Knowledge, skills, competence: European divergences in vocational education and training (VET) – the English, German and Dutch cases

Article *in* Oxford Review of Education · October 2008

DOI: 10.1080/03054980701782098 · Source: OAI

3 authors, including:

Linda Clarke
University of Westminster
55 PUBLICATIONS **654** CITATIONS
SEE PROFILE

Christopher Winch
King's College London
99 PUBLICATIONS **857** CITATIONS
SEE PROFILE

Oxford Review of Education
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713440173

Knowledge, skills, competence: European divergences in vocational education and training (VET)—the English, German and Dutch cases

Michaela Brockmann [a]; Linda Clarke [a]; Christopher Winch [b]
[a] University of Westminster, London [b] King's College, London

First Published:October2008

To cite this Article Brockmann, Michaela, Clarke, Linda and Winch, Christopher(2008)'Knowledge, skills, competence: European divergences in vocational education and training (VET)—the English, German and Dutch cases',Oxford Review of Education,34:5,547 — 567

To link to this Article: DOI: 10.1080/03054980701782098

URL: http://dx.doi.org/10.1080/03054980701782098

Oxford Review of Education
Vol. 34, No. 5, October 2008, pp. 547–567

Knowledge, skills, competence: European divergences in vocational education and training (VET)—the English, German and Dutch cases

Michaela Brockmann[a]*, Linda Clarke[a] and Christopher Winch[b]
[a]*University of Westminster, London;* [b]*King's College, London*

Policy debates on employability, lifelong learning and competence-based approaches suggest a convergence of VET approaches across European countries. Against the background of the creation of a European Qualifications Framework, this paper compares the VET systems of England, Germany and The Netherlands. The analysis reveals the distinct understandings and meanings of outwardly similar terms. These meanings are deeply rooted in the countries' institutional structures and labour processes and still inform national debates and policies today. The paper identifies a major distinction between a 'knowledge-based' VET model in Germany and The Netherlands and a 'skills-based' model in England. There is a need to develop trans-national categories that take into account the social construction of terms such as 'skills' and 'qualifications'.

Introduction

Pressures for convergence of vocational education and training (VET) systems in Europe have been widely commented upon in the literature (Ertl, 2002; Münk, 2003). Factors frequently cited include socio-economic changes and global economic pressures which are said to have triggered broadly similar responses across the major European countries (Boreham, 2002a). Others point to the many initiatives at European Union level. Ertl, for example, argues that within the EU, educational policy has always been an important tool for achieving stated economic aims, notably free movement of goods, services and capital (2002). Recent policy developments, notably the Lisbon European Council in 2000, initiated specific measures in education and training to ensure the EU's global economic competitiveness. VET has been regarded

*Corresponding author. Westminster Business School, University of Westminster, 35 Marylebone Road, London NW1 5LS, UK. Email: m.brockmann@wmin.ac.uk

ISSN 0305-4985 (print)/ISSN 1465-3915 (online)/08/050547–21

DOI: 10.1080/03054980701782098

as integral to achieving this goal. In 2002, the Copenhagen Declaration on enhanced European co-operation in VET laid down plans for building a true European labour market through trans-national recognition of vocational qualifications and improving national VET systems (Coles & Oates, 2004). This process culminated in the development of a European Qualifications Framework (EQF) (European Commission, 2006), intended to serve as a mechanism enabling comparability between national qualification systems, thus enhancing transferability and mobility of labour.

While this process follows previous attempts at creating equivalence frameworks (Cedefop, 2006; Coles, 2006), it crucially builds on outputs or learning outcomes of qualifications rather than inputs, seen as the only way of ensuring that the framework can be operationalised (Coles & Oates, 2004; Winterton *et al.*, 2005). This approach arguably is closest to the English National Qualifications Framework, and has been criticised sharply as it would risk fragmenting European VET systems based on holistic notions of occupations and qualifications (Rauner & Grollmann, 2006). However, others have pointed out that stakeholders across Europe welcomed the EQF as it stimulated the debate in their own countries and advanced moves towards developing learning outcomes, seen by many as a vital means for improving comparability and transferability at national level (Björnavold & Coles, 2006; Hanf, 2006). The EQF was developed by the European Commission on the basis of expert groups from all EU countries. To describe learning outcomes, the Framework grades qualifications according to eight reference levels and across three dimensions: knowledge, skills and competences (Winterton *et al.*, 2005).

Against this background, this paper will explore the VET systems of three European countries (England, Germany and the Netherlands), examining in detail the debates and policy responses in each country. National and European policy debates on employability, lifelong learning and developments towards competence-based approaches in particular may appear outwardly close, using similar or even identical terms. The paper will highlight the need for contextualising these and related concepts in order to understand fully their particular meanings. It will be argued that it is of crucial importance to take into account the social construction and historical embeddedness of concepts if the European Qualifications Framework is to succeed.

The paper will examine the key terms on which the EQF is based. The latter appears to have adopted the Anglo-Saxon definitions of 'knowledge', 'skills' and 'competence', used as the indicators of learning outcomes, without due consideration of the meanings of these terms in different national contexts. The first section will analyse some of the key principles as they underpin and define national VET systems, such as the role of 'knowledge' and 'competence'. In subsequent sections, the paper will examine the ways in which the concepts are embedded and operationalised within the different national systems. It will explore the meaning of qualifications and their significance in the labour market, as well as the role of general and civic education within VET. In relation to current debates and initiatives, particularly on employability, the analysis will draw out important differences in the meanings of 'competencies' and 'learning outcomes' and will further our understanding of the different rationales behind national moves towards developing a competence-based approach. The main

conclusion is that a major distinction needs to be made between two VET models: a knowledge-based model operating in Germany and the Netherlands, and a skills-based model in England. The analysis suggests that, because of the particular intrinsic and context-bound meanings of VET systems and their underlying principles, there is a need for developing trans-national categories to which common comparators of qualifications can refer.

Qualifications, 'employability' and competence-based approaches

In most European countries, there have been debates about developing VET appropriate to what is commonly referred to as a 'knowledge-based' society, as economies have moved from a Taylorist-Fordist system of mass production, relying on a narrow specialisation of tasks and strict division of labour, to an organisation of work characterised by greater use of technology, flatter hierarchies and employees deployed across functions and departments (Boreham *et al.*, 2002). There has been an increasing demand for abstract 'knowledge', a need to understand the whole labour process and to deal with 'risk' and unpredictable situations. Employers have placed greater emphasis on personal attributes, such as problem-solving, independent decision-making and the ability to communicate with colleagues. At the same time, there have been demands for a more flexible use of labour and a new emphasis on lifelong learning and less on initial VET (Ertl & Sloane, 2004). This has not been an even process within national economies and the term 'knowledge-based society' is particularly ambiguous in England, where there has been a much greater emphasis on 'skills' (as opposed to 'knowledge'). This concept of 'skills' has to be treated with particular caution. In England, it is generally regarded as an individual attribute, associated with manual dexterity, attached to specific tasks or output and with no particular association with a knowledge base (Clarke & Winch, 2006a). It is a term situated in the 'work' process, associated with the results of labour and thus with the actual site or location of 'work' or output, rather than in the 'labour process', associated with labour input and thus with a range of dimensions including the division of labour into different occupations.

