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A comparative study of additional qualifications at the interface of initial and continuing education: findings from the United Kingdom

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Editor's Foreword

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Abstract

This paper draws upon findings from a project that is concerned with a comparative survey of 'additional qualifications' at the interface between initial training and continuing education and training. The functions of additional qualifications for companies, individuals and the VET system will be examined in general as well as in the sectors of print, retail and health. Overall additional qualifications can be used to enrich training programmes based around NVQs, or they could be used in the opposite way, bringing a particular vocational focus to more broadly-based learning programmes. Practice-based Masters programmes are one example of additional qualifications being used as 'locks' for innovation, whereby new types of more practice-oriented programmes are 'lifted' into the standardised education and training provision. With their emphasis upon management and supervision, as well as specialist practice, they can play a role in individual career development, whether the occupational mobility is horizontal, diagonal or vertical.

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1. Placing additional qualifications in the context of the wider VET system

1.1 Problematising the notion of 'additional qualifications'

This paper draws upon findings from a project that is concerned with a comparative survey of 'additional qualifications' at the interface between initial training and continuing education and training. However, the notion of 'additional qualifications' makes much more sense in VET systems where initial VET is highly formalised and other substantive vocational qualifications are also taken in advance of being given the opportunity to exercise the skills, knowledge and understanding in roles for which a person has been trained (c.f. German 'Meister' qualifications). Such an anticipatory education and training strategy can help young people into work, because they have vocational qualifications with a general labour market utility, for example in the search for semi-skilled work (Brown and Behrens, 1994), as well as opening options for entry into particular skilled occupations. The broadening of the initial education and training though has the effect of increasing the likelihood for starting workers to require more specific additional qualifications in order to be effective in the workplace.

It is impossible to formulate a single and precise meaningful definition of 'additional qualifications' to apply across very different VET systems. Rather the understanding of 'additional qualifications' itself needs to be contextualised and interpreted in the light of the development and patterning of particular VET cultures, policies and practices. For example, partly as a consequence of more intensive use of technology and changing patterns of work organisation in the UK banking sector employers' recruitment requirements have been stressing behavioural characteristics and the ability to be adaptable and flexible in response to changing work practices, rather than stressing specific banking skills (Courtney, 1997). In this particular context the occupation-specific skills, which in other systems could be developed in initial training, are developed as 'additional qualifications', which may or may not be formally accredited during the first few years of employment in the sector.

1.2 Key transition is to 'experienced skilled worker status' rather than skilled status per se

An important starting point for any analysis of skill formation is the need to acknowledge that the full range of skills, knowledge, understanding, personal attributes, attitudes and so on required to perform effectively as an 'experienced skilled worker' is far in excess of those required to complete initial training. Recognition of this draws attention to the issue of the extent to which these additional qualifications (owned by individuals) should be systematised and formally recognised within a framework of additional qualifications. This in turn could be linked with concepts of organisational and qualificational spaces (Tessaring, 1998) : for example, in the UK in many organisational settings there has been a tendency to leave much learning within the organisational space, and outside the remit of the qualificational space.

The interplay of organisational and qualificational space at a systems level has changed considerably with the development of National Vocational Qualifications (NVQs). The coverage by level and sector is quite extensive, such that much skill specification has moved from the organisational to the qualificational space, at least in theory. In practice, the very low

take-up of NVQs in many areas, the almost complete collapse of firm-based initial training (in the 1970s, 80s and early 90s) has meant that the organisational space has, de facto, increased significantly in many industrial sectors. Although, on the other hand, the increasing participation in post-compulsory education has meant that the specification of skills in (pre)vocational education and vocational higher education has lead to an expansion of qualificational space from a different direction.

This also means that 'additional qualifications' cannot be directly compared according to level (for example, between levels 3 and 4), but rather it is an empirical question as to what extent the content of an additional qualification (in the qualificational space) in one country is or is not within the qualificational space of another country, and this is in turn influenced by the overall topography of qualificational space in that country. This means that additional qualifications may need to be related to vocational education and training qualifications more generally, rather than being specifically linked to initial training, more narrowly defined. Indeed additional qualifications could be one means of lessening the distance between learning in the 'organisational space' which is formally not accredited and the major programmes in the centre of the 'qualificational space'. Therefore, it may be more appropriate to consider 'additional qualifications' in the 'interspace' between qualificational and organisational space, rather than at the interface of initial and continuing education and training.

