Chapter 15
Competence Development and Workplace Learning: Enduring Challenges in the Interplay of Policy and Practice in the UK

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15.1 Introduction

Ideas about what constitutes a knowledge-based society are in flux. A conception of a knowledge society that combines the arguments for knowledge-based economies in Europe with wider notions of a learning society has been strongly related to the development of workforces equipped with high levels of competence (European Parliament 2006). The changing abilities required for contemporary working life present organisations and individuals with a number of challenges that, it is argued, can be met only through lifelong competence development. Developing competence has become crucial both for a sustainable working life (Evans et al. 2013) and for the organisational development of workplace environments. The latter has engaged UK researchers from a variety of traditions (e.g. Eraut 1994; Remedios and Boreham 2004; Evans et al. 2006; Fenwick 2006). European agendas since 2000 (European Commission 2000, 2001) have repeatedly emphasised the significance in modern societies of human capital, lifelong learning and work. In response, the driving force behind most member states' policies has been concerned with employability and adaptability to economic shifts and demands (Zarifis and Gravani 2014), where the competence development of individual workers is expected to play a crucial role. At the same time, there is a strong critique of this position, as Zarifis and Gravani (2014) show in comparing the actualities of lifelong learning with the intent of the EC Memoranda. In the present time, self-sustainability is increasingly emphasised, as a goal which extends beyond employability, and the discourses of innovation move beyond adaptability towards creativity, developmental competence (Ellström 2001) and the reshaping of work practices.

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The nature of competence and its various configurations, as well as the contexts where it could be developed and exercised, have become important areas of research. Because of its complexity and strong dependence on the context where it is applied, the concept of competence has been interpreted and conceptualised in a variety of ways (see Part I of this volume). The meanings given to competence in everyday life, in both vocational education and training settings and in academic settings, are quite different. What is more, the meaning is likely to change over time within each of these contexts. We will start by considering the idea of competence development as used in occupationally related education, training and assessment, outlining policy and practice tensions in the introduction and development of the competence frameworks adopted in the UK at national (systems) levels. This chapter will give particular attention to competence development in the workplace, which is strongly influenced by the quality of work-related environments and organisational dynamics. We will consider the ways in which competence development in the workplace is associated with a range of motivations at the individual level and also look at changing perceptions of the learning space at work. These factors are shaping the realities of the development of competence and the challenges for workplace learning in the United Kingdom, at the levels of policy and practice.

15.2 Competence-based Education and Training: The UK National Context

Approaches to competency-based education and training have to be understood not only in terms of the need to develop and update skills in changing work environments but also in terms of the impact of different conceptions of competence on learning (Velde 1999). The emergence of the 'competence movement' in British education and training in the 1980s and 1990s is significant for understanding both the modern concept of competence and the nature of the National Occupational Standards. It is also important for an understanding of the debate over the different versions of the concept of competence that are in play in Europe and the extent to which these might be converging. Early developments in defining standards in the UK focused on task analysis (not so much on competence). Standard tasks were replaced by competence objectives in 1986, with the 'Review of Vocational Qualifications' (MSC/DES 1986), when the NVQ criteria were first published and the term 'competence' was adopted (Stewart and Sambrook 1995). The review was a significant step, especially as it recommended a new qualification framework and development of standards. Further developments have led to the adoption of the version of competence that has become dominant in the qualification frameworks in use in all countries of the UK, in which competence has been defined as the ability to perform work activities to the standards required in employment (NCVQ 1989). The contrasts between this view of competence and the versions with a more generative view of people's capacities that are dominant in France, Germany,

Netherlands and Sweden have been extensively discussed by Brockmann et al. (2008) and Mulder et al (2007) (see also Chap. 17 of Le Deist, Chap. 16 of Weber and Achtenhagen and Chap. 25 of Wesselink et al., in this volume). The main features of competence frameworks introduced in Britain included tight prespecification and subsequent measurement of the intended consequences, or 'outcomes', of learning. 'Functional analysis', which became an underlying principle of the development of the standards, has been defined as (1) the process of deriving competencies for particular occupations (Bates 1995) and (2) a central feature of the methodology to implement government policy on NVQs in England (SVQs in Scotland) and for producing statements of national standards (Stewart and Sambrook 1995).