Describing different qualifications strategies, Rauner (2006) distinguishes between VET systems which focus on education for an occupation (*Berufliche Bildung*) on the one hand, and those which are aimed at employability of individuals, on the other. In the first type, VET is integrated into a comprehensive school system and is designed to achieve ability to act competently within an occupational field. Qualifications are obtained through the successful completion of courses developed through negotiation with the social partners (trade unions and employers), integrating theoretical knowledge and workplace learning. In the second model, a 'market of qualifications' enables individuals to enhance their employability through certification of competencies, acquired either through work experience or courses in a modularised system. The nature and type of competencies are determined both by market mechanisms and decisions taken by individuals in order to enhance their careers or income. As Rauner points out, this requires a high level of general education on the part of individuals in order to enable them to make those decisions. Clearly, the countries Rauner has in

mind in relation to the first type are those with a so-called 'dual system' of VET (Germany, Switzerland and Austria), while he allocates the UK and US to the second type.

For the present discussion it is useful to place the two models on two ends of a continuum from qualification to certification, i.e. from a system based on (tightly regulated) inputs to one based on outcomes. Following Rauner, Germany would sit fairly staunchly on the side of 'vocational education', with England on the opposite end of 'employability' and, possibly, the Netherlands somewhere in between. The Netherlands has traditionally subscribed to a broader notion of occupation and recently opened up its system by partly breaking the link between vocational education and qualifications, thus moving closer towards the employability model. Here, part-modularisation and the introduction of accreditation of prior experiential learning (APEL) enhance individual opportunities for acquiring the competencies suited to a changing labour market, enabling lifelong careers. A debate to that effect is currently underway in Germany and moves in this direction have been rather more cautious. Indeed, we will argue that the VET systems in both Germany and the Netherlands are moving towards putting greater emphasis on employability, with occupations becoming less, rather than more delineated and less, rather than more, specialised. Crucially, and in contrast to England, this approach centres on a strong knowledge base with a central focus on the occupational mobility of the individual. Our analysis will demonstrate that the opposite has been the case in England, where there has been a trend towards a narrowing down of 'skills' and a further weakening of the knowledge base. Here, a strongly demand-led system ensures the production of narrow sets of 'skills' and minimal underpinning knowledge suited to a predominantly low-skilled labour market. This raises the question whether the notion of employability as understood and put into operation in England works to the detriment of individuals by trapping them in low-skill sectors of the economy. Thus, the nature of employability reflects the differences in the conceptualisation of VET: a knowledge-based approach in Germany and the Netherlands and a skills-based approach in England.

The VET systems of the Netherlands and Germany, despite moves towards employability, have retained some of their defining principles, such as holistic education and lifelong personal development. They have traditionally integrated vocational education into a comprehensive education system, regulated by the social partners. Crucially, in these countries VET incorporates a substantial element of general education based on the notion of citizenship, building upon Humboldt's notion of *Allgemeine Menschenbildung*. An educational reformer in 18th-century Germany, Wilhelm von Humboldt advocated an education system that would ensure the full participation of citizens in society through the provision of general education (Benner, 2003). Central to his idea was the notion of 'learning to learn': through the development of key faculties individuals are enabled to acquire knowledge throughout life (Benner, 2003, p. 180). This contrasts sharply with the VET system in England which has been criticised for neglecting general education (Green, 1998).

While there are important differences between them in the balance of classroom and workplace learning, VET in Germany and the Netherlands has traditionally included

a substantial element of theoretical knowledge. The fact that it is difficult in the English language to differentiate types of knowing may reflect the suspicion with which abstract underpinning knowledge in VET is treated. For example, the German language distinguishes systematic propositional knowledge (*Wissen*) from 'knowing how' or practical knowledge (*Können*). It further distinguishes between *systematic* propositional knowledge (*Wissen*) and *non-systematic* propositional knowledge *(Kenntnisse)* (Clarke & Winch, 2006a). Also, while VET in Germany and the Netherlands involves different types of knowledge (task-specific, occupational and industrial) to underpin practice in a relatively broad occupational field, in England it is aimed at acquiring (ever more narrowly defined) task-specific skills with little or no underpinning knowledge. The notion of 'skills' epitomises the Anglo-Saxon approach. Clarke traces the notion back to the old craft-based system of apprenticeship, where an apprentice would be expected to learn certain task-specific skills (usually of a physical nature) on the job, with one particular employer, and with little theoretical underpinning (1999). Thus, the concept of skills is conceived as an individual attribute, i.e., the mastery of a narrow range of tasks (Clarke & Winch, 2004, 2006a). This contrasts with Germany, where the closest equivalent to 'skills'—*Fertigkeiten*—are an integral part of a broad occupational field, importantly underpinned by theoretical knowledge (Clarke & Winch, 2006a).

Theorists such as Ryle (1949) and Oakeshott (1962) in their writings epitomise the Anglo-Saxon notion of skill as practice and the minimal role of theoretical knowledge. For Oakeshott, the technical knowledge underpinning every practical activity is understood as a rigid set of rules which is applied in an unreflective way. Ryle goes one step further by completely disconnecting theoretical knowledge, what he refers to as 'knowing what', from practice ('knowing how'). He maintains that, while practice may initially be based on knowledge or rules, these are soon no longer reflected upon, but become second nature. It is possible to learn an activity without ever learning the rules at all and more often than not *how* is learned by practice, unaided by theory (Ryle, 1949, p. 41). According to him, somebody is 'skilful', if he or she meets certain criteria in the conduct of the performance itself. The notion that skills can be measured in terms of the practical performance of a task is at the heart of the National Vocational Qualification (NVQ) system in England.

Central to the notion of employability in all three countries have been initiatives to make VET more practice-oriented, and thus more relevant to the workplace. Crucially, this has involved the adoption of a competence-based approach. The literature offers many definitions of the term competence, with a common distinction being made between an overarching notion of 'competence' or 'being competent' in the workplace and possessing the necessary 'competencies' or attributes (Delamare le Deist & Winterton, 2005). There are, however, marked national differences in the conceptualisation of competence-based approaches. Indeed, following Delamare le Deist and Winterton, we can distinguish between multi-dimensional competence development in Germany and the Netherlands, and the functionalist-behaviourist Anglo-Saxon model dominant in England, each underpinned by distinct epistemological assumptions.

The multi-dimensional competence-approach is based on a model of the active employee taking an active role in constructing knowledge. Competence is understood as the ability to deal with complex work situations, drawing on multiple resources that the employee brings to the workplace. Thus, competence is a holistic notion, relating to the whole person and including different dimensions (for instance, occupational, personal and inter-personal). Crucially, this approach encapsulates the notions of development of competence and personal growth, both through VET and the employee's own experience at the workplace (Fischer, 2002; Fischer & Rauner, 2002; Straka, 2002; Rauner, 2004). Equally important and in contrast to England, competencies in initial VET are linked to curricula, are negotiated by the social partners, and to some extent incorporate the interests of the employer and the employee. By contrast, the functionalist-behaviourist model posits the employee as largely passive, and as oriented towards the demonstration of prescribed competencies, or 'skills', presumed necessary to perform functions as specified by employers. They are not tied to curricula, and competence ascription is tied to ability to demonstrate performance to the standards required. In this sense, the terms 'competence' and 'skill' can be used interchangeably.

