: 29-40), these responsibilities are to be found on the following three levels:

"Regulation" through social partners[10] (corporate system)

Control of the system primarily takes place through the social partners. They are incorporated in the organization and structure of vocational training and they define

[8] The roots of the dual system lie in the Prussian "Gewerbeordnung-Novelle 1897" (cf. Reichsgesetzblatt 1897; Greinert 2007).

[9] The term „dual system" applied within the (West-)German VET system has only been coined in the mid 1960ies and has been applied in the legal framework of the Vocational Training Act of 1969. Compared to the basically also dual VET system of the former German Democratic Republic, the VET system stands out by a double duality: The duality of the two main learning environments "training company" and "vocational school" on the one hand and by the (albeit biased) duality of legal responsibilities and competencies on the other hand. The private training company is, for example, responsible for the regulation, the execution and the supervision of the entire apprenticeship training and for the practical training. The vocational school on the other hand is a state-run and/or communal institution and is only responsible for theoretical education and training. There are no further competencies beyond this assignment. Although the dual system has more or less proved itself successful in practical VET, it has come and is continuously coming under criticism. This criticism has reached a new dimension within the framework of the current EU measures to adapt European VET structures and to make them better comparable (cf. Neß 2007).

[10] Social partners are employers' and employees' organizations. Chambers (employers' side) and sub-organizations of the Trade Unions are always involved when it comes to operational issues within the vocational educational system.

the regulations and the contents of training as well as the outline of the examinations. Furthermore, they ensure the required quality of training. The incorporation of the social partners in the vocational training acts can be regarded as a stabilizing factor since it also has an influence on achieving a balance between the supply and demand of traineeships.

Occupational structure of qualifications

In vocational education the qualifications imparted display a particular structure. On the one hand, they represent skills relevant for the labor market while, on the other hand, they are characteristic features of German vocational education, with regard to the preparation for integration into existing social structures in companies and in society. This reaches far beyond a mere integration into company "communities of practice". It refers to qualification-related elements of occupational profiles encompassing technical and soft skills, work experience and integration of job starters in experienced work groups. This finally results in the attribution of a specific in-company and social status. Attaining a certain level of qualification is ensured by way of the regulatory system, specifically through training regulations and examination requirements. These standards are defined by employers and labor representatives and they achieve this mutual agreement a high appreciation in the labor market. The reason for this mutual concept is that both employers and employees have generally an interest in a high level of quality, in spite of the interest-based differences in the assessment of quality.

Capacity of companies for social integration

Thanks to the rules and the standardization of the training system, employers have access to candidates who have reached a high level of competence by virtue of their training according to clearly structured occupational profiles. The low rate of youth unemployment in Germany – it is substantially below the European average (OECD 2009) – also demonstrates that the integrative capacity of the companies remains to be successful.

Vocational training schemes still follow a standardized procedure and differ significantly from academic profiles. Hence, by means of occupational qualification profiles, both young people and companies have an attractive alternative to academic training at their disposal (see Bosch, 2008: 239).

It becomes evident that the German vocational education and training system needs to be considered not only regarding its qualification concept but also regarding its social structure. It is a highly differentiated, institutionalized system, steered by the social partners and with the dual system still at its core.

However, a stabilization on a lower level can currently be observed (cf. Table 2). As a consequence of this more restricted access to apprenticeship contracts of weaker people (in particular due to change in the hiring practice of companies). Young people without (or with a weak) graduation from Hauptschule as well as young people with a

migration background have hardly any chances to obtain apprenticeship contracts within the dual system. They are the true losers within the educational system (cf. Beicht/Granato 2010: 3). These structural transformations call for innovative steps to stabilize and possibly boost the dual system of training.

4 Dual system and transition system: A critical development

The emergence of the transition system between graduation from school and entering VET (cf. Footnote 1) as an alternative to the dual system has a number of reasons which cannot be disclosed here in detail since there is not sufficient fact-finding research for a secure clarification of this phenomenon. However, several reasons can be identified here. They should be discussed in the context of change within the dual system:

1. As early as the 1970s, school-based programs were established at vocational schools to cater to academically weaker young people who had not been able to obtain a training contract. The same programs were open to young people who were already employed, yet without a chance of obtaining a training contract. These programs either aimed at already covering certain parts of vocational education and training (first training year in a "Berufsgrundbildungsjahr" – basic VET) or at compensating basic learning deficits in order to improve the chance of obtaining a training contract ("Berufsvorbereitungsjahr" – preparation for entry into vocational training). In cases where apprenticeship contracts were concluded, the previous school qualification level was not acknowledged. There were just a few exceptions of this rule (cf. Spöttl et al. 2008; Spöttl 2013).

   Similar to other programs which had been established in the years before these initiatives primarily developed into a not intended "parallel system" to dual training without meeting their original targets. By and by this parallel system became a "safekeeping" or just "holding" system (called "transition system" in footnote 1) for all young people who so far had not obtained training contracts.
2. By the end of the 1980s the number of participants in the transition system had increased significantly. Since 2008 the number is decreasing (cf. Berufsbildungsbericht 2011). Statistics state different figures but it seems to be realistic that around 400,000 to 500,000 young people up to the age of 25 years are currently "parked" in the transition system. The main reasons for this development are the following:
3. The companies as such did not offer the number of training places necessary to accommodate all graduates of general schools in occupational training programs.
4. The requirements for young people who wanted to obtain an apprenticeship training contract with a company increased considerably, e.g. due to the new technologies and knowledge work (cf. Solga 2009: 21f.). As a consequence of this change, the occupational training offered through dual system has increasingly developed into a "golden path" for "better" qualified trainees. Young graduates from the basic secondary school ("Hauptschule") and slow learners had increasingly less chances to be offered a training contract. For example: The number of apprentices in the automotive service and repair sector who had graduated from basic secondary schools steadily declined from three thirds in the

mid-1990s to less than 40 % in 2009 (cf. Berufsbildungsbericht 2011; Becker et al. 2012: 34ff.).

5. One of the drivers for this system is "educational marketing": A lot of these courses are very expensive. Today a huge number of training providers is operating in this field. The programs are mainly offered by private providers, educational institutions funded by trade organizations, the trade unions or employers' organizations and by social and clerical providers. The qualification programs are organized in different ways and they are co-funded through state-run programs (such as Jobstarter, Job Connect etc.) on federal and Länder level. Partly, the funding of these programs has been very generous. This has lead to a confusing and multifaceted range of different qualifications. Altogether it has developed into a "partial VET system", favored by many of the providers concerned. This variety of programs attempts to secure for young people the chance to obtain training contracts in companies without problems. However, in reality this aim is only rarely met.