1.3 Different patterning of organisational and qualificational spaces within the UK

The use of the concepts of organisational and qualificational spaces can also be used to highlight the very different patterning of these spaces in different occupational sectors in practice, despite the existence of many NVQs, which have been explicitly designed to fit a template as to how they should be constructed within a common national framework. This means that 'additional qualifications' in any single sector need to be situated in the particular context of that sector : for example, in relation to the degree of standardisation of training provision; the extent to which skills are learned on the job; how education and training provision is stratified; the nature of progression pathways; labour market value and recognition of different qualifications; whether experience is valued more highly than formal qualifications; balance between different types of learning; and so on.

Thus, for example, the three sectors being compared in this project make very different usage of qualificational space for 'additional qualifications'. In the health sector there are examples of formal additional qualifications, though even here learning gained in the 'organisational space' will often be of considerable significance. In the retail sector the same formal qualifications may be taken either during initial training or as part of continuing education and training provision, although most learning occurs in the 'organisational space' rather than being formally accredited. In the print sector, after initial training there is little formalised accredited training and there are very few instances of individuals taking 'additional qualifications'.

1.4 Major recent developments leading to changes in vocational education and training

1.4.1 National qualifications framework

The national vocational education and training system has been completely overhauled in the last fifteen years. The main driver of change has been the perception that improvements in attainments in education and training were essential for improving economic competitiveness. In particular, there were concerns that the English education and training system produced a 'long tail' of young people with few substantive academic or vocational qualifications. A whole series of education and training reforms have been undertaken in the last fifteen years, and national education and training targets have been set, requiring much higher levels of attainment across the population by the year 2000. These targets are presented as representing essential national needs in the drive to improve economic competitiveness.

The major recent developments in vocational education and training have stemmed from a political desire to reform education and training, and many subsequent changes have largely been linked to an agenda and vision that was set in the middle 1980s. Unfortunately the vision, though superficially attractive, was untested and proved to be seriously flawed in conception and impossible to implement as intended. However, the consequences of the failure of NVQs in practice has turned out not to be too serious overall precisely because of the relative lack of importance given to formal vocational qualifications in the English system: the quality of learning at work has been improved in many workplaces and the massive expansion of higher education has raised the general levels of achievement of those entering employment. This reflects a deeper truth in that it is the quality of learning and skill development which is of far greater importance than the much narrower range of achievement which is formally recognised within the qualificational space. On the other hand, it is clear that the further reform of vocational qualifications remains unfinished business, if there is a desire to bring more learning and achievement within the purview of the qualificational space. This section has addressed the broad picture, while subsequent sub-sections highlight particular characteristics of the English system which are of relevance to a debate about the possible value of additional qualifications in different contexts.

1.4.2 Co-existence of NVQs and other vocational qualifications

The failure of NVQs to have significant take-up in many occupational sectors, coupled with concerns about the unreliability of the relatively expensive assessment methods (Wolf, 1995) and doubts over the acceptability of the standards development process (CBI, 1994), lead to a major review of the NVQ system (Beaumont, 1996). Changes to the NVQ system were recommended, but considerable impetus was lost in the attempt to restructure completely the previous system of vocational qualifications. Robinson (1996) pointed out that NVQs still compete with numerous traditional qualifications, offered by national awarding bodies, commercial institutions and professional bodies: with the number of people obtaining traditional qualifications far outstripping those obtaining NVQs. Where the traditional qualifications are widely accepted by firms, they are also popular with individuals as they have a greater labour market utility.

1.4.3 National vocational qualifications (lower levels : 1 and 2)

These were designed to assess competence in specific occupations in terms of skill, complexity and range of tasks undertaken. Success in lower level NVQs by adults in some sectors boosted their self-confidence, and hence provided a possible platform for further learning. However, these qualifications were mainly taken by young people, and for those not already in employment, this group often had very low levels of attainment in formal education. Hence the vocational pathway was at least in part being used to perform a compensatory function for those young people, who did not perform well within and had become disillusioned with formal education, as much of it was being used to increase employability in a particular job. Even at this level, however, most training does not result in a formal qualification. Much NVQ level 2 equivalent training for those in employment occupies the 'organisational space' rather than the 'qualificational' space (Hogarth et al, 1998).

