Transforming Professional Practice: Work related Knowledge and the Education of Vocational Teachers and Trainers

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Introduction

In the summer of 1996 a dispute broke out in Bremen in north Germany over state attempts to reduce the number of teachers in schools. Following a series of protests by parents and staff students went out on strike and took to the streets. However the popular slogan for the demonstration was not against cutbacks in staffing or resources but was about the teachers – "We want younger teachers". The students were expressing their frustrations over both the pedagogic approaches employed in the Bremen schools and over the relevance of the curriculum (their assumption that younger teachers would resolve these questions is another matter). Studies of students' attitudes to both general education and vocational education and training show a similar disillusion with the quality and nature of provision. Of course this evidence cannot on its own be put forward as the basis for a reform of our system for educating teachers and trainers. But is should raise some concern – especially given when taken alongside surveys of non attainment and high rates of drop outs from vocational programmes in many European Member States. Further anecdotal evidence is provided by repeated surveys of employers who complain that VET programmes are 'irrelevant' to the needs of work or are 'out of date' for the requirements of modern industry.

The EUROPROF project, a fourteen-nation study funded by the European Leonardo programme, took a different starting point, but came up with similar conclusions to the Bremen students. The project was based on a hypothesis that vocational education and training was central to future economic competitiveness and that there was a need to develop VET as a recognised profession or discipline in its own right. The professionalisation of VET professionals was a key step along this road. The project started out by looking at the future role of teachers and trainers – VET professionals – in the different Member States, given the fast changing technologies and economies. A particular concern was the economic importance of innovation and the role of VET in developing shaping skills for the workforce. A qualitative survey, based on a series of interviews with social actors, was undertaken of present provision for the education of VET professionals in the participating countries and of the problems and deficits in such provision. Despite the common economic and social pressures facing the different VET systems, structures and agencies the survey revealed a pattern of fragmentation of provision with contradictory trends of convergence and divergence. Rather than attempt to compare the different roles and curricula the project sought to collaborate in developing new programmes based on a number of common 'cross cutting themes' or 'cornerstones'. One of these was a mutual recognition of the importance of work process or work related knowledge in the education of VET professionals.

Work-related Knowledge

Work related knowledge was viewed as central cornerstone in four regards. Firstly it provided a basis for the development of new curricula and new teaching and learning methods in in vocational education and training – in overcoming the problems in the development of relevant and modern curricula referred to above. Secondly work related knowledge was seen as the key link between the development and applications of traditional skills and the new demands of an information orientated economy. Thirdly work related knowledge was seen as critical to the knowledge creation and development and thus to dynamic and innovative work organisations. Finally work related knowledge also is critical to overcoming the dichotomies in the present education and practice of VET professionals between organisational development and HRD and vocational education and training, a split which itself reflects the division between theoretical knowledge and occupational expertise.

In this respect the cognitive side of occupational competence is key to the development of context-related expertise: with work-related knowledge providing the link between knowledge, which is not context related, and experience at work, which may not necessarily be used in a generalisable way. This implies both the need for active reflection upon experience and a shift from information to knowledge: expertise cannot be developed through simple although extended information acquisitions, but only through continuous and subtle cognitive experiences related to putting knowledge into action, co-developing personal and professional knowledge, and integrating individual knowledge into the larger dimensions of knowledge held by groups and whole organisations.

In terms of VET innovation the `enjeux' are very relevant: a shift of emphasis is required from training to learning and from the mere transmission of knowledge through training interventions to the facilitation of learning (i.e. the creation, use and circulation of knowledge), through more complex interventions in which training is mixed with other human resources development (HRD) practices. In particular, it seems as if VET has to ensure that individuals are able to contribute to the processes of knowledge development within organisations

The focus upon particular kinds of knowledge development has been identified as a key factor in innovations designed to increase the supply of creative knowledge value: "what is important for the production of knowledge value is not so much facilities or equipment in the material sense, but the knowledge, experience, and sensitivity to be found among those engaged in its creation" (Sakaiya, 1991, p270). This way, knowledge is assumed as the real driving force of our era, but also strictly linked with day-to-day problem-solving and problem-setting in working situations, and more generally with the professional competencies and expertise.

Such concerns have led us to re-examine our approach to the education of VET professionals and to the issue of the professionalisation of VET. In particular we have sought to develop a research-related 'working agenda' for supporting the continuing professional development of VET professionals. Research is seen as providing a basis for the continual development of work related knowledge and occupational expertise and thus to overcoming the division of labour between teachers, trainers, designers and developers and training managers. Such an integrative and holistic approach can lay the groundwork for the development and recognition of a community of practice of VET professionals which is essential to the professionalisation of VET itself.