   It can be assumed that the transition system has established and stabilized itself alongside the dual system. So far a number of approaches to cut the system back and to instead channel the young people into the dual system have not been successful yet.

   The transition system is a considerable threat to the dual system: these initiatives developed into a not intended parallel system, which is too much funded and does not meet its original targets. The transition system became a "safekeeping" or just "holding" system for young people instead of preparing them for dual apprenticeship. It provides only qualifications for less demanding work places which are constantly decreasing in numbers in Germany. [11]

   In order to safeguard the stability of the dual system it will be crucial to offer an apprenticeship contract to all young people at their first occupational threshold – the transition from general education schools to employment. Offering a sufficient number of apprenticeship contracts will remain a challenge for the approximately 70 % of smaller and medium-sized companies that are relying on a limited division of work, yet a high quality of skilled work (cf. Blasius 2007).

   But the transition from general education to meaningful vocational education and training is not the only problem. More and more the situation has developed into a structural conflict between two sub-systems, with no solution so far. Consequently the following question arises: Why is it not possible to reincorporate this apparent dead-end transition system into dual vocational education and training with the help of the dominant influence of the social partners? So far neither politicians and social partners nor the research community can offer convincing solutions. It is always specific aspects that are taken up in an effort to

[11] The demand for lower skilled workers will decrease as statistics show: i.e. from 38% in 1991 to 21% in 2010 (cf. Reinberg/Hummel, 2004).

find a solution. At the moment the best known approach is presumably that of the so-called "training modules" (see Hippach-Schneider et al. 2007:31), which qualify young people for narrow, specialized tasks. Candidates are supposed to acquire their qualification profile accepted by companies through accumulation of a set of "partial qualification". The authors, however, are convinced that this does not substantially contribute to problem-solving (see Chapter 5)

5 Change in the labor market and in the vocational education system

With regard to fulfilling its role in society, crisis symptoms can be observed at the two following levels of vocational education and training in Germany:

- insufficient capacity of companies regarding the integration of young people through training,
- inadequate occupational structure of qualifications regarding the actual skill needs at the workplace.

The lack of the companies' capacity for integration is shown by the fact that it has not been possible to close the gap in the demand for apprenticeships in the last decade – despite various initiatives by the social partners and the government which led to programs such as Jobstarter, Entry-Level Qualification and others. The number of training contracts concluded in the past years declined from 622,693 in 2000 to 560,073 in 2010 (see Walden 2010: 32f., BIBB-Statistik Ausbildungsverträge 2010). Thus they are back to their 1995 level of appr. 572.000. Contrary to the declining number of apprenticeships, the number of graduates of general education schools increased at the same time, i.e. from 685,274 in 2000 to 714,789 in 2004. Afterwards they dropped only slightly (see Bundesinstitut für Berufsbildung 2009:56). The number of school-leavers who primarily intend to enter the dual system grew with the number of school graduates (until appr. 2010), whereas at the same time the supply of apprenticeships slightly declined. This led to considerable supply problems in the training market that persist up to 2010 and is slightly changing since 2011 because of decreasing numbers of school graduates (cf. Troltsch/Gerhards/Mohr 2012: 2 f.)

This whole situation evidently resulted in a distinct expansion of the so-called transition system. That means the number of state-funded extra-company traineeships has risen significantly (see Bundesinstitut für Berufsbildung 2009: 228 and Chapter 4). In addition, there are one-year or two-year fulltime courses at vocational schools, prevocational training courses and entry-level training schemes, none of which lead to a full-fledged vocational qualification and which at the end only call the vocational education and training system and the existing occupational qualification structures into question. Many of the qualifications acquired in the transition system are of a prevocational nature and do not really open up any opportunities for direct entry into working life. They very often require further training in order to reach the qualification level demanded by companies.

Because of the large number of young people who end up in the transition system – currently around 40% of each cohort – vocational training in general and the dual system in particular are under substantial pressure. Some researchers even assume that the structures of vocational professionalism will disappear because a change in economic, management and organizational structures will lead to a situation in which those who complete the dual system are no longer taken on by future-oriented companies (see Baethge/Baethge-Kinsky 1998 and Kupfer 2010: 92). Furthermore, a

major effect of change in the employment sector is the diminished significance of the identification with vocations (Beruf) and trades. Still other authors see the vocational training system under pressure when, after the successful Bologna reforms, increasing numbers of graduates from bachelor programs pour into the upper segment of job positions previously held by graduates from the dual system and force them out. One of the predictions discussed is that this development will result in the dual system shrinking to a "remnant" for weaker young people. Finally fundamental positions presume that the dual system is no longer suitable for a service and knowledge society and will tend to increasingly decline in importance (see Baethge/Solga/Wieck, 2007: 73). In more detail, the following reasons are quoted for this:

As long as a service and knowledge society develops, the importance of systematic theoretical knowledge grows and the importance of practical and tacit knowledge and experience declines.

The above arguments are used to question the future of the dual system. The current discussion revolves less around the point that the opening of universities as a consequence of the Bologna debate represents another aspect that could further weaken the vocational training system. It is argued that it must be possible to enable successful careers at universities on the basis of vocational training and to offer craftsmen the same opportunities for obtaining a degree as candidates with a university entrance qualification ("Abitur"). If it is possible to establish career paths of this type, this would, on the one hand, strengthen the dual training system, while, on the other hand, such a development would raise the question whether this approach necessarily has to be based on traditional dual training.

After all, the importance of experience and experience-based learning in vocational education and training has been the subject of quite extensive study to date (see Böhle 2010; Spöttl 2009: 47ff). Böhle summarizes the core: "The special thing about vocational training is the link between institutionalized learning and practical work. This refers to the principles of learning, which are designated as action-, task- and project-oriented and in which education not only refers to "knowing what" (knowledge), but also "knowing how" (skills)." Spöttl (see 2009: 47f) demonstrated that use of knowledge is also highly relevant at the skilled worker level. Due to the context-specific nature of this knowledge, however, it is not recommended to assign engineers to cope with knowledge-based tasks in skilled work. Instead skilled workers should be provided with the knowledge necessary to make them qualified "knowledge workers" without losing the connection to the actual context of work.

So far only limited research has been devoted to the precise impact of the structural transformation in the economy on occupational structures in the long term. The numerical development of employment and trainees in production and service occupations have been analyzed, but virtually no consideration has been extended to analyzing the effect which the various developments in vocational training have had on matching the needs at the workplace. In Germany research regarding early identification of skills needs is currently being set up for the purpose of examining the

question of how structural change in the skills needed can be identified and how the vocational education and training system should react to them (see Windelband 2006). A special problem is the expansion of the transition system. Young people who enter the transition system do not manage to get a job or apprenticeship contract within one and a half years, which means that they are not linked to the in-company training structure. With regard to this development, the dual training system can be justifiably criticized as only accepting high-achievers as trainees and converting into a kind of "golden path" with pronounced selection characteristics. However, this trait is defended by company representatives who are involved in running the dual training system. They claim that

- the requirements for work quality have considerably increased and that
- the meticulous mastering of work processes absolutely needs to have high priority in companies.