The two models also subscribe to different theories of learning. Processes of learning that rely primarily on tacit knowledge have been dominant within the Anglo-Saxon world. Lave and Wenger's (1991) study of African tailors learning their trade within a 'community of practice' has been an influential work, and describes how apprentices develop from newcomers to experts through a process of imitation and socialisation, closely following Oakeshott's conception of practical knowledge. Some commentators have suggested that even this acquisition of minimal underpinning knowledge is being eroded in England (Green, 1998). Arguably NVQs are based on a tightly defined rule-following approach akin to Oakeshottian technical knowledge. In Germany and the Netherlands, the shift towards a knowledge-based economy has sparked criticism as to the relevance of school-based learning for employment, and has led to a new emphasis on other forms of knowledge. Theories that attach great value to tacit knowledge and the ways in which it can contribute to overall knowledge creation and innovation have been influential. Nonaka and Takeuchi (1995) have drawn attention to the way in which Japanese companies make use of the largely tacit knowledge of the workforce by providing mechanisms for converting it into explicit and back again into tacit knowledge, thus creating a 'spiral of knowledge'. European researchers have also drawn on US literature, including the work by Lave and Wenger (1991). The multi-dimensional competence-based approach, while lacking a coherent theory, stresses the importance of situated learning by 'growing into' a community of practice (Biemans *et al.*, 2004; Rauner, 2004; Weigel & Mulder 2006; Wesselink *et al.*, 2006). Rauner (2004) argues that competencies develop in confrontation with the task itself. Competence development is seen to go hand in hand with the development of an occupational identity.

While practical knowledge, or know-how, is now an accepted and distinct form of knowledge (Rauner, 2004), it is the integration of tacit and practical knowledge with formal knowledge that marks a major distinction between the English and Continental models. A common development in the latter countries has been the

move from subject-based towards situated or workplace learning (e.g. Sloane, 2004). Critical for the multi-dimensional model is the notion of labour process knowledge[1] first introduced by Kruse (Boreham *et al.*, 2002; Rauner, 2004; Weigel & Mulder, 2006). The term encapsulates the shift towards a new organisation of the labour process in which knowledge of the whole process replaces that of distinct functions (Rauner, 2004). Rauner describes it as a central category of knowledge, derived from reflected experience of the labour process and underpinning practice (2004, p. 14). He goes on to explain that labour process knowledge is the integration of context-bound, practical (tacit) knowledge and context-free, theoretical (explicit) knowledge (2004, p. 14). Importantly, the resulting labour process knowledge itself is explicit.

Knowledge creation through a process of experiential learning and reflection is absent in the English competence model, as is the principle of competence development (Straka, 2002). It appears that, as people are required to perform to narrowly prescribed competencies, they do not have the knowledge, skills or, indeed, the motivation to perform tasks or deal with situations beyond the prescribed outcomes.

The following analysis will provide a deeper insight into the particular meanings of and rationales for moves towards learning outcomes, competencies and employability, notions that assume a very different resonance in the national contexts.

England

In England over the past thirty years there have been multiple attempts to address the perceived low skills levels compared with other major Western economies. Many initiatives have sought to widen access to education to raise skills levels and to increase economic competitiveness. Latest in the series has been the Leitch Review of Skills, which recognises the need to produce skills for the 'knowledge economy', and sets ambitious targets for skills levels by 2020, stressing the importance of enhancing employability to maximise economic growth and productivity, as well as social inclusion (HM Treasury, 2006). The Review proposes to consolidate the strongly employer-led, output-based approach, central to VET policy since the introduction of the NVQ system in the mid-1980s. While this approach is echoed in the language of policy-makers across Europe, the notions of employability and 'skill' have a distinct functionalist, individualistic meaning in the English context, at odds with some of the fundamental values of education in the Continental countries. Rather than representing capability within an occupational field, NVQs accredit narrow skill sets, devoid of any notion of competence development. In many respects, British policy has remained trapped in this way precisely because it has been so firmly embedded within and wedded to a 'skills' framework.

The English VET system is of course highly differentiated with a variety of routes, including apprenticeships leading to NVQs and college-based courses leading to different qualifications such as BTEC. For the purpose of comparative analysis it is appropriate to focus on the NVQ system, as it epitomises the inherent skills-based approach in England and has impacted on and arguably led to the watering down of

established routes in certain sectors. It has also dominated governance, notably funding regulations, and policy debate, including concerning the highly variable quality of apprenticeship training provision in a voluntarist environment and declining employer engagement (Farlie, 2004; Ryan *et al.*, 2006).

The vocational educational route in England traditionally has not enjoyed high status and has been associated with academic failure in a system where general education towards university entry qualification has been upheld as the 'gold standard' (Hayward *et al.*, 2006; cf. Pring, 2007). VET within schools has been described as 'weakly vocational', and successive government reforms, aimed at improving low participation rates in post-16 education, have sought to enhance parity of esteem with academic qualifications by increasing general content and reducing the practical element of courses. Outside the school system, there have been a range of more 'strongly vocational' courses located in Further Education colleges (Hayward *et al.*, 2006). These lead to recognised qualifications following standardised curricula, integrating both theoretical and practical knowledge. However, while not enjoying the esteem of academic qualifications, they also lack a well-developed workplace element and have been criticised for being little practice-oriented and for not producing the skills needed by employers (Winch & Hyland, 2007).

Over the past 20 years there has been a growing shift towards a narrow focus on 'training' for employer-led skills. The introduction of NVQs in 1986 involved the substantial reorganisation of the VET system (King, 2000; Boreham, 2002b). This constituted a shift from a system linked to a curriculum to one based on outcomes, not linked to a programme of VET but measured in terms of workplace performance. NVQs serve as the central mechanism for comprehensive skills development and, having been linked with more traditional routes such as apprenticeships, are now dominating VET in many areas. Being demand-led, these rely on the identification and mapping of detailed work functions (Ertl, 2000; Delamare le Deist & Winterton, 2005). NVQs are defined as 'statements of competence clearly relevant to work' (Jessup in Ertl, 2000, p. 52) and relate to elements of competence with associated performance criteria, collectively referred to as occupational standards. These are then grouped into units of competence which are accredited as part qualifications. NVQs are awarded on the basis of certain combinations of units only, and the system therefore does not fully subscribe to what Ertl (2000) has described as the 'fragmentation' model of modularisation, based on stand-alone units. However, it is highly flexible and allows for the accumulation of competencies through a variety of modes (including APEL) within a flexible time frame.

This development has involved a shift from the notion of 'qualification' in Rauner's vocational education model towards certification and accumulation of competencies more akin to the 'employability' model. However, in contrast to Germany and the Netherlands, the NVQ model does not include the notion of competence development based on the integration of theoretical and practical knowledge, but instead focuses on the performance of narrow tasks prescribed by employers. The traditional Anglo-Saxon notion of skills and learning on the job, underpinned by minimal knowledge, still underlies the current NVQ model, echoing

the tradition of thought found in the writings of Ryle and Oakeshott. One architect of the system, Gilbert Jessup, believed that theoretical knowledge taught in college was inert and of little relevance to practice (Boreham, 2002b). His belief that knowledge needed for the execution of tasks is acquired through experience in the workplace is the main epistemological pillar of the NVQ system. Thus, in contrast to the Continental model, the competence approach in England contains very little input of any formal knowledge and relies heavily on tacit knowledge acquired solely in the workplace. There is no notion of an integration of different forms of knowledge, and thus of experiential learning and knowledge creation. The idea of workers following instructions or 'rules' in a non-reflective way clearly builds on Oakeshott's notion of technical knowledge (1962). As pointed out by Ertl (2000), because of the unitisation of skills and knowledge, there is no theoretical knowledge base thought to be essential for a flexible workforce able to deal with economic change. Biemans *et al.* (2004, p. 527) have described the English competence model as:

> [a] rigid backward mapping approach, in which the state of the art on the shop floor is the untouchable starting point for the definition of occupational competencies, leading to routinised job descriptions, in which the proactive and reflective worker is left out.