1.4.4 NVQ level 3 : 'skilled' jobs

There was a collapse of firm-based level 3 education and training in many sectors up to the early 1990s. The problems caused by 'poaching' were one important reason for the decline of apprenticeships (Marsden, 1995). The Modern Apprenticeship was explicitly designed as a State-funded way to rebuild initial skills formation processes at this level. Significantly, the programmes aimed to add broader theoretical knowledge and relevant key skills to the more limited requirements of level 3 NVQs (Tessaring, 1998).

1.4.5 Market orientation of UK VET practice

Companies themselves largely define the quantity and quality of initial and continuing training (Sellin, 1995). One consequence was a 'vicious spiral', whereby the substantial reduction of lengthy firm-based (apprenticeship) training led to skill shortages, which led to 'poaching', which undermined the viability of the remaining schemes. In theory, local Training and Enterprise Councils (TECs) could have filled the breach, given their responsibility to identify regional skill requirements and to direct financial resources of the government-funded youth and adult (unemployed) training programmes. In practice though, the TEC's own funding regimes and outcomes targets prevented them from supporting high cost, high quality, lengthy training programmes in favour of shorter, cheaper and easier to run training schemes (Felstead, 1994). These market failures were intended to be addressed in part by the development of the Modern Apprenticeship scheme.

1.4.6 Internal labour markets

Firm specific and job specific training has been increasing, even among companies using relatively low skilled labour. However, much of this training is geared to the internal labour market, and even where it does have a wider value this may only lead to access to other comparable 'low skilled' jobs in the secondary labour market, as there is little chance to gain further qualifications (Ashton, 1993). Indeed with the bifurcation of the UK labour market a key issue becomes how to prevent permanent barriers being erected between those working in low skilled, low paid jobs, with little training and few prospects for progression and those working in more highly skilled jobs, which are relatively well paid and give access to training and opportunities for further skill development. In such circumstances additional qualifications could be used to offer

at least the prospect for some individuals in the poorer section of the labour market to make the transition into more rewarding work.

1.4.7 Expansion of HE

The lack of regulation over preconditions for job entry means that only in some particular occupational areas, and/or where individual commitment to a specific direction is high, does it make sense for an individual with relatively high educational attainment to leave general education tracks. This has contributed to the development of a 'mass' HE system and has meant that the supply of graduates far outstrips the number of opportunities to get what were formerly defined as 'graduate jobs'. This has had three significant consequences. First, graduates are increasingly likely to start in a wide range of jobs, and are often prepared to move between jobs to build up experience in the first few years after graduation. By this means, they move progressively towards a job which is broadly commensurate with their qualifications. Second, it does mean that employers can recruit academically well qualified people to fill positions in a way that adds value for the employer: for example, Mason (1996) found that graduates recruited to relatively junior positions in banks were more likely to see beyond confines of the immediate task and take opportunities, for instance, for cross-selling of products to customers. Third, Wilson (1995) argues that there is some evidence that when more highly qualified people are recruited the nature of the job to which they are recruited itself changes.

Indeed, Soskice (1993) argues that, in a UK context, it makes more sense for employers to recruit graduates, with generally more highly developed communication skills, willingness to learn and other 'key qualifications' but without any appropriate specifically vocational training, than to attempt to develop or secure individuals who had been through initial vocational training. [This was prior to the development of the State-financed Modern Apprenticeship system]. The argument is that graduates can then be given specific training and/or develop their skills through on-the-job training or programmes of learning while working.

Rajan et al (1997) also 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 significant work responsibilities.

These dominant methods make use of mentoring and experiential learning: "graduates are thrown in at the deep end from the outset; with much of the training coming through learning by doing ....Except in professions like accountancy, chartered surveying and law, the learning that occurs is neither accredited nor examined. Even with external courses, the tendency is to send graduates on ad hoc courses that are short and modular. They address the practical needs of the job rather than the qualifications aspirations of the individual. .... Learning through

external courses is actively encouraged, so long as most of it is in the individual's own time" (Rajan et al, 1997, p 24).