Britain embarked on a bold experiment with competence-based education and training, in setting up its framework of National Vocational Qualifications (NVQs). This experiment attracted much interest around the world. Ten years after a national review of vocational qualifications led to the establishment of the National Council for Vocational Qualifications (NCVQ) to coordinate them, there was mounting pressure for a fundamental reappraisal of the framework and its appropriateness for the changing world of work in the face of evidence that some fundamental changes of approach were needed (Beaumont Report 1995). The development of the British system can be analysed in four stages:

Stage 1: 1981–1986. The 'New Training Initiative' launched a three pronged approach to improve the quality and quantity of training in Britain. This involved guarantees of 1-year vocational preparation for all school leavers, new kinds of occupational standards and move away from time serving in vocational training, and wider access for adults to education and training for employment. Government schemes, particularly Youth Training Schemes, were used as test-beds for the development of these 'new kinds of standards'. As work-based funded programmes operating under government guidelines, these were regarded 'soft' areas in which new approaches could be piloted without the prospect of significant resistance or industrial relations issues arising. Standards trialled were based on work-based performance and 'standard tasks' derived from analysis of the key functions.

Stage 2: 1987–1990. The National Council for Vocational Qualifications was established with the purposes of rationalising the 'jungle' of vocational qualifications (which had proliferated under the entrepreneurial examining and validating bodies such as City and Guilds, BTEC, etc.) around these 'new standards'. A five-level framework was designed with the intention that individuals could progress to levels up to postgraduate equivalent by any mode of learning, including work-based learning m the workplace. Underlying this agenda was a set of values which privileged 'work-driven' over 'education-driven' approaches (Hayes 1983) sparking critiques that the government had embarked on an ideologically driven project that was intended to put employers in the driving seat and marginalise the education sector as providers.

In 1986 the government initiated the definition of national standards for employment and a system of national vocational qualifications by establishing the National Council for Vocational Qualifications. To be accredited as a National Vocational Qualifications (NVQ), a qualification had to be

> based on national standards required for performance in employment and take proper account of future needs with particular regard to technology, markets and employment patterns; based on assessment of the outcomes of learning, arrived at independently of any particular mode, duration or location of learning; awarded on the basis of valid and reliable assessments made in such a way as to ensure that performance to the national standard can be achieved at work; free from barriers which restrict access and progression and available to all those who are able to reach the required standard by whatever means; and free from overt or covert discriminatory practices with regard to gender, age, race or creed and designed to pay due regard to the special needs of individuals.

Stage 3: 1991–1994. The Framework of NVQs was extended to include GNVQs (General National Vocational Qualifications) to meet the demand for a more generic approach to vocational preparation which could be pursued in full-time education.

Stage 4: 1995–1998. Increased resources were given to the development and marketing NVQs, tied to meeting of national education and training targets. The latter were framed in terms of the proportion of the population to reach specified levels by certain ages and also the terms of lifetime learning targets. A massive programme of implementation was set up to achieve these targets as evidence mounted of some inherent weaknesses in the approach and of practical difficulties in its implementation. The issues arising can be considered under three headings: practical issues, conceptual issues, and quality assurance and accountability issues.

15.3 Challenges Arising in Early Years of NVQ Implementation in Britain

Practical issues associated with the implementation of the competence-based approaches in NVQ were access and participation, the ability of employers to deliver work-based assessments to standards, complexity and consistency and proliferation of awarding bodies. It was estimated by the NCVQ that 85 % of the workforce would have 'access' to National Vocational Qualifications in 1995, based on the number of occupational areas in which awards are available. It did not reflect the actual take up, which was initially very low. Many awards had been developed at high cost in areas in which there was little demand, many employers preferring to use existing and established training programmes instead. It was estimated that in 1995 two million people were 'working towards' National Vocational Qualifications, approximately 8 % of the workforce. The figure was misleading as the initial indication was that many of these were completing only units of programmes and were not expected to progress to the achievement of the full vocational qualification. On the

second challenge of the ability of employers to deliver work-based assessments to standards, the complexity of NVQs was a central issue for employers. Each 'area of competence' was broken down into numerous elements, which required assessment to workplace occupational standards defined by 'lead bodies'. Each was accompanied by 'performance criteria', 'range statements' and 'knowledge specifications'. Employers had to be committed to this process to accommodate NVQs, sustain them and meet the requirements for assessment. Obviously larger firms were in a better position to be able to do this than smaller firms. In the early years, up to half of firms with more than 500 employers were using National Vocational Qualifications in one form or another, although many of these were confined to particular occupational areas, and large employers were as vocal as others in their complaints about the burden of assessment involved. At that time fewer than 10 % of firms with less than 50 employees were using NVQs. The nonusers tended to be the companies which had historically low involvement in training, the very companies whose needs were meant to be addressed by the new national system. Small employers found they were unable to provide significant parts of programmes because they did not have the relevant areas of activity in which trainees need to be assessed, and it was often too burdensome for them to arrange such experiences. Complexity and consistency presented further challenges. The difficulties encountered by employers were compounded by the large amounts of paper work involved in the administration of NVQs.