Equally, civic and general education have been neglected in VET in England (Green, 1998; King, 2000; Hayward *et al.*, 2005) and there is no notion of development of personal characteristics, such as critical reflection, taking responsibility for one's actions, and of the student as a citizen, all elements of competence development in Germany. In an attempt to address a concern about lack of basic education, the government introduced 'key skills' as essential components of NVQs, consisting of communication, numeracy and information technology (Hayward *et al.*, 2006). The idea that 'general education is only necessary in as much as it "underpins" competent performance in expected work tasks and can therefore be reduced to core skills' (Jessup cited in Green, 1998, p. 28) is at the heart of a functionalist, employer-led VET system. Green has criticised key skills as an 'ineffective surrogate' for general education, culture, and active citizenship (1998, p. 23).

Today's government-sponsored Apprenticeship programme is a case in point of the outcomes-based approach in England. Apprenticeships are no longer based on a regulated programme of VET. Funding is linked to achieving the constituent elements of NVQs, the so-called Technical Certificate, and Key Skills (which are not integrated but taught and assessed separately from one another) and programmes are often oriented towards acquiring a narrow range of skills as required by the employer. Typically, they no longer even constitute an initiation into a 'community of practice' of a particular trade, involving a broader skills base and minimal underpinning knowledge (Green, 1998; Clarke & Winch, 2004). Apprenticeships in England have anyway long played a relatively minor role (Winch & Hyland, 2007). Completion rates are very low (around 50%), and, in a voluntarist system, employers—especially in non-traditional sectors—have not shown much interest in taking on apprentices. In an attempt to engage employers, the government has introduced Skills Academies (European Commission, 2005). However, first indications are that, being 'skills' and

project-based, strongly demand-led and short-termist, 'training' (as opposed to VET) will once again involve a functional imparting of narrow skills, serving the perceived short-term interests of employers rather than those of employees.

The NVQ system was designed to improve access to qualifications. However, VET in England to a large extent functions to produce highly fragmented skill sets that tend to trap individuals in low-skill sectors of the economy. This is borne out by the National Qualifications Framework, which seeks to integrate vocational and academic qualifications, based on learning outcomes. While the framework establishes formal equivalence between NVQs and academic qualifications, this equivalence is highly questionable, given the low theoretical content of the former, particularly at the lower levels. Even more in doubt is the supposed permeability between different levels, as the low requirements inhibit progression between different level NVQs, and from vocational to academic routes (Clarke and Winch, 2006b). This is hardly surprising, given the emphasis on 'skills' as opposed to 'knowledge'.

It appears, therefore, that in England the skills-based approach of the NVQ system has not only failed to produce the competencies and knowledge base needed for an economy based on high and wide levels of operational competence, it has actively promoted the production of low-skilled labour. Indeed, Grugulis *et al.* (2004) refer to the polarisation of skills in England, where a Taylorist-Fordist system still operates in many parts of the economy. They point out that 27% of jobs required no qualifications in 2001 (while the number of unqualified people was reduced), and that task discretion and autonomy in jobs have declined.

It has been argued that the kind of knowledge people acquire is the result of power relationships in society (Young cited in Boreham, 2002). Clearly, the low theoretical content and the narrowness of skills reflect the strongly employer-based nature of the English system and the lack of wider involvement, in particular of trades unions and educationalists, in the development of qualifications. As suggested by Keep, the lack of interest in a broader, comprehensive training must be largely attributed to the abolition of the tripartite system and the deregulation of the labour market (2007). The voluntarist, individualistic approach (rather than, for example, a legally enforceable right to training) is reflected in initiatives such as 'Train to Gain' and Individual Learning Accounts.

Germany

The German education system incorporates a strong and long-established vocational route through a system of apprenticeship commonly referred to as the dual system. The term *Qualifikation* is closely bound up with the notion of *Beruf*, literally meaning 'vocation'. The notion of *Beruf* is deeply embedded in German society (Greinert, 2007). It emerged from the craft-based system and the particular privileges given to the craft chambers at the end of the 19th century, and the particular role afforded to education in marshalling the working classes to the cause of the bourgeois nation-state. Following the school reformer Kerschensteiner, with the introduction of vocational schools (which soon became compulsory) the state at the

time sought to co-opt the working classes into the bourgeois nation-state (and away from the threat of socialism), by way of socialisation, or 'education through the vocation' (Deissinger & Hellwig, 2006). This provided the foundations for the dual system: combining work-based training, underpinned by theoretical knowledge, and general education, both important elements of a *Beruf*. The result has been to provide a distinct educational and occupational route (as an alternative to the academic route) and to produce a strong intermediate labour force with its own distinct identity and social recognition (d'Iribarne & d'Iribarne, 1999; Deissinger & Hellwig, 2006).

Qualifying in one of the 350 recognised occupations *(Ausbildungsberufe)* traditionally meant entering a life-long career, linked to social status and recognition in society. The strong link between a qualification, vocational education and a particular occupation is the result of careful negotiation between the social partners, which includes the curriculum as well as the scope of activities of a given occupation. This means that the scope of an occupation and its associated VET programme are recognised and adhered to by all partners involved (Deissinger, 1997). The qualification gained at the end of the VET programme, lasting between two and four years, thus serves as a guarantee of what is referred to as occupational capability *(berufliche Handlungsfähigkeit)*, i.e. the ability of the holder of the qualification to act competently within the scope of the occupational field.

In Germany, *Handlungskompetenz*, or competence of action-taking (also referred to as *Handlungsfähigkeit* or capability to act) together with its dimensions pertaining to the occupation (*Fachkompetenz*); the social group (*Sozialkompetenz*); and the person (*Individual-* or *Humankompetenz*) has been the structuring principle of VET since the late 1980s (Ott, 1999; Straka, 2002; Sloane, 2004). In contrast to the dominant English model of VET, *Handlungskompetenz* is a holistic notion, which comprises particular knowledge, skills and competencies within each different dimension, linked to a curriculum. The aim of VET, as enshrined in legislation of 1991, is to enable the student to take autonomous and responsible action within the workplace (Halfpap, 2000). This concept of competence is integrative rather than cumulative, relying on the different components of occupational, social and individual competence to come together in a given work situation (Straka, 2002; Sloane, 2004). It relates to performance in the workplace as conceptualised by John Erpenbeck (2005, p. 11):

> Competences are about the ability to take action in complex, often chaotic situations. Competence is about performance.