Consequently the demand for the appropriate kind of training has been emphasized, and so has the demand for conveying prerequisites such as self-reliance, theoretical reflection, creativity and commitment (cf. Böhle 2010). This recognition has had a considerable impact on the selection procedures of companies when recruiting apprentices. The new practice turned out to be an advantage for young women who were able to gain ground in a lot of vocations due to their better achievements in school (cf. Kupfer 2010). Overall changes in the world of work and the higher demands for quality have considerably triggered innovations in the vocational education and training system (cf. Chapter 6) as for example the creation of core occupational profiles in the fields of mechanical and electrical engineering.

6 Innovations intending to secure the (future) effectiveness of the vocational education and training system

In spite of diverse crisis scenarios that assume that the "antiquated" institutional model of the dual training system no longer has any chance of survival, social partners and other agents of the dual training system have made considerable efforts since the 1990s to ensure the effectiveness of dual vocational training and to preserve the concept of vocational professionalism by means of selected innovations. The following six innovations represent the core action of reforming the dual training system within the past 15 years. These innovations will be described below on the basis of the empirical results of the three studies carried through by ITB (cf. Chapter 2). Furthermore it will be discussed in which way they have contributed to a modernization of the dual system.

Innovation 1: From an international point of view, the occupational profiles which have been restructured in the last 20 years meet demands like those of the "Club of Rome".

As a general response to the challenges of the industrial society, the Club of Rome has demanded that anticipative and participative learning should be intensified. In this context particular emphasis was placed on the integration of work and learning, especially learning at the workplace and learning in teams. These two demands were not only accepted in Germany within the framework of the restructuring of occupational profiles (e.g. in the metal and the electrical industry), but they were also clearly targeted in explanations regarding the new form of instruction. The new format underlines special support for the service dimensions, such as customer orientation, organizational competence, teamwork, communication skills and documentation skills. This means the new format explicitly points to the company as a social and economic organization. This was not the case with the old format (see Regulation 2004, p. 2ff.). Furthermore the annex to the framework plan for training for example, requires working with information from documents in English, using English terms and respecting the cultural identity of customers as part of the core qualifications (see Regulation 2004, Annex: "Common core qualifications"). These are clear indications of an international and even globalized alignment of occupational profiles. However, the implementation will presumably pose problems because neither teachers nor trainers and their environment are prepared for such innovations.

Yet, implementation concepts, in particular didactic approaches that can contribute to developing such competencies, are already available. They have been developed in the form of problem-oriented approaches, working with projects, techniques for developing communication skills, etc. (see Dreher/Spöttl 2002).

However, in spite of the availability of these future-oriented developments, a question that still needs clarification is whether Germany will attempt to tackle the implications for training of the global challenges which the economy is facing mostly by means of the restructuring of occupations.

The European Union calls for the creation of new approaches in general and vocational education with the target of contributing to "the power of Europe in a globalized economy". Intelligence and creativity are seen as the most important resources in this context. On the one hand, this conception should be supported, but on the other hand it needs to be significantly expanded as well. In particular, experience based learning in the work-process is a dimension that must be added as a further key component. In this context, the concept of dual training or an intensive linking of theory and practice remain a subject of discussion. In-company work processes offer outstanding starting points for occupation-oriented and experience-based learning since they encompass all dimensions which challenge a company. But when learning is linked to work-processes, it has to be designed in a way that the competence of coping with today's challenges at the workplace grows (see Spöttl 2008). Therefore, the core objective of the newly structured occupational profiles and of the curricula for the dual system is that learning through experience should develop from informal, unplanned learning into a self-directed and constructive mode of learning. This requires the integration of organized learning, but without losing characteristic features of apprenticeship, such as situational and authentic learning. This kind of vocational learning is fostered as a progressive and reflected work experience, because in a new work situation the trainee is confronted with the existing experiential background. The active acquisition of vocational competence is boosted by the integrated learning component. As a result, high educational standards can be met.

This calls for an excessive extension of learning at the workplace because learning is expected to unfold systematically in the work-process. Hence, it can be assumed that the trend towards learning in the work environment will continue (cf. OECD 2010). Increased incorporation, recognition and also certification of learning through experience meet the requirements of the employment system as well as the employee-related interests in career development and vocational advancement paths. Concepts in line with this orientation have been developed in recent years (see Dehnbostel/Holz/Novak 1992; Rauner/Spöttl 2002; Spöttl/Becker 2008). However, convincing complete didactic concepts are still lacking.

The orientation which has been documented here helps to resolve the following conflicts regarding overriding goals of training:

1. Extended systematized training (e.g. in training workshops and seminars) impedes experience-based approaches to skilled work and finally requires a lengthy famil-iarization after the training period in which the trainees acquire the necessary implicit knowledge.
2. Plans for a training framework often reinforce a company assessment system that might differ significantly from the actual training requirements of the company. This also results in long familiarization phases after the training.
3. Training and examination phases are frequently not based on each other, thus leading to greatly criticized gaps between the training requirements of the com-pany and formalized stipulation of what should be learnt.

The newly structured occupations of the dual training system (over the last 15 years) make it possible to overcome these problems in the following way:

- The standards are stipulated in a way that they are tied to skilled work assignments, work tasks and work-processes. This reaches considerably beyond the mode of assessment of "Competency-Based Training and Education" (CBTE) because contrary to CBTE learning processes play a key role in every case (see Loose 2008, p 75f.),
- Abstract technological subject matters no longer prevail, but rather work-related and work-process-based subject matters play the major role as a guiding principle for instruction.[12]

Current attempts regarding the restructuring of the curricula and the occupational profiles are already taking these demands into account. The testing system has already been reorganized in numerous occupations in a way that learning is orientated to the needs at the workplace and to experiential knowledge.