Any approach which assesses performance of numerous disaggregated tasks requires numerous assessors and verifiers. Accompanying bureaucracy and 'form filling' become a major disincentive in the NVQ system. The language surrounding the operation of the scheme also becomes something of a barrier. Commonality of language and descriptors and the reduction of jobs into standard tasks and functions do not, in practice, achieve consistency of standards between providers in the way often claimed. The ways in which tasks are interpreted and implemented in different sectors and different types of organisation are widely variable. It quickly became apparent that tasks and standards were not going to be interpreted in the same way in the corner shop as they are in a major international store, nor in the privately owned local garage in the same way as in a multinational company. Moreover, multinationals were looking to international standards, and there was scepticism about whether the approaches of NVQs could deliver 'world-class' standards in their original form. The proliferation of awarding bodies added to the problems. While levels of awards had been simplified and the scheme made it possible, in theory, to equate any given award with a level within the framework, in fact the number of bodies which could award these NVQs multiplied. This combined with the lack of consistency of standards meant that the initial, central objective of this policy, namely, the simplification and establishment of common standards and easily understood qualifications, was far from being realised. The response of the National Council of Vocational Qualifications argued that, with more effective marketing to employers, the qualifications would be more readily understood and the barriers to their take up will be reduced. A decade after the introduction of NVQs, it was

recognised that the issues were of substance rather than of presentation and that they would not be resolved without a fundamental review of the framework and approach.

Turning to conceptual issues, those that generated most debate included the problem of equating competence with performance, the relationship between learning and performance, process and outcomes, assessment of knowledge and understanding and the place of core skills. More fundamentally, did approaches based on functional analysis of tasks prepare people for the jobs of the future or reflect the jobs of the past? And how could an approach based on task analysis be extended to higher-level NVQs in the professions?

The extent to which competence can be equated with performance was hotly debated among practitioners and professional bodies. This debate revealed the differences between the underlying traditions that have influenced the development of competence-based education since the middle of the last century: the behaviourist, the generic and the cognitive (Mulder et al. 2007). Each of these three traditions indicates a direction for considering the concept of competence from different perspectives and for different purposes. The *behaviourist* approach stresses the importance of observing successful and effective job performers and determining what differentiates them from their less successful counterparts. The *generic* approach is more concerned with identifying the common abilities that explain variations in performance. Finally, in its conceptualisation of competence, the *cognitive* approach draws on all the mental resources of individuals that are used to master tasks, acquire knowledge and achieve good performance. Although this categorisation does not provide a universal topology for the notion of competence, this framework is helpful as it brings our attention to the changing nature of the use and interpretation of the concept of competence. The approaches initially adopted by the National Vocational Qualification framework were behaviourist approaches which were based on functional analysis or the breaking down of jobs into functions and tasks. The behavioural approach is, by its nature, reductionist and becomes very elaborate. Disaggregating the elements of performance of a job into its parts makes the assumption that these can be reintegrated into a statement of competence in the performance of whole jobs and roles. Having started at the most 'simple' level, the elaboration and extensions of the NVQ approach to incorporate the features of roles and jobs at higher levels made a complicated framework even more complex and ran into much resistance. It could be argued that the appropriate starting place for the framework would have been a set of generic competencies – that is, broad clusters of abilities which are conceptually linked in some way and which are called upon in performance of roles and activities – which could encompass the whole rather than trying to build up the framework from the simplest level of performance of tasks in basic occupations.