Just as the notion of *Beruf* comprises a broad spectrum of activities, so the different dimensions of competence are based on broad areas of occupational and industrial knowledge. The dimension of individual competence also holistically comprises the notion of development of the self (for example, confidence, ability to reflect, social behaviour), both in relation to the workplace and to society as a whole. Ott (1999) sums up the educational mandate of the vocational school, pinpointing Humboldt's idea of *Allgemeine Menschenbildung*: a) the continuation of general education; b) upbringing; c) vocational education; d) non-specific education through an occupation

(i.e. character development). The idea of *erzieherische Werte* (bringing up children to embrace certain values) is a dominant principle in German pedagogy, which still holds strong today.

Throughout the past two decades there have been increasing pressures to open up the German dual system, as the sharp demarcation of *Berufe* is no longer seen as suited to accelerating technological developments, one effect of which has been that employers have been increasingly reluctant to offer training places (Halfpap, 2000; Boreham, 2002b). To some extent echoing the founders of the NVQ system in England, a major criticism has been that theoretical knowledge taught in vocational schools is removed from actual work practice and is therefore inert. Since the mid-1990s there have been initiatives to orient learning towards the workplace, the most significant development being the introduction of *Lernfelder*, learning fields, in the new framework curriculum. Learning fields are a major didactic innovation, structuring learning according to concrete work situations, processes and tasks rather than subjects. The new guidelines place a renewed emphasis on holistic action-oriented learning, promoting occupational as well as social and individual competencies.

While the implementation of learning fields has been uneven, several developments have advanced the notion of situated learning. A number of new occupations have been introduced (notably in ICT) allowing an element of project-based, employer-specific learning, opening up the notion of *Beruf* to include elements of self-directed learning through work and thus enabling flexibility and innovation (Boreham, 2002b; Halfpap, 2000; Steedman *et al.*, 2006). New learning and teaching methods are being piloted in projects across the federal states (*Länder*) (Halfpap, 2000; Achtenhagen, 2004). While (holistic) competencies are thus developed in work situations, they are tied to a curriculum, in which task-based and project work, individual and group work serve as innovative didactic tools. And while competencies are dependent on the particular context of the work situation, they become transferable through the learning process. The learner assumes a central role, entailing 'a shift from consumer of knowledge towards active producer of knowledge' (Halfpap, 2000, p. 43). This constitutes a major shift away from largely imparted knowledge towards experiential learning advocated by Kerschensteiner (1968). By promoting key faculties of autonomous thinking, learning and action-taking, German VET enables students to determine their own learning and thus develop their own *Handlungskompetenz*.

The system has been increasingly criticised in recent years for inflexibility and inability to adapt to socio-economic change (Büchtermann & Vogler-Ludwig, 1997; Ertl & Sloane, 2004; European Commission, 2005; Deissinger & Hellwig, 2006). Many point to the growing reluctance of employers to take on trainees. It is argued that accelerating technological innovation raises doubts about the suitability of a *Beruf* with its high degree of specialisation during initial VET, requiring greater emphasis on lifelong learning instead (Büchtermann & Vogler-Ludwig, 1997; Deissinger & Hellwig, 2006). Many commentators favour the introduction of a modular system which would yet retain the holistic principle of a *Beruf*. Ertl's models of 'differentiation' and 'expansion', in particular, would allow for the certification of individual modules, while a qualification would still be subject to the completion of a *defined set* of modules (2002). This

would provide flexible routes to qualifications and enable individuals to switch between courses, continue training at different stages in their lives, and choose additional optional modules. This latter route has already been integrated into the new ICT courses in order to allow for specialised training relevant to a particular employer or sector (Steedman *et al.*, 2006).

Modularisation is closely linked to the need for the formulation of learning outcomes of VET courses. The debate about learning outcomes in Germany has been underway for some time, as different stakeholders have been advocating the enhanced comparability and permeability between different types of qualifications (particularly between VET and Higher Education) nationally, but also cross-nationally with a view to labour migration (Hanf, 2006). Crucially, the introduction of learning outcomes understood as standards related to a curriculum, rather than as behaviours to be realised, irrespective of curriculum and / or modularisation, would leave the basic structures of the knowledge-based approach of the German dual system in place, e.g. the holistic principle and the link between learning processes and qualifications (Hanf, 2006). Accreditation of informal learning, however, remains very controversial.

The Netherlands

In contrast to Germany, VET in the Netherlands has traditionally followed a strongly school-based route. Perhaps not surprisingly under the influence of Enlightenment values, this appears to be the result of the decline of the apprenticeship system after the abolition of the guilds in the 18th century, as well as a strong emphasis on inclusive civic education that took its place (Reinisch & Frommberger, 2004; Westerhuis, 2007). Vocational schools were founded in response to skill shortages in the 19th and 20th centuries but remained outside government control until the 1960s.

During the post-war period, VET was recognised by the government as an important instrument for reconstruction and was subsequently absorbed into a comprehensive school system (Westerhuis, 2007). The general character of education and its dual aim of preparing students for society as well as for the labour market was extended to VET. This embraces Humboldt's idea of *Allgemeine Menschenbildung*, although, as in Germany, the vocational and academic pathways have been highly selective, and permeability between VET and higher education has been restricted. The high content of general education and theoretical knowledge was agreed by the social partners on the basis that a broad knowledge base would facilitate vertical and horizontal occupational mobility as well as economic growth. Employers supported the general character of VET, valuing more abstract abilities, such as independent and reflective thinking (Westerhuis, 2007).

Since the early 1990s, there has been an increasing emphasis on work-based learning, in response to criticism that schools insufficiently prepared students for the workplace. The 1996 Education Act broadened VET to include a system of company traineeships (which also has a school-based element), and stipulated that school-based provision must include a substantial practical element (Heidemann *et al.*, 2000). The Act was significant also because it marked the shift towards a modularised, outcomes-based

qualifications system, which was strongly demand-led (Weigel & Mulder, 2006; Westerhuis, 2006). However, the framework resulted in an array of narrow qualifications being drawn up by different economic sectors, reminiscent of the English NVQ system. This development was not seen as conducive to the application of knowledge to practice in the workplace, and the system was revised once more. Based on the concept of core competencies, the new qualifications structure currently being introduced is once again built upon a broad conception of qualification, ostensibly focusing on the lifelong career perspective of students rather than on short-term economic needs. The number of qualifications will be substantially reduced, from over 600 to about 300 (ReferNet, 2005). Modularisation is close to Ertl's 'differentiation' model described earlier and allows for certification of individual modules while a holistic notion of qualification is retained (Westerhuis, 2006). The flexible qualification structure is thus designed to enable lifelong learning. It also provides for APEL, which so far, however, appears not to have been supported by industry.

The stated objectives of the introduction of the competence-based qualifications structure include improving the transparency and flexibility of qualifications, and enabling the quick adaptation of qualifications to changes in the labour market (ReferNet, 2005). In combination with other elements, such as modularisation and APEL, this approach superficially resembles the English NVQ system. However, qualifications are underpinned by a holistic notion of competence and, importantly, they are linked to curricula developed by the social partners and delivered through the VET system. Competence-based VET has been piloted in many areas and is being formally integrated into the VET system as part of the current reforms (ReferNet, 2005; Weigel & Mulder, 2006). Thus, in line with the traditional focus on citizenship, the system has been designed to advance individual career-building and knowledge-based employability.