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 'skilled worker'. This development though may be placed differently within the 'organisational' and 'qualificational' spaces, 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). Additional qualifications could have a role to play in the resolution of this paradox.

2. Individualisation (differentiation) and flexibility as new requirements for VET system

2.1 Introduction

The use of additional qualifications to facilitate greater differentiation refers to the prospect of allowing more scope to create individualised training pathways. To some extent, this is a natural complement to broader initial education, allowing individuals to 'tailor' their education and training in a way which is appropriate to a particular chosen path. 'Individualisation', though, has some wider connotations, relating to the increasing singularisation of individuals and their biographies. That is, differentiation should be facilitated so as to equip young people with the prospect of more flexible careers involving more frequent job changes (Brown, 1995), while 'individualisation' also allows the prospect of individuals making their own self-determined choices, irrespective of any more instrumental 'requirement'. Irrespective of motive, however, the use of formal additional qualifications should enable those in work to maintain their "'employability', of keeping fit in both the internal and external labour market for jobs through the acquisition of externally validated credentials" (Brown, 1995, p. 36).

The pursuit of flexibility as a requirement for the VET system has a number of distinct dimensions. There is flexibility in the extent of openness of entry in terms of access to different types of employment and in how easy it is for individuals to get their achievements in organisational space recognised formally within the qualificational space, without necessarily taking formal programmes of study. The first type of flexibility has been a long-standing feature of the UK occupational system, and NVQs were intended to enhance the second aspect.

Next there is the extent to which occupational flexibility is encouraged through the provision of programmes of study, which orient individuals towards broader vocational areas rather than training them for particular occupations. This was the rationale underpinning the development of GNVQs. There is also the need to consider flexibility of a VET system in relation to how easy it is to move between vocational and general education at different levels. Advanced

GNVQ programmes were intended to act as qualifications with a dual orientation, allowing access either to employment or to higher education.

Another consideration is the extent to which VET systems incorporate curricular flexibility, thereby allowing for some degree of individualisation as to how VET programmes are constructed. The use of modular or unit-based systems may increase the scope for this type of flexibility, provided sufficient scope is allowed for an individual to choose some elements of her or his own programme. GNVQ was explicitly designed so that individuals could take additional units or additional qualifications within their programmes of study. Modern Apprenticeships also utilise frameworks that enable programmes to be constructed whereby individuals can take additional units or additional qualifications besides the NVQ Level 3 qualification, and thereby offers enhanced prospects of progression within either vocational or academic pathways. These issues can perhaps best be exemplified through a more detailed consideration of the openness of the UK occupational system.

2.2 Openness of UK occupational system

One of the critical characteristics of the UK VET system is that access to most types of employment is more or less unregulated in terms of preconditions for job access (Tessaring, 1998). This is coupled with weak recognition and respect for qualifications generally, such that it is quite difficult for those completing particular VET programmes to be clear about their subsequent progression. This is in sharp contrast with the position in systems that continue to be organised much more strongly around occupational labour markets, with more clearly defined entry level jobs and career paths, which are themselves clearly related to attainment and recognition of particular vocational qualifications (Marsden and Ryan, 1990). The UK situation is therefore highly flexible (or, depending upon your perspective, disorganised), in that in many jobs it is possible to enter without particular qualifications, and to continue working without necessarily becoming formally qualified subsequently either.

This also has implications for additional qualifications, as there is a major issue around the fact that the English system of education, training and employment for those in work puts relatively little emphasis upon formal qualifications. Hence much learning while working and even in more formal training events is not externally recognised, with recording of participation and achievement often occurring mainly within the company. Where external recognition is granted, this may be in relation to quite short training courses, for example on health and safety. The state views continuing vocational training as the responsibility of enterprises although within an exhortatory framework encouraging lifelong learning, achievement of national education and training targets, and so on. The state does, however, provide support to facilitate the development of sectoral qualifications based on NVQs, and individuals taking programmes leading to the award of NVQs are eligible for tax relief on the costs of the programmes.