The relationships between learning and performance also had to be reexamined in terms of process and outcomes. The NVQ framework is predicated on the notion that it is the outcomes of learning which determine the qualification, and these will be credited irrespective of the learning which has taken place: it does not matter how or where you learn it; if you can do it, then you should be credited with it. While there are benefits in recognising the outcomes of learning in a way which is not

dependent on a particular mode and duration of attendance, process and outcome in learning are intimately linked and cannot be divorced without some negative effects and consequences. There are links between any activity, the context in which it is undertaken and the skill or concept being learned. The argument for an entitlement for all learners to a certain quality of learning process proved powerful, when allied to evidence that quality of process is likely to be reflected in outcomes. For example, minimum training times cannot ensure that the trainee or learner requires depth of understanding and experience, not only of the specific tasks but also of the social environment and expectations of the roles. While time serving had many wasteful and inappropriate aspects, the apprentice did learn from the 'master' and from experienced workmates the expectations and relations of the workplace and pride in the work of the craft person. This came to be recognised in the development of the UK 'Modern Apprenticeship' which added to the basic NVQ occupational standards, a supporting, broader curriculum incorporating additional areas of knowledge and core skills as essential parts of the programme. The question of how knowledge and understanding were to be assessed was the next controversy. It was a feature of the initial NVQ framework that underpinning knowledge can be inferred from competent performance and should not be the subject of a separate assessment. This too was an impediment to the acceptance of NVQs at the level of professional qualifications and higher education, where the knowledge base is extremely important (Hodkinson and Issit 1995). Employer bodies and providers also recorded concerns that the approaches are not effective in developing or verifying the existence of an integrated understanding of underlying principles. Any programme which does not develop understanding of underlying principles runs into two problems. First of all the qualifications are not future oriented. An inadequate knowledge of underlying principles limits capacities to respond to unpredictable situations. A parallel problem is that of safety, one uppermost in the minds of professions such as electrical engineers, which were vocal in presenting their concerns about NVQs in the 1990s. A worker faced with an unusual situation or set of circumstances needs to be able to make decisions as to how to operate with reference to underlying principles. There is a real danger that approaches which seek to infer the understanding of principles by assessment of the performance of disaggregated tasks will miss the point. The challenges of gaining acceptance for NVQs within the frameworks of vocationally oriented higher education multiplied in the light of these considerations.

Vocationally oriented higher education was responding in its own ways to the changing work contexts, with flexible forms of provision and partnerships with professional bodies. Resistance among the educational community to perceived narrowness and ideological intent in the rapid adoption of an untried system was matched by deep expressions of concern from business leaders. The Times 'Higher', on 17 October, 1995, reported continuing 'severe criticism from the business community' (Times Higher 1995). Dominic Cadbury, chairman of the Confederation of British Industry's Education Committee, said that 'the NVQ remains too costly, too bureaucratic and too much geared to larger employers who have the resources to turn it to their advantage'. A report by the Employment Policy Institute (1995), in the same week, showed again that employers did not want people with narrowly

based vocational qualifications, but were better served by improved general education of the workforce than by a proliferation of narrow vocational qualifications.

A broadening of understanding about what counts as competence and the significance of the quality and depth of learning in achieving it was necessary before these competence-based approaches could be accepted at higher education and professional levels or for safe practice in lower and intermediate skills. Broader classifications of competencies developed which essentially comprised distinctions in the scope or level of aggregation of descriptions of competence (Oates 2004). Oates, a prominent representative of the professional and assessment and validation communities, explained how competence emerges as an inferred quality of a set of capacities which allow complex decision-making and action in diverse settings. The development of these capacities takes time, immersion in rich learning environments, guided reflection and a complex interaction of theory and practice – both in meeting occupational standards and maintaining effective work performance.

By the 2000s learning outcomes were being widely adopted in higher education, following the Dearing Review on Higher Education (1997), to cover the outcomes of educational programmes together with developments in the Accreditation of Prior Experiential Learning (APEL) to cover assessment of informally developed knowledge and abilities. These developments were relevant for both academic and vocational programmes, and a learning outcome approach enabled broader competence-based approaches to be accepted into many higher-level educational courses, with the validation of outcomes subject to quality assurance regimes that were to ensure that depth and quality of learning experiences substantially contribute to the defined intended learning outcomes, which had themselves to become more broadly drawn. In employer-based training using NVQs, some of the concerns about narrowness were met through the broadening of competence-based assessments to include substantial elements of underpinning and related knowledge. There were renewed calls for improvements in the quality of environments for learning at work to support these developments (see Unwin and Fuller 2003; Evans et al. 2006). More generally, positive longer-term consequences of these developments and the debates they generated were also apparent. Learning and competencies acquired outside formal education had been brought to wider attention and given credibility by the development of NVQs that define and describe vocational competence, which is assessed by outcome. Where the time, place and context in which the competence has been gained is held to be irrelevant to the assessment of the competence, gaining credit for past learning and achievements becomes a real possibility.