Innovation 2: The introduction of core qualifications and specific qualifications in the concept of occupational profiles makes it possible to gear them to the requirements of international markets

Globalization implies international competition which in turn requires skilled workers qualified to install or repair foreign made equipment at the local sites. In addition English language skills are indispensable for this work since English is the common language for manuals. Furthermore, within the framework of European integration, vocational training itself is increasingly subject to international competition. In this context the question inevitably arises as to whether and if so to what extent the restructuring of occupational profiles takes into account European developments. The target should be as follows: Occupational profiles make clear reference to work-processes and thus to the world of work. This facilitates their alignment which European developments and with Europeanization. (cf. Hess/Spöttl 2009)

A review of regulations of 2004 governing the new or revised occupations reveals that these new requirements are being met as can be seen from the following analysis (see section 3):

Basic education structure and goals (section 3)

- Skills and know-how should be provided on a process basis.
- Objective: Trainees should be able to perform qualified occupational tasks through independent planning, implementation and control and they should take action within the overall company framework of the company.

[12] CBTE primarily involves assessment of sequences of precisely defined competencies. As a rule, the latter relate to a specified level. Learning processes and development of these processes – the basis of the dual system – shift to the background.

- Core qualifications and skilled qualifications are acquired on an integrated and sustainable basis.
- Holistic performance of complex tasks takes place on the basis of work or business processes (in at least one area of operation).

The concept of basic education as it is presented in this section targets

- process-oriented and
- holistic training,

in which core and skilled qualifications are acquired on an integrated basis. This is an ambitious goal, which also supports vocational professionalism in the dual system.

All the occupations which have been restructured within the past 20 years have common core qualifications shared by the occupational cluster to which they belong. They are combined with specific vocational skill qualifications for each occupation. During the training the core qualifications dominate in the first months and are then gradually replaced by training for specific skill qualifications. After around 24 months of training the focus is solely on specific qualifications, but both dimensions of qualification remain interlinked. Examples of core qualifications are as follows:

- conducting talks with customers and taking cultural identities into account,
- using English terms,
- communicating with partners via communities of practices,
- retrieving information from documents in English language.

Language is taken into account here as a cultural dimension and thus not only gains importance as a tool of communication. Consequently it also takes on European significance because English terminology should be considered (see Oates 2000). The call to take cultural identification into account in customer talks points into the same direction. This concept results in significantly more open, dynamic and flexible occupational profiles without abandoning the basic structure of vocational professionalism.

In this context the following innovations in the newly structured occupations deserve special attention:

- designing process-based examinations,
- introduction of a service dimension (customer orientation, organizational competence, teamwork, communication skills, documentation),
- regarding the company as a social organization, with a particular workforce and economic configuration, and
- enhancing learning through real life experience with a process orientation.

Behind all these innovations we conceive the image of a skilled worker who is able to act independently and the concentration on processes as objects of work as well as on the relevant know-how, skills and experience.

On the basis of these newly structured occupations an appropriate implementation, which focuses on learning in teams, learning at the workplace, independent learning and other approaches, is possible. Restructuring has resulted in excellent prerequisites for the development of problem-solving skills, abstract thinking, thinking in network systems, decision-making capability, self-criticism, etc. The close connection between the occupational profiles and the work-processes, and thus the world of work, is especially striking. The final version of the occupational profiles requires the reference to work content, work-processes, explicit and implicit knowledge and to all elements which account for the success of work-based learning.

Basically the point is to impart an understanding of technology and work not only as general phenomena, but to make this understanding embodied in practical work the subject of learning. Beyond the handling of knowledge-based intelligent tools at the shop floor level, the assumption in occupational profiles is that practical and useful work activities should be emphasized which cannot be replaced by a scientific understanding of work and technology. Working and learning guided by experience is therefore of great significance. Therefore, apart from developing

- cognition-based rational action, it is important
- to support experience-based action in vocational training (see Böhle 2004).

Objective knowledge, subject-related and situation-based knowledge as well as work-process and experience-based knowledge are enhanced through vocational training. This is another aspect of the modernization efforts in the dual system.

A reduction of the number of occupational profiles from over 600 in the early 1980s to around 345 today provided the prerequisite for realizing the reform which has been described above. For example, the 45 metal working occupations were reduced to 16 in 1987. In 2005, these 16 occupations were merged into five basic occupations. In the electrical industry the 14 single occupations were merged into four basic occupations.

Innovation 3: The introduction of areas of operation as an element of occupational profiles enables the companies to achieve a high degree of flexibility in training.

The goal of establishing stable occupational profiles in terms of timeframe and subject matter and, nevertheless, making them suitable for more flexible training is met by virtue of the so-called areas of operation in the ordinances (company training framework). This is based on a striking idea of harmonizing company needs, training requirements and flexibilization of training. The training company has to choose at least one of the areas of operation for training, but can also determine several areas in case the specified qualifications can be acquired there. The rule is: "Within the framework of occupationally specific qualifications occupational competence has to be

extended and intensified in at least one area of operation through qualifications that enable the trainees to perform complex tasks in the respective business process in a holistic manner" (Regulation 2004, section 3.4). In training for industrial mechanics, for example, maintenance or production engineering or construction of precision equipment or another relevant focus of the company can be incorporated into the training by areas of operation. In this way every company can impart specific qualifications geared to the work-process in a very flexible manner.

The introduction of areas of operation must be emphasized as an outstanding innovation since it enables companies to support the specific qualifications needed by them and work-processes in training in their particular way. In addition, it becomes possible in the training system to respond to the specific requirements of business processes on a short-term basis. This alone can already make a significant contribution to the flexibility of training, but also it demonstrates the enormous potential which is available in an alignment of training in accordance with occupational profiles based on work processes. The fields of teaching best suitable for more flexibility in training are so far only hesitantly used since this possibility has not been sufficiently explored. In this context it has to be noticed that internationally operating companies are now granted the opportunity for swiftly changing over to new contents.

With the introduction of areas of operation, companies have more freedom to shape the contents of training as the ordinances (e.g. company training framework) have been designed in a flexible way. An improvement of quality can be more easily reached as the training concentrates on a subject which is also of high importance for the company.

Apart from the areas of employment for the currently 348 recognized training occupations there are also other models such as e.g. emphases, vocational specializations and elective qualification units. All these models aim at increasing the flexibility of vocational initial training.

Innovation 4: It has become a focus of the reform of training that occupational profiles which guide the dual system are consistently geared towards work-processes.

As a consistent step of modifying and restructuring occupational profiles they are geared towards work and business processes. This does away with their primary orientation to technological components and instead intensifies the link to practice in vocational education and training. Work-processes have internationally attained the role of the leading dimension in training. Work and business processes as a basis for structuring the occupational profiles secure to a great degree their quality. In addition, occupational profiles based on work and business processes make it compelling to incorporate the features of the respective companies and of the industrial culture of the particular country or region. Therefore occupational profiles built on work-processes are useful across different vocational training systems for the very reason that they are oriented at company work and not geared towards an abstract structure. The content-related structuring of the new occupational profiles is exclusively done on a work-

process basis. This enables a high degree of dynamics and thus a rapid response to change in company work-processes. If the work assignments in the companies change, e.g. as a result of the introduction of new products or processes, the occupational profile can then be updated with little effort due to the existing depth of focus which is immanent in this approach. All coordination with the sector experts is fostered by structuring geared to the work-processes since it is not necessary to take any "detours" with regard to content via a subject-orientated structure when carrying out updates. Hence, work and business process orientation has to include the social, work organization and "tool-specific" aspects and the legal challenges with all their implications.