Within the English system there is little transparency of achievement within continuing vocational training: from an individual's perspective this tends to be linked to performance in her or his current role and could possibly be (weakly) linked to advancement in the internal labour market. From the enterprise perspective, the major aims are organisational: seeking to improve quality, raise productivity, enhance skills of the workforce and the like. The major beneficiary of continuing vocational training is the enterprise, with the weak links between performance of particular sets of work tasks and the possession of certified knowledge

undermining the necessity of individuals undertaking continuing vocational training, except where it is of direct benefit to them in performing their work tasks more effectively.

The relatively open entry to most types of employment is coupled with the openness of a competence-based system, which is not formally dependent upon prior achievement. This means it is possible for an individual to develop occupational skills through working and then to seek to have her or his competence attested, through a successful demonstration of the required elements of competence, resulting in the award of units or a complete NVQ certificate, as appropriate. The UK occupational system is flexible insofar as it presents relatively open access to employment and vocational qualifications, although in practice NVQ assessment was seen as too bureaucratic (Beaumont, 1996) and unreliable (Wolf, 1995), resulting in very poor take-up in many areas. This neatly illustrates the way qualifications can be both flexible and inflexible in different dimensions.

Thus the intended openness of access to assessment of occupational skills in NVQs was compromised in practice by the inflexibility involved in specifying in great detail the criteria associated with occupational competence (Jessup, 1991). Garrett (1990) saw the speed of change in some companies, and the need for them to move towards becoming learning organisations overwhelming competence specifications based on existing work practices. The switch to NVQs also had adverse effects on many learning programmes in vocational areas (Brown et al, 1991). The more or less exclusive concern with outcomes led to a neglect of the processes of learning (Brown and Evans, 1994), and a fragmentation of learning for individuals as they concentrated upon the achievement of disaggregated elements of competence (Hodkinson and Issitt, 1995).

One major problem with the highly detailed specification of occupationally-specific knowledge and skills, and the need for assessment processes to ensure performance criteria are met, is that the whole assessment process becomes focused upon the most visible aspects of occupational practice. So in the system of NVQs in England and Wales, there may be "the assumption that the occupational standards (the elements and the performance criteria) were sufficient in themselves to carry the full meaning of competence" (Mitchell, 1989, p1). This may encourage users not to look beyond the standards in constructing a learning programme. For this reason Eraut (1993) argues for the use of the term `capability', one dimension of which would be to provide a basis for developing future performance. BT (1993) make a similar point, defining capability as "the outlook, understanding and way of working that promotes innovation and adaptability" (p 8).

The above is not an argument against the specification of outcomes per se, but rather for the need to focus upon ways of outlining learning outcomes and processes in broad terms so as to avoid the problems generated in practice by highly detailed criterion-based assessment systems (Butterfield, 1995; Wolf, 1995). One way to achieve synergy between learning and assessment to achieve the goal of promoting a deep approach to learning could involve an attempt to reconcile the traditions of knowledge-based and competence-based approaches: particularly, in the way reflective processes could be encouraged (Brown and Evans, 1994).

3. Additional qualifications as an instrument to increase differentiation and flexibility

3.1 Functions of additional qualifications for companies, individuals and the VET system

3.1.1 Functions of additional qualifications for companies

There could be two distinct functions for additional qualifications dependent upon whether the concept was being applied to new or existing employees. If new recruits were joining a company with the intention of working at intermediate skill levels immediately or within a relatively short period, then the company may wish that they upgrade their technical skills, whether this was through on-the-job learning, more formal learning while working programmes or some form of off-the-job training. If such learning resulted in formal recognition of additional qualifications, this could be regarded as signalling that the employee was ready to perform fairly close to or at experienced skilled worker levels.

On the other hand, if the company was seeking to develop additional qualifications for existing employees in an organised way, this was likely to be regarded as an attempt to implement an upskilling strategy, associated with more effective use of human resources. This could be a response to technological and organisational change, and/or as part of an attempt to raise the quality of products or processes, in an attempt to secure competitive advantage.

3.1.2 Functions of additional qualifications for individuals

For individuals, additional qualifications can perform four functions. First, they can attest that a worker has reached a level where he or she can perform effectively in an existing role. Second, they can highlight that a worker has attained some specialist qualifications useful for a current or prospective work role. Third, they can be used to confer an advantage within an internal labour market. Fourth, they can have a general labour market utility.