Strengthened by a development process that both broadened and deepened NVQs since 2000, the central principles underlying UK approaches to competence development have endured. The principles (a) that the means and outcomes of learning can be separated and (b) many learning outcomes can be achieved through workplace and informal learning and can be validated for accreditation purposes are embedded in the Qualifications and Credit Framework (QCF). The European Qualifications Framework, which describes competence in terms of responsibility and autonomy (European Commission 2008), emphasising proven knowledge and abilities in work or study situations, is often described as a translation device,

allowing equivalences between national qualifications to be explored. Yet it is important to keep in mind that this exploration is critically dependent upon the different interpretations of the concepts of competence and qualification that are dominant in different countries, as the breadth of the OECD discussion (Ananiadou and Claro 2009) has shown.

15.4 Workplace Learning and Competence Development

The UK policy agendas of the past 20 years have reasserted the central role of workplace learning for workforce competence development. *The Learning Age* (DfEE 1998) *Skill Strategy* (DfES 2003), successive reviews of skills policies (DBIS 2010) and, in Scotland, *Life Through Learning; Learning Through Life: Scotland's new lifelong learning strategy* (The Scottish Executive 2003) are just a few examples of the increasing prominence given to both adult learning and the workplace as an important site of learning at the start of the twenty-first century. The significance of the link between education and training provision and employers' demands for skills was repeatedly emphasised (Unwin and Fuller 2003: 2), with calls for greater attention to boosting the 'demand' side in the supply and demand for skills and knowledge at work. More recently, the Commission on Adult Vocational Teaching and Learning (2013) initiated a fundamental debate in England as to what we value and hold in high esteem in the world of work at a time of harsh economic conditions, specifically emphasising the need to create a consistently strong system of vocational teaching and learning. The perception of the workplace as a site only for work and organisation-specific training is gradually changing, as workplaces are recognised as sites for learning in various configurations, contributing to lifelong learning, personal development and social engagement of individuals (Evans 2009). Competencies that employees develop and exercise as a result of engaging in a range of work-related activities, both formal and informal, are integral to workplace learning. The recognition of these competencies through competence-based programmes and qualifications has been shaped through processes of policy formulation and contestation and the policy-practice interplay. Illeris (2011) has observed this tendency internationally, in the gradual transformation of the role, use and perception of the notion of competence and in the way it has been used to contribute to better understanding of educational contexts, working lives and individual achievements.

Such competencies in the UK continue to be validated and assessed in the workplace environment on the basis of clearly defined criteria of success, on the basis of National Occupational Standards, set by the appropriate Sector Skills Council or sector body. In this context, competence has been described as the behaviour, knowledge and values expected of workers to fulfil a specific role competently. Further debate on work-related competencies highlighted the significance of the personal competencies and abilities that people can use in a variety of settings, including workplace settings (Evans et al. 2006; Eraut 2004). The idea of transferable

competencies sparked much development and debate as UK formulations of core skills, basic skills and generic skills started to proliferate in the 1980s and 1990s (Evans and Brown 1986; Oates 2004) and were held to be of crucial importance for young people entering the contemporary workforce. Employees at all levels are now expected not only to be able to exercise occupationally specific competencies in their job roles but also to possess a range of skills and attributes that are relevant for effective working in different contexts and settings. At the same time, traditional definitions and explanations of professional competence or expertise that have been based on theories of technical rationality, on the basis that learning can be applied in predictable ways, have given way to explanations of professional expertise which emphasise the importance of future-oriented capabilities (Eraut 2007) and the exercise of judgement (Beckett and Hager 2002).

The redefinition of the term 'competence' offered by Eraut and Hirsh (2007) emphasised the important links between individuals' capabilities and their competencies. All their competencies will be, as Eraut and Hirsh (2007) explain, within their capability, but not all their capability will be needed for any specific job. Therefore, individuals will have *additional capability*, which may have a tacit dimension. Such additional capabilities may be helpful both in enhancing one's competencies through further learning and also, according to Eraut and Hirsh (2007), in facilitating the process of transferability of competencies between various contexts and settings.

The discussion on understanding work-related skills required by new workspaces has underlined the importance of gaining a better understanding of how knowledge and competencies are used and developed as people move between different contexts and settings, including both workplace and other life and work contexts in which significant learning takes place. As Boud and Garrick (1999:1) have observed, employees develop skills of expression and communication which spill over into their personal lives. They also learn new ways of collaboration and planning which they can bring to their roles in their families and communities.