It is also evident that this approach supports the building up of core qualifications at the same time since the latter are already incorporated as a concrete work requirement. An example from the automotive service sector shows, that it is possible to assure through the design of core qualifications the necessary transparency in the coordination with customers and col-leagues or, in the case of vehicle reception areas, in the talk with the customer or, in the case of vehicle dismantling, even in teamwork. Concentration on work-processes with regard to competence development processes with a holistic orientation not only enables development of specialized theoretical knowledge and practical skills, but also of competencies regarding shaping and problem-solving and qualifications which might be especially important in a certain occupational field, such as the ability to communicate or to work in a team.

The new occupational profiles and curricula for training in the dual system are orientated to business and work processes. Combined with a differentiation according to areas of operation, the occupational profiles can be quickly adapted to change within the work processes without always involving the social partners. For example: As soon as a conventional production chain is switched to laser-controlled production, the respective occupational profile can immediately be adapted. Since around 15 years, the new concept of occupational profiles has been applied to upcoming or fundamentally restructured occupations and their updating (e.g. IT-occupations, car mechatronics, mechatronics, environmental occupations, electrical/electronic occupations, metalworking occupations etc.). The development of state-of-the-art occupational profiles is also a suitable instrument to revive vanishing sectors (e.g. the textile industry). The large multinational companies also tend to follow this concept in order to receive the necessary guidance when building up training departments for qualifying their employees for work abroad.

Innovation 5: Restructuring the vocational school curricula of the dual system on the basis of learning fields makes it possible to gear them to work-processes without interfering with the basic structure of the training system itself.

The orientation of occupational profiles at work and business processes made it necessary to redesign the subject-orientated structure of curricula at vocational schools. The vocational schools are the partners in the dual training system and are responsible

for the theoretical instruction. The new orientation made it necessary to introduce links to work processes and to work-process know-how as the key elements in the curricula. This brought about a striking change in paradigm that not only resulted in a departure from a subject and science-orientated system of didactics, but also in the need to work out, on the basis of developmental theory, a new system of vocational didactics for conveying practical skills. A special difficulty which has to be met is the need for maintaining the educational standards closely associated with the dual system of training. A special instrument which was introduced in order to maintain high standards were learning fields ("Lernfelder") which replaced school subject-orientation of didactics.

According to a decision of the Standing Conference of Education Ministers (KMK) (KMK 1996, 2000), learning fields are introduced to assist in shaping and structuring the curricula of vocational schools by linking learning processes to occupational tasks and work-processes. This facilitates activity-based learning in the courses of vocational schools. The learning situations, in turn, are generated on vocational school level on the basis of the learning fields. The work context within the companies will be taken into account. The learning situations themselves are set up didactically. The aim of these didactically shaped learning situations is to simulate typical activities from the particular occupational context within the world of work (i.e. from the work-processes) and to connect such processes with traditional educational contents like language learning or mathematics. However, they are not exactly identical with tasks at the company since they have to take the educational mission of the vocational schools into account and accordingly they have to pursue an educational goal.

The implementation of the learning-field concept in the classroom of the vocational school focuses on the development of occupational competence on the basis of work-processes. In this context, occupational competence is defined as "the ability and readiness of people to act properly and professionally in occupational situations in a personally well thought-out manner and with social responsibility as well as to constantly further develop their options for action" (Bader/Ruland 1996: 31). Another key goal of the vocational school is to convey a shaping orientation: Vocational school students and trainees should not only be able to cope with work-processes, but they should also learn to reflect on the dimensions of a work situation in a critical and constructive manner so as to be able to shape company situations together with their coworkers.

Thus, the learning field approach is characterized by the didactic goal of providing qualifications in the context of and for coping within work-processes as well as for shaping the work situations together with coworkers.

From the point of view of learning theory the KMK directive (2000: 8) is geared towards activity-oriented learning concepts. The recommendations are relevant for the following didactic principles (KMK 2000: 29):

- Didactic reference points are situations that are important for performing the job (integration of learning and taking action).
- Activities carried out (or conceptually understood) by the trainees themselves constitute the starting point for learning (learning through action).
- The trainees plan, carry out, review, correct and evaluate action independently as far as possible.
- Activities should promote a holistic perception of occupational reality, including technical, safety-related, economic, legal, ecological and social aspects.
- Activities which are geared towards learning must be integrated into the experience of the trainees and reflected on with regard to their social impact.

Activities should also encompass social processes, e.g. the explanation of interests or conflict within management.

The Standing Conference of Education Ministers (KMK) specifies this didactic realignment by defining learning fields as "thematic units oriented at occupational tasks and work-processes" (KMK 2000, p. 14). This alignment with work-processes implies a significant shift of paradigm for vocational education and training after several decades of instruction orientated at school subjects in the vocational schools. The orientation at learning fields is based on complete holistic work-processes, including self-directed planning, actual performance and evaluation of the trainees' own activities while taking into account interdisciplinary aspects (e.g. technology, economy, ecology, and law). Consequently it can be concluded that didactics place a great deal more focus on skilled occupational work today than was the case in the past.

The introduction of curricula based on learning fields led to a massive challenge for the vocational schools and in particular for their teaching staff. Above all the teachers were only inappropriately prepared for teaching in accordance with a learning field. Only intensive further training of the teachers helped in the meantime *to stabilize the learning-field approach in the schools and to make it applicable for all occupations.*

Innovation 6: A comprehensive German Qualification Framework (Deutscher Qualifikationsrahmen – DQR) was created for the field of education and training. Based on the European Qualification Framework (EQF), the DQR is meant to initiate another boost for modernization and shall make the VET system of Germany fit for Europe.

The recommendation of the European Parliament and the European Council to establish a European Qualification Framework (EQF) for life-long-learning was adopted on 23 April 2008. Since the European Council session in Lisbon in 2000, the process for more transparency of the certification of qualifications and for the adaptation of the systems of general and vocational education to the requirements of a knowledge society has been given high priority. It aims at creating a prerequisite to establish transparency of the national VET systems and to mutually recognize the acquired qualifications and competencies.

After creating the EQF, the European member states were advised to interlink their national qualification systems with the European Qualification Framework by the year 2012. This should be reached by referring to the defined descriptors of the 8 levels described in the EQF. If necessary, this could be done by working out a national qualification frameworks (see EU-Commission 2008).