The possible functions of additional qualifications and the linkages between qualificational space and organisational space are well illustrated in the longitudinal analyses of Elias and Bynner (1997a) of occupational change for particular individuals using the national New Earnings Survey Panel Dataset (NESPD), which spans the period from the mid 1970s to the mid 1990s. This showed a striking difference in the likelihood of upward mobility from intermediate positions to high and medium level management jobs for men and women over the nine year periods 1976-85 and 1985-94.

For men, between 15-30% of all age cohorts in the highly skilled (management level) category in both time periods had nine years earlier, if they had been in employment, been employed in intermediate jobs. The equivalent figures for women were 1-10% (Elias and Bynner, 1997a). Male intermediate jobs, especially for those in technical or supervisory (intermediate non-craft) positions, could lead on to more highly skilled jobs, although as Elias and Bynner (1997b) point out, such upwardly mobile individuals were characterised by high level educational experience and modern management skills profiles. This would seem to indicate that successful performance in both organisational space and qualificational space is characteristic of upwardly mobile men. That is, if men already have high level academic (for example, graduate) qualifications, then performance in the organisational space does not necessarily have to be supplemented by further formal additional qualifications. On the other hand, such

qualifications would be much more desirable for those who achieved fewer formal qualifications during initial education and training.

Men's upward mobility from intermediate occupations, derived from NCDS (National Child Development Survey) data over the period 1981-91, was nearly double the rate for women (Elias and Bynner, 1997a), and this is likely to be partly attributable to some women leaving the labour force temporarily for family formation purposes and then returning to part-time lower grade work (Elias, 1994; Bynner, Morphy and Parsons, 1996). Men were equally likely to be upwardly mobile into intermediate occupations than women between the ages of 23 and 33, but these were into different types of jobs: craft, technical and supervisory for men and mainly clerical and secretarial for women. Women were, however, more likely to be downwardly mobile from intermediate to other occupations (Elias and Bynner, 1997a). Where labour market exit was to have children, return at a lower level was especially likely for those women with poor educational qualifications (Joshi and Hinde, 1993). This meant that success in the formal qualificational space (whether in initial education and training or in the form of high level additional qualifications) was vital for women returning to the labour market. Without this, any achievements in the organisational space were unlikely to be given much credence subsequently.

3.1.3 Functions of additional qualifications for the VET system

Additional qualifications could be envisaged as playing a number of functions for the VET system as a whole. First, they could be viewed as part of a strategy to upgrade or extend technical education and training. Second, they could be considered as contributing to the development of a more comprehensive and transparent system of qualifications. Third, they could be a means of encouraging enterprises to engage in skill enhancement strategies for their workforce, through offering the companies the opportunity to formally recognise achievements on (organised) programmes of learning. Fourth, they could facilitate the transferability of skills (and individuals) within or outside the enterprise. Finally, they could offer the opportunity for individuals to construct more differentiated career pathways, 'tailored' to their own individual requirements. Overall then, additional qualifications can act as ladders, bridges or locks for the VET system as a whole, in the way they can facilitate individuals switching between different types of provision and modes of learning.

3.2 Additional qualifications in the national framework of qualifications

The national framework of qualifications comprises three major pathways: academic, vocational (based upon NVQs) and with GNVQ as the 'middle pathway', straddling both academic and vocational traditions. One problem with how the qualifications operate in relation to vocational education and training is that the coverage of the qualificational space, although fairly comprehensive in theory, is in practice rather light. The orientation of GNVQs more towards applied general education and the use of NVQs to attest a minimum level of competence, focused exclusively upon current standards of performance, together with the very limited take-up of NVQs in practice, has meant that a whole range of other vocational qualifications have continued to exist and that there has been a pattern of trying to 'enhance' and 'enrich' NVQs to try and put together more substantive programmes of learning. The effect of such attempts could be viewed as an attempt to extend the coverage of the qualificational space, including through the use of additional qualifications (additional in the

sense that they go beyond what is required in the formal NVQ). In this respect the development of Modern Apprenticeship could be seen as an attempt to strengthen the UK's intermediate skills base. It was to be based around achievement of NVQ 3, together with additional qualifications, and as such it is of interest to this project.