As in Germany, the notion of competence is multi-dimensional and includes knowledge, skills and the concept of 'attitude', which refers to the moral dimension of action and may be similar to the German notion of *Humankompetenz* (Westerhuis, 2006). Indeed, in the absence of an official definition, Mulder's (2000, p. 9) working definition is reminiscent of the German use of capability:

> Competence is the capability of a person or an organisation to reach specific achievements. Personal competencies comprise: integrated performance-oriented capabilities, which consist of clusters of knowledge structures and also cognitive, interactive, affective and where necessary psychomotor capabilities, and attitudes and values, which are conditional for carrying out tasks, solving problems and more generally, effectively functioning in a certain profession, organisation, position or role.

Like the German notion of *Handlungskompetenz*, this definition refers to integrated capabilities related to performance, although notably not related to a particular occupation or *Beruf* but to a broader conception of position or role, or even an organisation. In order to introduce competence-based VET, the current reforms have recognised the need to transform teaching and learning environments. They draw on a range of approaches, including constructivist theories of learning, emphasising situated and experiential learning (Mulder & Sloane, 2004; Simons &

Bolthuis, 2004). As in Germany, students develop competencies by making explicit and articulating knowledge.

VET reforms are based on two main principles (ReferNet, 2005). First, they firmly embrace the notion of labour process knowledge. Secondly, competence development is tailored to the individual student, their personal capacities and wishes. However, there are fears that students' wishes may be overridden by employer demands: there are tensions between the different stakeholders in terms of how they conceptualise the competence-based approach, and notably between teaching organisations (as broad, abstract knowledge, driven by learners) and national policy-makers (more outcomes-oriented) (Biemans *et al.*, 2004). Overall, it can be argued that, while moving considerably closer towards Rauner's employability model than Germany, the Netherlands have adhered to their traditional principles of knowledge-based VET.

Discussion

This analysis has shown that in the context of VET in Germany and the Netherlands, with their holistic concepts of education, a high content of theoretical knowledge and general education, the notion of employability has very different connotations compared to England. In the former countries, the notion of competence development, drawing on multiple resources involving the whole person, enables learners to become autonomous, while enabling the creation of innovative knowledge. It also strongly suggests that in these countries 'learning outcomes' have rather different meanings and serve different purposes. As part of a comprehensive VET system, they are negotiated by a variety of stakeholders, including the state, employers, unions, and teaching institutions, thus representing the interests of all these bodies. Learning processes are formulated as outcomes in order to enhance comparability of qualifications and thus the occupational mobility and employability of individuals. Crucially, they are linked to curricula and pedagogy. In England, by contrast, learning outcomes, defined according to employers' skill needs and with no wider trade union or educational involvement, are in the NVQ system disconnected from curricula and teaching. Lifelong learning in practice constitutes the accumulation of skills in relation to particular jobs or tasks, rather than the more holistic career development—which includes professional as well as personal growth—of the continental VET systems.

In the light of the creation of a European Qualifications Framework, this paper has analysed the VET systems of three European countries, England, the Netherlands and Germany, including the national debates and recent developments in these countries, on the basis of a review of the existing literature. In particular, it has explored in detail the distinct meanings attached to some of the key terms which form the basis of the framework: 'qualification', 'knowledge', 'skills', 'competence' and 'learning outcomes'. It is argued that, without taking into consideration the diverging understandings of these concepts, it remains questionable whether the aims of the EQF, such as enhancing transferability and comparability, can be fulfilled.

Clearly, there appears to have been some support for the EQF from diverse national stakeholders, underpinned by a desire to develop or revise national qualification

frameworks. Within VET systems traditionally based on learning inputs, advocates of learning outcomes have cited socio-economic changes and the need to develop flexible mechanisms of VET, as well as to enhance occupational mobility both nationally and internationally.

The three VET systems in this paper are all in a state of flux and have been undergoing major changes over the past two decades. Thus, to differing degrees all systems have moved towards greater 'employability' (individualised, flexible VET) and away from 'occupational education' (tightly regulated, fixed qualifications). However, analysis of the different contexts and traditions in each country has revealed the distinct meanings and understandings of different terms and their embeddedness within the VET system and the labour market. While recent developments might signal convergence, e.g. in the shift towards learning outcomes, these need to be understood within these contexts.

This analysis has identified marked differences between the construction of VET in England, on the one hand, and that of the Netherlands and Germany, on the other, notwithstanding major differences between the two latter countries. We have concluded that there is a key distinction between the knowledge-based approach in VET in the Netherlands and Germany and the skills-based approach in England. An important aspect is the differing relationship between theoretical and practical knowledge involved in qualifications. In our two continental countries, qualifications have traditionally included a high theoretical content, as well as the notion of personal development and civic education. Both countries have also modified their VET inputs in response to the need for more practice-oriented learning. However, this has led to the *reconfiguration* of theoretical knowledge rather than its eradication. There has been a greater emphasis on situated, experiential learning, and on the need to value different forms of knowledge, both tacit and explicit. The idea of integrating theory and practice is accentuated in the notion of competence development, which captures the bringing together of different resources and applying them to a given work situation. Importantly, competence in the continental countries is understood as a multi-dimensional concept. The individual develops competencies by applying aspects of the whole person, including the ability to reflect on situations and on one's own actions. Students and workers thus become producers of knowledge, central to the success of knowledge-based labour processes.

'Employability' in these countries, therefore, is not solely or primarily focused on the interests of employers. Particularly in the Netherlands, policy initiatives have embraced the notion of a right to a lifelong career, enabling individual employees to adapt to a changing labour market by providing mechanisms that facilitate learning and occupational mobility. In the same way, the drive towards learning outcomes stems from the perceived need to transform and open up systems traditionally designed as inputs.

By contrast, VET in England is in danger of continuing to be equated with failure, as the academic route remains unreformed. Initial as well as continuing VET is dominated by the NVQ system which takes 'skills' and 'learning outcomes' at their most literal. Qualifications are awarded on the basis of performance in the

workplace against criteria set by employers. Typically, these refer to narrow sets of skills. VET—or rather 'training'—lacks a developed notion of citizenship and neglects general education and any form of personal development. Thus, arguably, employability refers to a functionalist interpretation of lifelong learning which may ultimately impede occupational mobility.

Importantly, the skills-based approach lacks any notion of broad competence development and occupational identity. In the context of low theoretical content, narrow skills and lack of general education, people tend to perform to standards defined by employers. Other dimensions of competence, such as social and personal competencies, are neither required nor recognised. The low requirements and restrictive nature of vocational qualifications also suggest that people may not rise beyond prescribed standards as they simply lack the skills, knowledge or motivation to do so. As competencies are thus narrowly defined, this may also impede the development of occupational identity, so crucial in the continental competence model.

The English VET system as it currently stands may also simply perpetuate a low-skilled labour-intensive economy, as employers continue to build on traditional skills, 'the skills of yesterday', thus restricting the capacity for the development of new skills areas (Clarke & Winch, 2004, p. 515). This is of particular significance in the light of the recent Leitch Review of Skills (2006). Leitch recognises the crucial importance of upgrading the skills base if economic competitiveness is to be achieved. However, as we suggest here, the weakness of the English system—and the Review itself—lies in the fact that it is based on and bounded by a 'skills'-based approach.