The introduction of an EQF was welcomed in principle by both the Steering Committee of the Federal Institute for Vocational Education and Training (Bundesinstitut für Berufsbildung, BIBB) on 15 March 2007 and by various head organizations of the economy (cf. Kuratorium der Deutschen Wirtschaft 2005). It was expected that the EQF would underpin the competency and outcome orientation of vocational education and training and the assessment and equal ranking of formal and informal (work-place oriented) learning. Therefore all statements of the relevant groups welcomed this basic orientation of the EQF. They urged, however, to maintain a structure which was oriented at occupations and thus at the dual system. In the past, above all the trade unions had feared that the EQF system might jeopardize the existence of the dual system.

Already in 2006, the Federal government and the Länder had agreed upon the development of a national qualification framework – The German Qualification Framework (DQR). A first proposal had been submitted by a working group comprising representatives of all major stakeholders in February 2009. With the help of working groups, approximately 60 qualification profiles/ occupational profiles on the basis of the DQR were completed until May 2010.

With regard to vocational education and training it has to be underlined that the DQR structure aims at mapping the qualification steps within the VET system from prevocational education up to university level with the aid of descriptors which define the characteristics of successful action (indicator-supported descriptions of competency). An example: At Level 6 of the DQR, double-tracked formulations allow to equally assess both the general as well as the vocational qualifications earned in VET and/or academic education. The respective competency description reads as follows:

> „To master competencies in dealing with (planning, working on, evaluation) comprehensive tasks and problems as well as autonomous control of processes in partial areas of a scientific subject or within an occupational profile." (DQR 2011)

It has to be expected that the process which started with the development of the DQR will trigger considerable dynamics with regard to the future development of the VET system. This will above all be relevant should the DQR not only be seen as a static instrument for the description, compilation and assessment of acquired qualifications. It should rather be regarded as a formatted procedure to move from one qualification level to the next within a process of life-long-learning (also in different learning environments). This upward mobility is highly supported by the vocational education system and the universities have meanwhile also opened their doors for this development.

In spite of positive statements of the social groups regarding the basic principles of the EQF and the DQR respectively, there is still some skepticism with regard to the occurrence of a basic structural reform of the German VET system emerging as a logical consequence of an implementation of the DQR. According to the assessment of the trade unions such a reform might deprive the dual system of its quasi-monopoly for vocational education and continuous vocational education.

However, as long as the dual system of VET will be judged as vocational education per se and as long as occupational professionalism will be defended by the relevant social groups as the outstanding characteristic of the dual system, lines of segmentation between the three subsystems of general education will prevail and will continue to exclude a large part of school graduates from access to training in the dual system.

Educational policy makers have firmly decided to introduce the DQR. The very positive consolidation process during 2010 suggests that there will be no major obstacles. In 2010, important steps were taken towards more permeability in favor of graduates of the vocational education system by incorporating their objectives in the Higher Education Act. Since summer 2010, all universities have opened their admission for master craftsmen, technicians, business economists and other graduates of vocational programs.

7 Summary

The six innovative steps named in this article concentrate on the dual system and its mode of training. Innovations with respect to a swift change of the prevailing occupational profiles have meanwhile successfully been implemented. The same is true for the curriculum approach based on learning fields in vocational schools. However, so far the targeted level of qualification for training has not yet been reached. One of the reasons lies in the fact that the teaching staff is not yet adequately trained for a successful implementation.

The innovations initiated by the European Commission – such as the EQF but also the credit point system and the quality assurance system – are being conscientiously implemented by both politicians and social partners. Nevertheless, once implemented, all steps will be geared towards preserving the basic structure of the dual system of training.

One of the aims of the innovations was to make the "transition system" obsolete. This objective has so far not been reached. The system has rather stabilized itself. The further development of the transition system remains completely open. Currently three alternatives are being discussed: a) Upgrading the transition system towards a regular sub-system; b) systematic use of the transition system as a buffer between general education schools and vocational education and training while at the same time reducing the number of young people within this system; and finally c) abolition of the transition system.

It is generally accepted that there should be a school-based part of the vocational education system. It plays two important roles: a) Intensification of the theoretical qualification of per-sons within vocational education, b) support of the upwards mobility toward academic studies of persons with a vocational education background c) supports participation in the shaping of the society.

Conclusions

The findings which have been elaborated here are evidence that, on the one hand, the dual system of vocational education and training in Germany has come under considerable pressure in the past decade while, on the other hand, the authorities in charge have taken a clear stand in favor of this system as well as of occupational professionalism. To date the impact of the transition system, the Europeanization of VET and the dynamization of the labor market cannot be fully predicted in their consequences. Substantial steps of reform presented here on the basis of six innovations– are intended to ensure that the dual system of vocational education and training is strengthened to be able to cope with the change in the world of work. Interestingly the innovations initiated and developed by social partners and educational authorities constitute counter positions regarding the position of science and politics. Some scientific representatives call for complete structural changes within the educational system and for an orientation towards more school instruction, while

politics aims to enforce the dual system. Yet, the reforms which we have appraised here are aimed at making the entire training process significantly more flexible. The implementation of the innovations, however, must avoid the initiation of destructive processes, i.e. to break up the consolidated occupational structures. Rather, very flexible measures have to be integrated into the occupational profiles to enable companies to provide training according to their own needs. The curricula of vocational schools have also been structurally further developed by introducing learning fields. The latter represents a departure from a training syllabus oriented at the structure of traditional school subjects. They have made it possible for vocational schools to conduct training on the basis of work-processes. On this basis vocational schools and companies can coordinate their training closely with each other since learning situations that could form the basis for learning at both learning environments can be generated out of the work-processes. At any rate the innovations outlined here are proof of the readiness for change.

Thus far, however, it has not been possible to exploit the full potential of the innovative options. Successful implementations of the innovative approaches in the daily training process at school and at the company are nevertheless successfully progressing.

However, it seems to be a critical point that the transition system will largely continue to re-main in existence and there is even a risk that it will stabilize itself as a parallel system of vocational education and training.