Overall this gives an insight into the role that additional qualifications can play in relation to the UK national framework of qualifications. They can be used to enrich training programmes based around NVQs : this would be appropriate wherever there were requirements for greater breadth, flexibility, an orientation towards future performance and so on above the minimalist requirements of competence in particular jobs, as currently conceived. Alternatively, additional qualifications could be used in the opposite way, bringing a particular vocational focus to more broadly-based learning programmes. For example, units from NVQs or other vocational qualifications could be taken as additional qualifications within the GNVQ framework, so as to give a (pre)vocational (or applied general) education GNVQ programme a stronger vocational orientation.

4. Additional Qualifications in three sectors

4.1 Retail sector

4.1.1 Introduction

The retail trade sector throughout Europe is undergoing significant change, and as the market is becoming saturated so firms in the sector are seeking new business strategies, with increased emphasis upon customer service and a consequent interest in staff training (Kruse et al, 1994). The evidence presented on developments in the retail sector in the UK are drawn principally from three sources. The first pair of sources are sectoral studies of retailing by Jonathan Reynolds (1996; 1998) as part of the Institute for Employment Research (IER) labour market assessments in their *Review of the Economy and Employment* (Lindley and Wilson, 1996; 1998). The third is a sectoral study of the Food Retail Sector, with fieldwork conducted between February and August 1997, as part of a detailed assessment of the economic costs and benefits to employers of training to National Vocational Qualification level 2 or an equivalent standard, also conducted by the Institute for Employment Research (Hogarth *et al.,* 1998).

UK retailing employed 2.58 million people in 1996 (Reynolds, 1998). This comprises 10% of UK total employment. The growth in employment opportunities is expected to continue, with a 15% increase between 1996 and 2006, according to IER forecasts. These forecasts also suggest that 10.6% of UK total employment will be in the sector by 2006 (Reynolds, 1998). The structure of retail employment has shifted markedly towards part-time employment over the last 15 years, partly as a consequence of a much freer regulatory framework which allows for extended trading hours. IER forecasts are that by 2001, female part-timers will constitute almost one-half of the workforce (Reynolds, 1996), and by 2006 62% of the workforce will be part-time (Reynolds, 1998). The particular employment mix, however, varies greatly between different sectors of the retail industry (Reynolds, 1996) and, as a consequence, the patterns of vocational education and training also differ. The supermarkets have been one sector which has moved towards a model of flexible part-time working, although there are dangers that some retailers adopting this model may thereby give away some of the “very values (such as

product knowledge, continuity, experience and perhaps maturity) which consumers may find increasingly important" (p.72, Reynolds, 1996). This model also means that the patterning of vocational education and training is very different from companies using a much smaller number of staff, most of whom are full-time. An additional consideration is the growth of franchising in retail (and catering), where training and development may be a prerequisite of obtaining a franchise, even if people already have experience of working in the sector.

4.1.2 General features of vocational education and training in the sector

Many staff in the sector have no vocational qualifications

Around a quarter of the total number of sales staff in 1996 had few or no formal qualifications (Wilson, 1998). Most of those with a vocational qualification have only been trained to (the equivalent of) NVQ level 2 (Wilson, 1998). The fact that the vast majority of entrants into the retail sector have no relevant vocational qualifications means that it is not always easy to differentiate between initial and additional qualifications, because vocational education and training, leading to vocational qualifications, will often be taken by employees with varying lengths of service. A further complication is that, historically, most vocational education and training in this sector has not resulted in any formal qualification.

Structure of qualifications in the retail sector: General National Vocational Qualifications in Retail and Distributive Services

GNVQ was designed as a 'middle pathway' between more explicitly academic and vocational pathways, so as to provide opportunities for progression into either employment or higher education: in practice, however, GNVQ has operated more as 'applied general education' with a pre-vocational emphasis, rather than with a genuine vocational orientation (Brown, 1996). Nevertheless, there are GNVQ qualifications available in Retail and Distributive Services, although these have been generally available only from September 1996. While most GNVQ students are, in practice, in the 16-19 age group, it would be theoretically possible for a more experienced worker to take a GNVQ Retail (Advanced) programme as a means of getting a vocationally-related additional qualification, particularly if this were a prelude to enrolling on a vocational higher education degree programme.