Models for Continuing Professional Development

Our analysis of the challenges facing vocational education and training in Europe and our survey of good practices in the different Member States have impressed on us the need to develop models for continuing professional development which can bring together initial and continuing education and training and provide a common basis for the development of effective learning programmes and for systems development. The model should be based on the development of new knowledge through the application of expertise. Such a model needs to be robust at the level of pedagogy and design whilst providing the flexibility for its implementation in different cultural and social settings. The model we present here has been developed in the context of a Leonardo da Vinci project for the education of vocational teachers and trainers (EUROPROF) (Brown, 1997; Attwell, 1997). Whilst models of professional development have been more traditionally associated with white collar professionals rather than occupations we believe such a model to be appropriate for the development of expertise throughout the occupational spectrum. As such we believe there is a need for a major research focus on the piloting and evaluation of the model as a contribution to the future development of skills and knowledge in Europe.

The Continuing Professional Development (CPD) of professionals needs to be reflective, forward-looking and dynamic. It needs to equip professionals with the ability to support the development of skills, knowledge and understanding of others as well as of themselves, in a commitment to lifelong learning, as well as seeking to accommodate requirements for complexity and flexibility. The size of the task is daunting, and is only achievable with a commitment to continuing professional development within a culture which acknowledges the importance of developing practice, expertise and a research capability in an inter-related way (Brown, 1997a), so as to be able to support the generation of new forms of knowledge (Engeström, 1995).

Communities of Practice

The Continuing Professional Development of professional communities of practice needs to incorporate current concerns, but also have the ability to look beyond these, and this is possible only if, as Ellström (1997) argues, practitioners develop a broad developmental and interactive view of occupational competence. This would complement a focus upon the significance of work-related knowledge and work process knowledge in the Continuing Professional Development of professional communities of practice (Attwell et al, 1997).

Developing practice

Initial competence as a professional is often associated with the ability to 'survive' and gradually assume a full position within particular 'communities of practice' (Lave, 1991). However, practitioners need to have a continuing commitment to explore, reflect upon and improve their professional practice (Schön, 1983; 1987). This in turn means that practitioners have to develop the understanding, skills and knowledge necessary to evaluate and review their professional practice, recognising that such practice often takes place in complex and dynamic contexts.

Indeed practitioners increasingly have to be able to manage continuing change in aspects of their practice and in the contexts within which their practice takes place, as well as coping

with the complexities inherent in the teaching and learning processes of their CPD. This adds further impetus to moves whereby the competent professional is seen as a 'reflective practitioner,' able to respond to professionally problematic contexts through reflection and 'reflection in action' (Schön, 1987). That is, the essence of competent practice is that the practitioner is able to respond intelligently in situations which are sufficiently novel that the response has to be generated in situ (Elliott, 1990).

It is important that Continuing Professional Development does address the idea of supporting the development of practice, and the concept of work-based learning has been used as a key component of continuing professional development, although this sometimes relies heavily on individualistic processes of reflection (Winter and Maisch, 1996). Additionally, Eraut (1994) raises the question of whether successful workplace practice can necessarily be equated with a capacity to understand the ideas and concepts that inform such actions. It is therefore clear that ideally work-based learning needs to have a strong collaborative dimension and should seek to ensure that significant intellectual development also takes place. The whole approach of communities of practice therefore has much to recommend it, not least because of the way it stresses the collaborative dimension to learning (Lave and Wenger, 1991). One way of raising the intellectual demands associated with work-based learning is to make use of problem-based learning where the focus is upon core problems of groups of practitioners (Onstenk, 1997), acknowledging the contribution theoretical concepts can make to assist individuals to understand what they are doing and why work practices are subject to change (Engeström, 1995).

Developing expertise

The initial key to going beyond competent practice lies in the ability to transfer skills, knowledge and understanding from one context to another (Eraut, 1994), so Continuing Professional Development has to be able to support this process, including through helping practitioners to perform effectively when they work with colleagues and in groups with different kinds of expertise (Engeström, 1995). Young and Guile (1997) argue that increasingly professionals need to possess a connective, rather than an insular, form of specialisation, which stresses the ability to look beyond traditional professional boundaries.

Another aspect of developing expertise lies in the ability of the professional to handle the complexity and inter-relatedness of issues. This has at least three dimensions. One is the form of the representation of knowledge structures into mental models (Soden, 1993) or networks (Simons, 1990), which are capable of handling the increasing complexity and inter-relatedness of issues. The second dimension relates to the way an individual is able to hold and inter-relate ideas from different spheres (practice, research and theory) to get a fuller, deeper contextualised understanding of professional issues, which affect policy and practice. The third dimension then revolves around the capability to apply that contextualised understanding to particular situations and, if appropriate, to translate that understanding into action.