Vocational training policies in Europe call for an improvement in the permeability of the programs in education and training and for an increase in pathways of equivalence between the different national education and training systems. Yet, in the case of well-established vocational training systems, it is not recommended to opt for strengthening both the vertical and horizontal permeability by increasing the proportions of theoretical school-based instruction at the expense of practical training. With regard to vocational education certificates, this applies to programs which intend to significantly increase the opportunities for successful university studies. Suitable approaches in this context are education and training courses which provide double qualifications – i.e. a blend of vocational training and academic education. Greater weight on theoretical education, however, implies for the dual system that the implementation of work-process orientation is endangered. Due to the high popularity of the dual system in the companies and the attractive career opportunities it can offer, such considerations lead to considerable resistance among the social partners and the companies. Currently these parties have no interest in diverting from work-process orientation. Therefore, it can be assumed that the reform process which has been launched will intensify and the innovations will be more sustainable than in the past. Another indication of continua-tion of the intensive reform process is the increasing adherence to the overriding goal of establishing a comprehensive concept of training which addresses the tripartite of career biographies into training, gainful employment and retirement. The extent to which this goal can be achieved and what the future new

balance within this division will be is still open since the effects of the current far-reaching transformation process regarding change in the economy, the technology and the work organization cannot yet be conclusively evaluated.

Nevertheless it will be necessary to bestow a new image on vocational education and training. This new image must underline that there is a corporate setting for occupational education which is able to cope with highly complex corporate tasks within the practical world of work apart from academic education. This requires qualitatively high-grade education and work-process based training which, however, cannot be academically oriented.

Literature

Autorengruppe Bildungsberichterstattung (2008 & 2010): Bildung in Deutschland 2010 (2008): Ein indikatorengestützter Bericht mit einer Analyse zur Zukunft des Bildungswesens im Kontext der demografischen Entwicklung. Bielefeld: Bertelsmann.

Bader, Reinhard; Ruhland, Hans-Josef (1996): Kompetenz durch Bildung und Beruf. In: Schaube, W. (Hg): Handlungsorientierter Unterricht für Praktiker. Ein Unterrichtskonzept macht Schule. Darmstadt: Winklers, p. 30–33.

Baethge, Martin; Baethge-Kinsky, Volker (1998): Jenseits von Beruf und Beruflichkeit? Neue Formen von Arbeitsorganisation und Beschäftigung und ihre Bedeutung für eine zentrale Kategorie gesellschaftlicher Integration. Mitteilungen aus der Arbeitsmarkt- und Berufsforschung, Heft 31, p. 461–472.

Baethge, Martin; Solga, Heike; Wieck, Markus (2007): Berufsbildung im Umbruch. Signale eines überfälligen Aufbruchs. Gutachten zur beruflichen Bildung in Deutschland im Auftrag der Friedrich-Ebert-Stiftung. Berlin.

Becker, Matthias; Spöttl, Georg; Karges, Torben; Musekamp, Frank; Bertram Bärbel (2012): Kfz-Servicemechaniker/-in auf dem Prüfstand. Chancen und Grenzen zielgruppenspezifischer Berufsausbildung. Bertelsmann-Verlag, Bielefeld.

Beicht, Ursula; Granato, M. (2010): Ausbildungsplatzsuche: Geringere Chancen für junge Frauen und Männer mit Migrationshintergrund. BIBB-Report, Heft 15.

Berufsbildungsbericht (2011): Berufsbildungsbericht 2011. Bundesministerium für Bildung und Forschung (Hg.), Bonn.

BIBB-Statistik Ausbildungsverträge (2010): Ergebnis der Erhebung neu abgeschlossener Ausbildungsverträge zum 30.9.2010 im Vergleich zu den Vorjahren. Online verfügbar unter http://www.bibb.de/dokumente/pdf/naa309_2010_tab006_0bund_mzkt.pdf (06.01.2011).

BIBB-Statistik Ausbildungsverträge (2009): Berufsbildungsbericht 2009. Bundesminiserium für Bildung und Forschung. Bonn. BMBF.

Bildungsbericht (2010): Bildung in Deutschland 2010. Ein indikatorengestützter Bericht mit einer Analyse zu Perspektiven des Bildungswesens im demografischen Wandel. Hrsg.: Autorengruppe Bildungsberichterstattung im Auftrag der Ständigen Konferenz der Kultusminister der Länder in der Bundesrepublik Deutschland und des Bundesministeriums für Bildung und Forschung. Bielefeld: W. Bertelsmann.

Blasius, Hanns (2007): Porsche-Toyota-General Electric. Gute Unternehmensführung in Deutschland, Japan und den USA. Zürich: Orell Füssli

Böhle, Fritz (2004): Erfahrungsgeleitetes Arbeiten und Lernen als Leitidee der Neuordnung der Metallberufe. In: Becker, M.; Schwenger, U.; Spöttl, G.; Vollmer, Th. (Hg.): Metallberufe zwischen Tradition und Zukunft. Bremen: Donat, p. 10–27.

Böhle, Fritz (2010): Kann die höhere Bildung von der beruflichen Bildung lernen? In: BWP, Berufsbildung in Wissenschaft und Praxis, Heft 2/2010, 39. Jg., S. 6–9.

Bosch, Gerhard (2008): Zur Zukunftsfähigkeit des deutschen Berufsbildungssystems. Arbeit, Jg. 17, Heft 4, p. 239–253.

Bundesinstitut für Berufsbildung (2009): Datenreport zum Berufsbildungsbericht 2009. Informationen und Analysen zur Entwicklung der beruflichen Bildung. Bonn.

Dehnbostel, Peter; Holz, Heinz; Novak, Hermann (Hg.) (1992): Lernen für die Zukunft durch verstärktes Lernen am Arbeitsplatz. Berlin, Bonn, Bielefeld: Bertelsmann.

DQR (2011): German Qualifications Framework for Lifelong Learning. Bundesministerium für Bildung und Forschung; Kultusministerkonferenz. Bonn, Berlin, March.

Dreher, Ralph; Spöttl, Georg (Hg.) (2002): Arbeiten mit Projekten – ein Ansatz für mehr Selbstständigkeit beim Lernen. Bremen: Donat.

EU-Commission (2008): The European Qualifications Framework for Lifelong Learning (EQF). Luxembourg: Office for Official Publications of the European Communities.

Greinert, Wolf-Dietrich (2007): Erwerbsqualifizierung jenseits des Industrialismus. Frankfurt a. M.: Gesellschaft z. Förderung arbeitsorientierter Forschung u. Bildung-Verlag.

Hanf, Georg (2011): The Changing Relevance of the Beruf in Germany. In: Brockmann, Michaela; Clarke, Linda; Winch, Christopher (eds.): Knowledge, Skills and Competence in the European Labour Market. What's in a Vocational qualification? London; New York: Routledge, p. 50–76.

Hess, E.; Spöttl, G. (2009): Core occupations as a building block for European vocational education and training. In: BWP, Berufsbildung in Wissenschaft und Praxis, Special Edition, p. 10–13.

Hippach-Schneider, Ute; Karsue, Martina; Woll, Christian (2007): Vocational education and training in Germany. Cedefop Panorama series Nr. 138. Luxembourg: Office for Official Publications of the European Communities.