Acknowledgements

We would like to thank our project partners, Anneke Westerhuis, Georg Hanf and Philippe Méhaut, for their invaluable comments on earlier drafts of this paper.

Note

1. The German notion of *Arbeitsprozesswissen* is usually translated as 'work process knowledge'. However, we feel this should in fact be 'labour process knowledge' to reflect the wider scope of knowledge involved.

Notes on contributors

Michaela Brockmann is a Research Fellow at the Westminster Business School, University of Westminster.

Linda Clarke is Professor of European Industrial Relations at the Westminster Business School, University of Westminster, where she undertakes research on training, skills, wage and labour relations in Europe, particularly in the construction sector. Her publications include *Vocational education: international approaches, developments and systems*, with Christopher Winch (Routledge, 2007).

Christopher Winch is Professor of Educational Philosophy and Policy at King's College, London.

References

Achtenhagen, F. (2004) Mastery learning in and by complex teaching-learning environments, in: R. Mulder & P. Sloane (Eds) *New approaches to vocational education in Europe* (Oxford, Symposium Books).

Benner, D. (2003) *Wilhelm von Humboldts Bildungstheorie* (Weinheim and Munich, Juventa Verlag).

Biemans, H., Nieuwenhuis, L., Poell, R., Mulder, M. & Wesselink, R. (2004) Competence-based VET in the Netherlands: background and pitfalls, *Journal of Education and Training,* 56(4), 523–538.

Björnavold, J. & Coles, M. (2006) *Governing education and training: the case of qualifications frameworks* (Draft November 2006) (Brussels, European Commission).

Boreham, N. (2002a) Work process knowledge in technological and organizational development, in: N. Boreham, R. Samurçay & M. Fischer (Eds) *Work process knowledge* (London, Routledge), 1–14.

Boreham, N. (2002b) Work process knowledge, curriculum control and the work-based route to vocational qualifications, *British Journal of Educational Studies,* 50(2), 225–237.

Boreham, N., Samurçay, R. & Fischer, M. (Eds) (2002) *Work process knowledge* (London, Routledge).

Büchtermann, C. F. & Vogler-Ludwig, K. (1997) Das deutsche Ausbildungsmodell unter Anpassungszwang: Thesen zur Humankapitalbildung in Deutschland, *IFO Schnelldienst,* 17/18, 15–20.

Cedefop (2006) 30 years with Cedefop—in good times and bad. Interview with Burkart Sellin, *Cedefop info,* February.

Clarke, L. (1999) The changing structure and significance of apprenticeship with special reference to construction, in: P. Ainley & H. Rainbird (Eds) *Apprenticeship—towards a new paradigm of learning* (London, Kogan Page Limited), 25–40.

Clarke, L. & Herrmann, G. (2007) Divergent divisions of construction labour: Britain and Germany, in: A. Dainty, S. Green & B. Bagilhole (Eds) *People and culture in construction* (London, Taylor & Francis), 85–105.

Clarke, L. & Winch, C. (2004) Apprenticeship and applied theoretical knowledge, *Educational Philosophy and Theory,* 36(5), 509–521.

Clarke, L. & Winch, C. (2006a) A European skills framework?—but what are skills? Anglo-Saxon versus German concepts, *Journal of Education and Work,* 19(3), 255–269.

Clarke, L. & Winch, C. (2006b) *Quick scan paper—VET in England* (unpublished).

Coles, M. & Oates, T. (2004) *European Reference Levels for Education and Training—an important parameter for promoting credit transfer and mutual trust. Final report* (London, Qualifications and Curriculum Authority).

Coles, M. (2006) *A review of international and national developments in the use of qualifications frameworks.* Report for the European Training Foundation (Brussels, European Training Foundation).

Deissinger, T. (1997) The German dual system—a model for Europe? *Education and Training,* 39(8), 297–302.

Deissinger, T. & Hellwig, S. (2006) Apprenticeships in Germany: modernising the dual system, *Education and Training,* 47(4/5), 312–324.

Delamare le Deist, F. & Winterton, J. (2005) What is competence? *Human Resource Development International,* 8(1), 27–46.

Erpenbeck, J. (2005) *Positionspapier für BIBB Workshop zum 1. EQF Entwurf vom 16 November.*

Ertl, H. (2000) *Modularisation of vocational education in Europe* (Oxford, Symposium Books).

Ertl, H. (2002) The concept of modularisation in vocational education and training: the debate in Germany and its implications, *Oxford Review of Education,* 28(1), 53–73.

Ertl, H. & Sloane, P. (2004) A comparison of VET structures in Germany and England: contexts of complex teaching-learning environments, in: R. Mulder & P. Sloane (Eds) *New approaches to vocational education in Europe* (Oxford, Symposium Books).

European Commission (2005) *European employment observatory review: Autumn 2005* (Brussels, European Commission).

European Commission (2006) *Proposal for a recommendation of the European Parliament and of the Council on the establishment of the European Qualifications Framework for Lifelong Learning* (Brussels, Commission of the European Communities).

Farlie, V. (2004) *Are apprenticeships any longer a credible vocational route for young people, and can the supply side respond effectively to government policy, and address the needs of learners and employers?* Nuffield Review of 14–19 Education and Training, Working Paper 28. Available online at: http://www.nuffield14-19review.org.uk/files/documents52-1.pdf.

Fischer, M. & Rauner, F. (2002) The implications of work process knowledge for vocational education and training, in: N. Boreham, R. Samurçay & M. Fischer (Eds) *Work process knowledge* (London, Routledge), 160–170.

Fischer, M. (2002) Work experience as an element of work process knowledge, in: N. Boreham, R. Samurçay & M. Fischer (Eds) *Work process knowledge* (London, Routledge), 119–133.

Green, A. (1998) Core skills, key skills and general culture: in search of the common foundation in vocational education, *Evaluation and Research in Education*, 12(1), 23–43.

Greinert, W.-D. (2007) The German philosophy of vocational education, in: L. Clarke & C. Winch (Eds) *Vocational education: international approaches, developments and systems* (London, Routledge).

Grollmann, P., Spöttl, G. & Rauner, F. (Eds) (2006) *Europäisierung Beruflicher Bildung—eine Gestaltungsaufgabe* (Hamburg, Lit Verlag).

Grugulis, I., Warhurst, C. & Keep, E. (2004) What's happening to 'skill'? in: C. Warhurst, I. Grugulis & E. Keep (Eds) *The skills that matter* (Basingstoke, Palgrave Macmillan), 1–18.

Halfpap, K. (2000) Curriculumentwicklung im Rahmen der dualen Berufsausbildung in Deutschland, *European Journal of Vocational Training*, 21, 37–44.

Hanf, G. (2006) Der europäische Qualifikationsrahmen—Ziele, Gestalt, Verfahren, in: P. Grollmann, G. Spöttl & F. Rauner (Eds) *Europäisierung Beruflicher Bildung—eine Gestaltungsaufgabe* (Hamburg, Lit Verlag), 53–64.

Hanf, G. (2007) Under American influence? The making of modern German training in large Berlin enterprises at the beginning of the 20th century, in: L. Clarke & C. Winch (Eds) *Vocational education: international approaches, developments and systems* (London, Routledge).

Hayward, G., Hodgson, A., Johnson, J., Oancea, A., Pring, R., Spours, K., Wilde, S. & Wright, S. (2004) *The Nuffield review of 14–19 education and training: annual report 2003–4* (Oxford, University of Oxford, Department of Educational Studies).