While the metaphor of 'transfer' has been dominant in recent times, the current debate has extensively problematised this notion (see Hager and Hodkinson 2009) which often pays insufficient attention to the learning processes involved in recontextualising skills and knowledge in order to 'put them to work' in new and changing contexts (Evans et al. 2010, 2011). In this context, the role played by tacit skills (Evans et al. 2004) and by self-management (Bound et al. 2014b) has been fundamentally linked with capabilities to use skills and competencies in a range of settings and spaces.

As Felstead and Jewson (2012) point out, a common set of skills characterises those who successfully adapt to a range of new working spaces. These include, for example, motivation, self-discipline and the ability to establish and maintain boundaries with others to achieve targets without immediate supervision. Acquisition of such skills, as Felstead and Jewson (2012:155) point out, represents a major contribution to the underlying learning dispositions of employees, as new spaces of work demand new models of self-governance. Examples from the field of nursing are provided by Allan et al.'s (2015) research into the capabilities required of newly

qualified nurses as they are held accountable for the delegation of care to healthcare assistants. By contrast, in the cultural and creative industries, free lancers are shown to be engaged in the reproduction of the self as an economic resource, relying on capabilities such as the ability to read situations quickly and on effective use of networks (Bound et al. 2014a).

The interplay between competence development and workplace learning is also strongly reflected in public policy-driven attempts to enhance employees' literacy, numeracy and information technology (IT) competencies. The context of the contemporary workplace presupposes that employees have satisfactory levels of English and Math skills, as one of the crucial requirements for engaging in a wide range of work-related tasks and activities. The public policy agenda which resulted in the setting up of 'Skills for Life' courses (DfEE 1999) as well as other types of formal and informal provisions across all sectors of the economy and public sectors in England now emphasises the functional skills of English and Mathematics as most recently represented in *Rigour and Responsiveness in Skills* (DBIS 2013).

Research undertaken across different occupational sectors in a range of UK workplaces (including, e.g. care homes, Fire and Rescue Service, ship building) has indicated ways in which employees are expected to use their literacy and numeracy skills more intensively now than in the past, within many occupations, including job roles that are traditionally considered to be low skilled and low paid (Kersh et al. 2012; Waite et al. 2014. For example, in the employment setting of a care home, care workers commented that they are required to have the competence of being able to complete daily forms that relate to various aspects of the daily routine of those in their care. The significance of language that they need to use while filling in these forms has been emphasised: it needs to be clear, concise and professional. Employees of the Fire and Rescue Service (firefighters) have described the competencies required for their job roles as a combination of occupationally specific, personal and basic skills, with both literacy and numeracy playing a significant role. The ability to undertake calculations while performing their immediate duties, often under pressure (e.g. exact timing of rescue operations), is regarded as a prerequisite of their professional competence, as well as producing detailed and comprehensive written accounts of rescue operations. Such requirements present a challenge for some employees, and various forms of work-based provision and courses are expected to play a crucial role in addressing this challenge.

However, research has indicated that the government-initiated schemes, such as Skills for Life provision, have encountered range of problems resulting from tensions between policies and practice. Waite et al. (2014), for example, note that the pressure of adapting courses to shift patterns, diverging priorities of providers, training managers and line managers, changes to companies and the impact of the economic downturn has presented major barriers to sustainable provision. What is more, government declarations of a 'skills crisis' based on assumptions about the existence of large-scale deficiencies in literacy and numeracy skills among lower-level employees have taken insufficient recognition of the variation of literacy practices among lower-level employees in differing organisational contexts as well as the complex constitution of employees' skills and competencies (Waite et al. 2014).

This body of research (e.g. Evans et al. 2011) has indicated that the workplace programmes designed to develop literacy, numeracy and IT competencies have often been associated with a wider range of personal and professional outcomes for the employees than were envisaged by the organisations who entered the publicly funded programme. Enhancing basic skills through workplace learning can encourage employees to develop their competencies (personal or professional) further, as Taylor and Evans (2009) have shown.

While much attention has been paid to ways in which adults can be supported to develop their competencies through workplace activity, less attention has been given, until recently, to the pedagogic strategies that promote competence development through the interplay of college-based and workplace learning, including the pedagogic strategies that can effectively bring together subject-based and work-based knowledge in programmes at the higher vocational levels. Gradual release is one such strategy, identified in Evans et al. (2009) research into 'Putting Knowledge to Work', exploring processes of knowledge recontextualisation in competence development. The principle of 'gradual release' involves recognising different forms of knowledge that are constitutive of competence and sequencing the knowledge elements of learning programmes in ways that support learners in moving between learning, practice and workplace environments via the gradual, iterative release of responsibility from educator, trainer and supervisor to learner. The exercise of responsibility by individuals and in teams is strongly influenced by attitudes, motivations and dispositions to act in particular ways in response to opportunities or difficulties that arise in day-to-day work (Garrison 1997), as well as workplace environments and cultures. Accordingly, particular contexts, work settings and productive systems may either facilitate or undermine employees' competence development within the workplace.