Kohlrausch, Bettina (2009): A Ticket to Work? Policies for the Young Unemployed in Britain and Germany. Frankfurt am Main/New York: Campus.

Kultusministerkonferenz – KMK (2000): Handreichungen für die Erarbeitung von Rahmenlehrplänen der Kultusministerkonferenz (KMK) für den berufsbezogenen Unterricht in der Berufsschule und ihre Abstimmung mit Ausbildungsordnungen des Bundes für anerkannte Ausbildungsberufe. Bonn: KMK.

Kultusministerkonferenz – KMK (1996): Handreichungen für die Erarbeitung von Rahmenlehrplänen der Kultusministerkonferenz (KMK) für den berufsbezogenen Unterricht in der Berufsschule und ihre Abstimmung mit Ausbildungsordnungen des Bundes für anerkannte Ausbildungsberufe. Bonn: KMK.

Kupfer, Antonia (2010): The socio-political significance of changes to the vocational education system in Germany. British Journal of Sociology of Education, 31:1, S. 85–97.

Kuratorium der deutschen Wirtschaft (2005): Berufliche Bildung für Europa. Europäischer Qualifikationsrahmen (EQF) und Leistungspunktesystem (ECVET). Bonn. http://www.kwb-berufsbildung.de/fileadmin/pdf/2005_Positionspapier_EQF_ECVET.pdf.

Loose, Gert: Can We Link and Match Training in the „Dual System" with Competency-Based Education and Training (CBET)? A Discussion Note. In: Loose, G.; Spöttl, G.; Yusoff, Md. Sahir (eds.): „Re-Engineering" Dual Training – The Malaysian Experience. Frankfurt/M.; Berlin u. a.: Lang, p. 75–78.

Neß, Harry (2007): Generation abgeschoben. Warteschleifen und Endlosschleifen zwischen Bildung und Beschäftigung. Bielefeld: W. Bertelsmann.

Oates, Tim (2000): Trends in the internationalization of qualifications. In: CEDEFOP, p. 22–27.

OECD (2009): OECD Employment Outlook. Paris: Organisation for Economic Cooperation and Development (OECD).

OECD (2010): Learning for Jobs. Synthesis Report of the OECD Reviews of Vocational Education and Training. Paris: OECD

Rauner, Felix; Spöttl, Georg (2002): Der Kfz-Mechatroniker – vom Neuling zum Experten. Bielefeld: Bertelsmann.

Regulation/Ausbildungsordnung (2004): Verordnung über die Berufsausbildung in den industriellen Metallberufen. Berlin: Bundesminister für Wirtschaft und Arbeit.

Reichgesetzblatt (1897): Gesetz, betreffend die Abänderung der Gewerbeverordnung vom 26. Juli 1897. Berlin, p. 663–706.

Reinberg, Alexander; Hummel, Markus (2004): Fachkräftemangel bedroht Wettbewerbsfähigkeit der deutschen Wirtschaft. Aus Politik und Zeitgeschichte B 28, S. 3–10.

Scheib, Thomas; Windelband, Lars; Spöttl, Georg (2009): Entwicklung einer Konzeption für eine Modellinitiative zur Qualitätsentwicklung und -sicherung in der betrieblichen Berufsausbildung. Bielefeld: W. Bertelsmann.

Solga, Heike (2009): Wissensgesellschaft: Paradigmenwechsel in der beruflichen Bildung. In: Heidemann, Winfried; Kuhnhenne, Michaele (Hg.): Zukunft der Berufsausbildung. Düsseldorf: Hans-Böckler-Stiftung (Bildung und Qualifizierung, 235), p. 21–38.

Spöttl, Georg (2013): Das Duale System. Frankfurt/M.; Berlin u.a.: Lang,

Spöttl, Georg (2009): Erfahrungsbasierte Berufsausbildung: Die Stärke des deutschen Bildungssystems. In: Heidemann, Winfried; Kuhnhenne, Michaele (Hg.): Zukunft der Berufsausbildung. Düsseldorf: Hans-Böckler-Stiftung (Bildung und Qualifi-zierung, 235), p. 47–66.

Spöttl, Georg (2008): Learning through the Work-process – Challanges and the Shaping of Skill Requirements. In: Loose, G.; Spöttl, G.; Yusoff, Md. Sahir (eds.): „Re-Engineering" Dual Training – The Malaysian Experience. Frankfurt/M.; Berlin u.a.: Lang, p. 31–44.

Spöttl, Georg; Becker, Matthias (2008): Work-process Analyses – An Essential Tool für Qualification and Curriculum Research. Loose, G.; Spöttl, G.; Yusoff, Md. Sahir (eds.): „Re-Engineering" Dual Training – The Malaysian Experience. Frank-furt/M.; Berlin u.a.: Lang, p. 105–126.

Spöttl, Georg; Bremer, Rainer; Grollmann, Phillip; Musekamp, Frank (2008): Gestaltungsoptionen für die duale Organisation der Berufsbildung. Hans-Böckler-Stiftung, Arbeitspapier 168, Düsseldorf.

Spöttl, Georg; Hecker, Oskar; Holm, Claus; Windelband, Lars (2003): Dienstleistungsaufgaben sind Facharbeit – Qualifikationsanforderungen für Dienstleistungen des produzierenden Gewerbes. Hg.: Bundesinstitut für Berufsbildung (BIBB). Bielefeld: W. Bertelsmann.

Thelen, Kathleen (2004): How Institutions Evolve: The Political Economy of Skills in Comparative-Historical Perspective. Camebridge: Camebridge University Press.

Troltsch, Klaus; Gerhards, Christian; Mohr, Sabine (2012): Vom Regen in die Traufe? Unbesetzte Ausbildungsstellen als künftige Herausforderungen des Ausbildungsstellenmarktes. BIBB Report, Heft 19, Bonn, Oktober

Verordnung (2004): Verordnung über die Erprobung einer neuen Ausbildungsform für die Berufsausbildung in den industriellen Metallberufen. Der Bundesminister für Wirtschaft und Arbeit. Bonn: April.

Walden, Günter (2010): Zukunft der Facharbeit. Ausbildung und Qualifikationsentwicklung im Dienstleistungsbereich. In: Friedrich-Ebert-Stiftung (Hg.): Perspektiven der Erwerbsarbeit. Facharbeit in Deutschland. Bonn: Friedrich-Ebert-Stiftung (Wiso Diskurs Gesprächskreis Arbeit und Qualifizierung), p. 29–39.

Windelband, Lars (2006): Früherkennung des Qualifizierungsbedarfs in der Berufsbildung. Dissertation. Bielefeld: W. Bertelsmann.