There is clearly not a precise moment when one can identify a shift from 'competent practitioner' to 'expert', not least because it requires a degree of self-acknowledgement as well as recognition by others (Brown, 1997b). Expertise rather lies at the conjunction of research, theory and practice, such that the practitioner can be considered 'reflective', not only upon action, but also upon 'reflection in action' (Schön, 1987). This means that an individual will be able to engage in processes of analysis and critical reflection, such that he or she is able to build understandings, interpretations and explanations to 'test' these against other

research and theory as well as against practice. [A further test might be whether the individual can communicate her or his understanding in such a way as to convince others.] In such an interpretation the ability to be able to create new knowledge is significant (Engeström, 1995), and therefore in order to develop expertise it is important for practitioners to develop their research skills and be able to apply them to their professional practice. In an important sense then expertise is itself partly generated through research.

It should also be noted that understanding and, if appropriate, application of theory has a role to play within developing expertise. While the value of practical theory or 'theorising' in the sense of reflecting upon his or her own practice is central to the process of becoming an experienced professional (Schön, 1987), this on its own is insufficient. Rather because it is locked into current modes of practice, it is important that 'theoretical learning' is also developed (Guile and Young, 1996). Theoretical learning provides the concepts for analysing the problems that arise for professionals at work and for making explicit the assumptions underlying existing practice (Guile and Young, 1996). This conceptual knowledge can then be used to underpin reflection upon practice at a deeper level than just 'theorising' practice. Such conceptual knowledge can have both explanatory power and be applied to (changes in) practice. It therefore complements the development of practical learning, based upon reflection on practice. Crucially, however, the development and application of theoretical learning also facilitates a forward-looking perspective: enabling thinking about how practice might be developed in future.

Developing a research capability

Teaching and nursing are recent examples of professions where there have been explicit attempts to move more towards making these research-based professions, where practice is not only informed by research, but new knowledge about practice is capable of being generated by the professionals themselves. Whilst these may be regarded as 'professions' and not 'occupations' Fischer (1996) has developed an expert system for the continuing professional development of maintenance engineers which similarly utilises the development of new knowledge through applied research. This entails explicit recognition that practitioners have a key role to play in how new knowledge is generated and applied in practice (Engeström, 1995). Further this could be linked with an attempt to create wider communities of practice that embrace research as a guide to both policy and action (Brown, 1997a).

The ability to design and carry out authoritative research into aspects of professional practice individually or as part of a team is an integral part of practitioners developing a research capability. However, possession of research skills will also be valuable in helping professionals analyse, interpret, evaluate and, if appropriate, apply the research findings of others. The possession of a research capability could therefore be used as a tool to create new forms of knowledge and to help in the transformation of existing communities of practice.

Effective work-based learning

In previous sections we have examined the new types of knowledge and knowledge generation which, we believe, will be required for work and society in the 21st century. We have gone on to outline a model for continuing professional development, on which new programmes of learning can be based. However, such programmes can take place in a variety of contexts, so it is worth examining what type and combinations of learning contexts contribute to making work-based

learning effective. One key decision will be the location of and balance between development of more specialised expertise and broader vocationally oriented knowledge. The diversity both of employers and of facilities of off-the-job learning providers make it unwise to lay down any general rule, as, for example, Frietman (1990) shows that either simulation or authentic learning can be effective, and which is more appropriate depends on a variety of circumstances.

Nieuwenhuis (1991) goes further to argue that there is not a single `best' context, because effective training can make use of a **variety** of contexts. Rather it may be more appropriate to audit the learning opportunities available and the advantages and disadvantages associated with particular combinations of education, training, employment and community contexts. Knasel and Meed (1994) argue along similar lines that guidance should be given to practitioners which allows them "to make informed decisions about the relative strengths and limitations of off-the-job, near-the-job and on-the-job experiences in relation to specific areas of learning and aspects of the learning process" (p iii). It is also important to monitor what happens in practice, as "work-based learning has the capacity to deliver an exceptionally challenging and rewarding learning environment. However, it can also produce sterility, where challenges are few and a series of mundane experiences lead to little learning" (Brown, 1992, p 134).

Onstenk (1994) points to the need for workplaces to offer 'strong learning environments', where it is possible for learners to apply their developing skills, knowledge and understanding in different contexts. There are some obvious difficulties for some small companies in providing the full range of learning opportunities required for the development of a broad occupational competence. Training practitioners in one study in England strongly believed that organisational culture itself could be influential, whereby "the *wrong* organisational culture would significantly inhibit effective learning" (Knasel and Meed, 1994, p 17, original emphasis). In contrast, in an organisation with a long-standing commitment to learning, then it may appear natural that workers learn with the company (Brown and Evans, 1994). Pettigrew et al (1988) saw the existence of receptive or non-receptive training contexts as influential upon the whole approach companies adopted to the development and management of their human resources.