15.5 The Role of Motivation in Adult Learning and Competence Development

A significant body of research literature (see Malloch et al. 2011) draws attention to the role of the workplace context and its distinctive relationships with individual motivations, experiences and outcomes. Workplace affordances and the extent to which employees are motivated to engage in learning opportunities that are available to them facilitate knowledge sharing and competence development at work. What employees learn as participants in the workplace is related to their dispositions, motivations, attitudes and to what they perceive as being in their interests as workers, translating into a great variety of responses to workplace affordances for learning, which themselves range from learning-rich to learning-poor, expansive to restrictive (Fuller and Unwin 2004). A number of studies have approached the competence development through the avenue of understanding what motivates adults to develop their competencies in and through the workplace (Evans et al 2006;

Edwards et al. 2006). Indeed, some psychological studies have equated competence with performance motivation (after White 1959) (see for a summary of his work Mulder 2014) and have therefore construed motivation as integral to competence. Previous research has identified a range of motivational factors that may stimulate learners towards engaging in workplace learning. Factors such as personalities and backgrounds, previous educational and life experiences, age, gender and attitudes to learning have been considered as enablers or barriers for competence development. Motivational dispositions have been held to be integral to self-management in learning (Garrison 1997) and need to feel competent as integral to intrinsic motivation (Ryan and Deci 2000). Carré (2013) has identified eight heuristics that take into account the major roles of motivation, self-regulation and capabilities as three conditions for adult learning, looking for learning interfaces between learners' dispositions and environmental resources as a key to efficient, learner-oriented instructional design.

The emergence of workspaces where the boundaries between work and learning are considerably blurred is exerting new influences on employees' motivations and the processes of competence development. Research (e.g. Brooks et al. 2012) suggests that the perception of the workplace space plays a significant role in facilitating or undermining employees' opportunities for competence development as well as their motivations towards the acquisition of a range of skills and their engagement in the social practices of work. Different types of learning space may play a significant part in enhancing the learning processes and aspirations of new entrants and experienced adults, as well as developing confidence in the workplace. The learning space at work can be perceived as a combination or overlap of a range of components, such as physical space, learning contexts and environments, formal/informal learning and virtual learning.

To take an example, in innovative aircraft maintenance engineering degree programmes, the hangar experience allows the students to extend their skills through participation in a range of activities. Some activities are more formalised than others. On the informal side, supervisors reported extending 'invitational' opportunities to the students (Billett 2006). One supervisor gave an example of how he simply gave time to students and took an interest in them as future engineers: 'If I see them in the hangar I talk to them, ask them who they're with, how they're getting on – these are our people of the future'. Another supervisor recalled how he creates opportunities to 'get students involved' in whatever he is doing: 'if I'm doing some plating or working on nose-loading gear then I get them involved'. He also emphasised involving them in the thinking behind the activities, as in 'It's about jointly assessing the job, planning it, what tools needed etc and getting on with it'. In these ways, everyday working practices are turned into learning opportunities for competence development.

The expansion of new technologies, such as the Internet, email, mobile phones, etc., has an impact on competence development in the new types of learning spaces. Research in UK companies (Kersh et al. 2012) has explored the challenges of so-called virtual environments (e.g. via electronic resources), where employees' digital competence becomes of utmost significance. While learning at work, employees are

increasingly expected to acquire and employ digital competence. There is a growing tendency for online 'paperwork' and administration, where employees need to be computer literate. Employees were strongly motivated towards digital skill development if they felt that their newly acquired IT skills could be applied immediately within their workplace settings. In the Fire and Rescue Service, for example, firefighters acknowledged that being digitally literate enables them to perform their jobs better, while they use various types of electronic record/note-taking devices (e.g. via mobile phone or tablet). Engaging in different types of virtual learning has motivated them towards further learning and competence development. In a large hotel and restaurant group, collaboration with a provider of technology-enabled learning services has led to the creation of virtual learning opportunities through an Elbox device, a touchscreen tablet PC, which enables anywhere, anytime access to learning for employees. The concept of virtual learning that has been associated with the expansion of digital technologies broadens the notion of the learning space and contributes to erasing the borders between different types of learning site and enabling the interplay of instruction and experience that is necessary for competence development.