Hayward, G., Hodgson, A., Johnson, J., Oancea, A., Pring, R., Spours, K., Wilde, S. & Wright, S. (2005) *The Nuffield review of 14–19 education and training: annual report 2004–5* (Oxford, University of Oxford, Department of Educational Studies).

Hayward, G., Hodgson, A., Johnson, J., Oancea, A., Pring, R., Spours, K., Wilde, S. & Wright, S. (2006) *The Nuffield review of 14–19 education and training: annual report 2005–6* (Oxford, University of Oxford, Department of Educational Studies).

Heidemann, W., Paul-Kohlhoff, A. & Felger, S. (2000) *Berufliche Kompetenzen und Qualifikationen—Ein Thema für Euro-Betriebsräte* (Düsseldorf, Hans Böckler Stiftung).

HM Treasury (2006) *The Leitch Review of skills: prosperity for all in the global economy—world class skills. Final Report* (Norwich, HMSO).

d'Iribarne, A. & d'Iribarne, P. (1999) The French education system as the expression of a political culture, *European Journal of Vocational Training*, 17, 25–37.

Keep, E. (2007) The multiple paradoxes of state power in the English education and training system, in: L. Clarke & C. Winch (Eds) *Vocational education: international approaches, developments and systems* (London, Routledge).

Kerschensteiner, G. (1925) Die geistige Arbeit als Bildungsverfahren, *Ausgewählte Pädagogische Texte* (Band 2) (Paderborn, Ferdinand Schöningh), 70–79.

Kerschensteiner, G. (1968) Produktive Arbeit und ihr Erziehungswert (1901), *Ausgewählte Pädagogische Texte* (Band 2) (Paderborn, Ferdinand Schöningh), 5–25.

King, D. (2000) Mechanical building services craft training in Great Britain: a comparison with France and Germany, *European Journal of Vocational Training*, 22, 15–23.

Lave, J. & Wenger, E. (1991) *Situated learning: legitimate peripheral participation* (Cambridge, Cambridge University Press).

Lutgens, G. & Mulder, M. (2002) Bridging the gap between theory and practice in Dutch vocational education, *European Journal of Vocational Training*, 25, 34–38.

Mulder, M. (2000) Competence development—some background thoughts, *The Journal of Agricultural Education and Extension*, 7(4), 147–159.

Mulder, R. & Sloane, P. (2004) *New approaches to vocational education in Europe* (Oxford, Symposium Books).

Münk, D. (2003) Einflüsse der Europäischen Union auf das Berufsbildungssystem in Deutschland, *European Journal of Vocational Training*, 30, 46–60.

Nonaka, I. & Takeuchi, H. (1995) *The knowledge-creating company: how Japanese companies create the dynamics of innovation* (New York, Oxford University Press).

Oakeshott, M. (1962) *Rationalism in politics* (London, Methuen).

Ott, B. (1999) Strukturmerkmale und Zielkategorien einer ganzheitlichen Berufsbildung, *European Journal of Vocational Training*, 17, 55–64.

Pring, R. (2007) 14–19 and lifelong learning, in: L. Clarke & C. Winch (Eds) *Vocational education: international approaches, developments and systems* (London, Routledge).

Rauner, F. (2004) Praktisches Wissen und berufliche Handlungskompetenz, *ITB Forschungsberichte* 14 (Bremen, University of Bremen).

Rauner, F. (2006) Berufliche Bildung—die europäische Perspektive, in: P. Grollmann, G. Spöttl & F. Rauner (Eds) *Europäisierung Beruflicher Bildung— eine Gestaltungsaufgabe* (Hamburg, Lit Verlag), 127–153.

Rauner, F. & Grollmann, P. (2006) Berufliche Kompetenz als Massgabe für einen europäischen Berufsbildungsraum—Anmerkungen zu einem europäischen Qualifikationsrahmen (EQF), in: P. Grollmann, G. Spöttl & F. Rauner (Eds) *Europäisierung Beruflicher Bildung—eine Gestaltungsaufgabe* (Hamburg, Lit Verlag), 115-26.

ReferNet (2005) *Netherlands—overview of the vocational education and training system* (Thessaloniki, Cedefop).

Reinisch, H. & Frommberger, D. (2004) Between school and company: features of the historical development of vocational education and training in the Netherlands and Germany in a comparative perspective, *European Journal of Vocational Training*, 32, 26–31.

Ryan, P., Gospel, H. & Lewis P. (2006) Educational and contractual attributes of the apprenticeship programmes of large employers in Britain, *Journal of Vocational Education and Training*, 58(3), 359–383.

Ryle, G. (1949) *The concept of mind* (London, Hutchinson).

Simons, R.-J. & Bolhuis, S. (2004) Constructivist learning theories and complex learning environments, in: R. Mulder & P. Sloane (Eds) *New approaches to vocational education in Europe* (Oxford, Symposium Books).

Sloane, P. (2004) The application transfer between schools and enterprises in the German Dual System, in: R. Mulder & P. Sloane (Eds) *New approaches to vocational education in Europe* (Oxford, Symposium Books).

Smith, A. (1976) *An enquiry into the nature and causes of the wealth of nations* (Oxford, Clarendon Press).

Steedman, H., Wagner, K. & Foreman, J. (2006) ICT skill supply in the UK and Germany, *European Journal of Vocational Training*, 37(1), 9–21.

Straka, G. A. (2001) Action-taking orientation of vocational education and training in Germany—a dynamic concept or rhetoric? in: L. F. M. Nieuwenhuis & W. Nijhof (Eds) *The dynamics of VET and HRD systems* (Enschede, Twente University Press), 89–99.

Straka, G. A. (2002) Empirical comparisons between the English National Vocational Qualifications and the educational and training goals of the German Dual System—an analysis of the banking

sector, in: F. Achtenhagen & P.-O. Thang (Eds) *Flexibility, transferability and mobility in VET* (Brussels, European Commission).

Warhurst, C., Grugulis, I. & Keep, E. (Eds) (2004) *The skills that matter* (Basingstoke, Palgrave Macmillan).

Weigel, T. & Mulder, M. (2006) *The concept of competence in the development of vocational education and training in selected EU member states*, Available online at: http://www.mmulder.nl/2006-09-23%20Article2_%Mulder_Weigel.pdf.

Wesselink, R., Mulder, M., van der Elsen, E. R. & Biemans, H. (2006) Developing competence-based VET in the Netherlands, paper given at *Annual Conference of the American Educational Research Association*, San Francisco.

Westerhuis, A. (2006) *Quick scan paper—the Netherlands* (unpublished).

Westerhuis, A. (2007) The role of the state in vocational education: a political analysis of the history of vocational education in the Netherlands, in: L. Clarke & C. Winch (Eds) *Vocational education: international approaches, developments and systems* (London, Routledge).

Winch, C. & Hyland, T. (2007) If you can understand it, you deserve an NVQ level 5 —the structure and funding of vocational education in England, *Guide to Vocational Education and Training (essential FE toolkit)* (London, Continuum Press).

Winterton, J., Delamare le Deist, F. & Stringfellow, E. (2005) *Typology of knowledge, skills and competences: clarification of the concept and prototype* (Thessaloniki, Cedefop).