While some small companies are reluctant to get involved in training and development (Keep and Mayhew, 1994), other relatively small or medium-sized enterprises are highly innovative, and particularly if linked into `multi-firm networking processes' (Rothwell, 1993), they can offer very rich learning environments. The GOLO model project in Wilhelmshaven in North Germany has brought together networks of enterprises to collectively offer a broad range of learning opportunities for apprentices (Rauner, 1998). This project is now being extended to embrace co-operation between the German based enterprises and enterprises situated in Akron, Ohio in the USA with the intention of offering an extended experience of working in different environments and practices. In such circumstances, work itself (and the survival of the company) is concerned "with extending levels of organisational adaptability and flexibility and with developing new areas of knowledge and technological competence" (Rhodes and Wield, 1994, p168). The richness of the work/learning environment is such that knowledge and expertise rapidly develop through work, which is itself taking place in different contexts (and possibly companies). In such circumstances great emphasis is given to possession of: "a broad mix of skills is required to achieve viable levels of flexibility in the development and delivery of products and services, and to sustain viable inter-firm networks" (ibid, p 169).

It is interesting to note the considerable expectations small growing companies in central London in the UK had of new employees being able to learn while working from the outset. Rajan et al (1997) point out, in a survey of 950 small and medium-sized companies in central London, that growing companies were likely to be moving towards a performance-driven

business culture, with an emphasis upon empowerment, teamwork, lifelong learning and individuals managing their own careers. Graduates were "reckoned to have intellectual and behavioural traits more in tune with the main elements of the new culture" (Rajan et al, 1997, p 13), and as a consequence "the growing companies in our sample have been recruiting a significant number of graduates in recent years.... in nearly three out of every five companies in our sample, more than 20 per cent of the workforce have graduate qualifications" (Rajan et al, 1997, p 13). The training methods most frequently used with new graduate recruits were learning by doing; coaching by line managers; interacting with suppliers and customers; and carrying out significant work responsibilities.

While the central London labour market may be a special case in some respects, the development of skills through the exercise of responsibility, rather than through an organised preparation for responsibility, is probably typical of the wider UK labour market. Employers following this path could be regarded as developing the additional qualifications of individuals, including at a level above that of the 'skilled worker', even though these qualifications may not be formally recognised. That is these developments may be placed primarily within the 'organisational' space of company activities rather than within the formal 'qualificational' space (Brown, 1998), although there may be some variation according to the different approaches adopted by different individuals, companies or sectors. Indeed the employment of inexperienced 'over-qualified' young people (for example, graduates without appropriate specialist knowledge) could mean that they are over-qualified by educational level in relation to the specific job requirements, but simultaneously under-qualified in terms of their experience (Tessaring, 1998).

An alternative development may be seen in Germany where an increasing number of graduates are undertaking an apprenticeship following completion of their university course. Similarly an increasing number of apprentices have already achieved the Arbitur qualification necessary in Germany for entrance to University and are undertaking an apprenticeship prior to a university degree. However Drexel (1997) points to the problems of overqualified graduates blocking the traditional promotion pathways for apprentice trained skilled workers and thus acting as a disincentive and barrier to continuing education and training for this group. A model project in Schwarze Pumpe in Brandenburg has been designed to provide apprentices with a dual qualification, as a skilled worker and with the academic qualification for higher education. The project has involved bringing together companies and vocational schools to utilise the workplace as an opportunity to practice the theoretical learning and to align the school based learning more closely to opportunities for project development in the enterprise (Bremer, 1995).

Concluding Remarks

The EUROPROF project has always been conscious of the need to develop and innovate in methodologies for transnational VET research. To that extent the project defined itself as an action research project, aiming both to develop and reflect on theory but at the same time to lead to and learn from changes in VET practice. The project further developed the idea of collaborative or co-operative research seeking to develop mutual learning through undertaking collaborative studies on common issues. To that extent we have sought to develop a programme for continuing professional development which through reflective practice can seek to develop on the more theoretical research into the nature and application of new forms of knowledge and knowledge acquisition in particular work environments and situations. Such a new approach to the development of occupational expertise and work related knowledge for

VET professionals promises to overcome the conceptual gap between work related knowledge research and the present practice of curriculum processes. Nethertheless there remain considerable barriers to such a development. The framework for continuing professional development is as yet in its infancy, although we are confident of support for its further development. The further stage of developing and piloting new curricula and new curricula processes will meet considerable barriers, given the present fragmentation of provision and the vested interests in preserving the status quo. Furthermore the approach we have outlined provides a challenge to present definitions and paradigms of knowledge, expertise and practice and thus to present practice in education and training. To this extent it is necessary for the EUROPROF network to develop a broader approach in order to link the professionalisation of VET professionals to the professionalisation of VET itself and to develop policies and strategies for transforming present VET policy and practice. This itself demands an extension of the present research in work related process knowledge to develop a new theory and practice in pedagogics for VET.

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