15.6 Conclusions

Competence development in the workplace is a complex process that is strongly influenced by the interplay between nationally recognised regulatory frameworks, workplace environments and the attitudes, dispositions and motivations of workers. While supporting structures for VET are provided through formal educational institutions, regulatory frameworks that govern employment, business systems and licences to practice in particular occupational fields influence the organisations in which people work, contributing to an environment for learning that can be rich, poor or uneven in quality. Work systems in different countries are characterised by contrasting ways of structuring tasks and jobs and of controlling how work is allocated, performed and rewarded. Employment relationships are also linked to the nature of firms, interest groups and dominant governance principles or "rules of the game" in different societies, which in turn stem from different patterns of industrialization. Whitley's (2000) argument that the radical transformation of any prevalent system in any society will be limited by the extent to which work system characteristics are integrated with the institutional arrangements which are themselves rooted in different patterns of industrialisation is borne out by an examination of the introduction of, and resistances to, competence-based and credit transfer systems for education and training in different national contexts. In the UK, where the NVQ system was initially directly targeted at workplace learning and the participation of employers is voluntary, the effects upon learning environments and learning outcomes have depended largely upon local circumstances, and the extent to

managers, trainers and trade-union representatives perceives the need to work together to enhance workplace learning (Rainbird 1990). Outcomes have also depended on the corporate strategy and the organisational terrain it provides for employee development and on whether the NVQs have been used as 'containers' or 'enablers' of competence development for workers (Evans and Germon 1993).

Competence development programmes implemented in the workplace are likely to be more effective when learning is seen as an integral part of practice rather than a bolt-on activity. This potential strength of UK approaches to competence-based learning, which approached competence from the starting point of workplace activities, was undermined somewhat by the focus on the assessment of specific work tasks rather than whole work processes. These limitations were widely discussed in the literature for more than a decade and were partially resolved in the move to learning outcomes. Some of the enduring challenges lie in the uneven quality of the environments for learning, resistance to regulatory regimes for workplace learning and the lack of emphasis on effective, contextualised pedagogic strategies for fostering learning in and through work. Although there are some very high-profile examples of excellence, there are too few of these and too many incidences of poor practices. The former are overreported, the latter often invisible. This is a long-standing problem. As long ago as 1997, Attwell observed that the ways forward lie in identification of new learning strategies and learning environments which can develop competence in a holistic manner and which provide for multidimensional qualification. These are newly emphasised in the search for fresh ways of thinking about the ways in which the different forms of knowledge that are embodied and enacted in competence are put to work. Promoting the interplay of 'formal' and 'informal' learning has become crucially important in the search for ways of developing holistic competence as part of knowledgeable practice, raising the further challenges of making NVQs enablers for the long-term development of expertise.

Goran and Svensson (2012), in an analysis of why many large-scale publicly funded European programmes of competence development prove unsustainable, have made a compelling case for projects for competence development to be embedded in the dynamics of real workplaces, with all their uncertainties, risks and creative potential. Active ownership of the learning processes is an essential ingredient if innovation is to be energised and development sustained. The importance of a broad strategic terrain at organisational level (Waite et al. 2014) has also been demonstrated. In the particular field of use of technology in learning, we know that effective learning is more likely to take place in enterprises

> where employees have greatest freedom in the organisation of their work, where employees have the greatest opportunities for proposing and implementing changes in the way work was organised, where the nature of technologies being used is changing fastest, where ICT is most involved in the work process, where employees have most responsibility for the outcomes of their work and where team work is most important (Attwell 1997).

This collective dimension in competence development, so often neglected, is central to organisational dynamics. The perspective of social ecology provides a way into understanding the complexities of factors that impact on learning and competence

development in the workplace, through the interplay of actors, structures, processes and environments. This interplay is not restricted to the workplace but involves the overlap of learning spaces and other contexts that extend way beyond the workplace. This social ecological lens does not provide instant solutions but does keep in view the factors that can confound even the most well-intentioned introduction of competence-based education and training programmes when they meet workplace realities. It also, most importantly, by highlighting the interdependencies – what or whom is depending upon what, in particular situations – shows the flows of influence and spaces for action that employees and their representative bodies, training practitioners and managers can use to realise more fully the benefits of competence development at work.

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