Structure of qualifications in the retail sector: National Vocational Qualifications

There is a range of retail and related qualifications available within the NVQ framework. While qualifications in other vocational areas could have a significant retail component, the major occupational sub-area is 'retail operations' and NVQs are offered in this area at levels 2, 3 and 4. The NVQ level 2, or equivalent qualification, is the '*de facto*' industry standard qualification, with relatively few registrations above level 2. In 1997, the total number of NVQ level 2 awards was 6547. The level 3 NVQ has a strong supervisory dimension, with an emphasis on planning, monitoring and control, evaluation, continuous improvement and maintenance of productive working relationships. The level 4 NVQ is clearly focused upon managerial functions, with an enhanced emphasis on planning, monitoring and control, purchasing, assessment, resource allocation and facilitation of team-work and individual effort. Even where companies use competence-based systems for training and development, they may see the NVQs as "too broad and the system [of competence-based NVQs] unable to respond quickly enough to meet changing business needs" (King and Kruse, 1996, p17).

Structure of qualifications in the retail sector: other qualifications

The most important set of other qualifications is that of the in-house qualifications, offered predominantly by large companies, often as part of comprehensive staff development programmes. That is, there are far more employees who undertake training which could be considered as broadly equivalent to NVQ level 2 than those who are formally accredited with an NVQ level 2 qualification. At higher levels, besides in-house qualifications there is a wide range of vocationally-oriented diplomas, undergraduate and postgraduate degrees. These are not necessarily education-based, and many large companies are getting work-based programmes accredited by universities.

4.1.3 Recent developments leading to changes in VET in the sector

Increasing willingness of major retailers to invest in staff training and development

UK retailing has continued to become more competitive, despite the continuing concentration in the sector, with one-quarter of total retail sales accounted for by the largest five UK retail businesses (Reynolds, 1996). There have also been moves towards greater cross-border trading and this has further intensified competition (Corporate Intelligence on Retailing, 1996). The effects of increased competition, coupled with consumers becoming more price conscious and continuing concerns about quality, has led to a renewed emphasis upon customer service (Reynolds, 1996). This, in turn, has focused increasing attention upon training and staff development, and "what has emerged over the last year is that many retailers are finally showing a greater willingness to make investments in people at critical levels within the organisation" (p. 39, Reynolds, 1998). This type of effort though is primarily focused upon what are perceived as key staff, although it may be in addition to more broadly-based staff training programmes.

Emphasis upon training in corporate administration and management

The increasing use of outsourcing by retailers for supporting activities, such as IT, distribution, cleaning and catering, has meant that their prime focus has become buying, selling and administering (Reynolds, 1998). This has had consequent effects on the range of vocational education and training they offer, with training in corporate administration and management becoming increasingly important. [IER forecasts are that the number of corporate administrators in this sector will increase by around 40% in the period 1996-2006, to over 300,000 by 2006 (Reynolds, 1998).]

Increasing need for specialist (technical) expertise among small retailers

One further effect of increasing concentration and competition in the retail sector will be to squeeze further the proportion of self-employed people working in retailing. [IER forecasts are that by 2001 7% of the self-employed will work in retail, compared to 14% in 1971. This represents a real decline, even given the overall increase in self-employment in the UK during that period (Reynolds, 1998).] The high failure rate of business start-ups in retailing means that the advice from banks is that "small retailers unable to adapt to specialist retailing will face the greatest threat. They should concentrate on offering added value rather than competing on prices" (Barclays Bank, quoted in p. 42, Reynolds, 1998). This indicates that small specialist

retailers should increasingly have some technical expertise. This in turn suggests that the key qualifications for such staff might lie in a vocational area outside retailing. Those small retailers who are not operating in specialist markets often feel almost overwhelmed by increasing competition, as they strive to maintain profit margins. In such circumstances, they often have little interest in training: "any perceived advantages of training are usually completely overshadowed by this [competitive] pressure" (King and Kruse, 1996, p17).

Emphasis upon broadly-based staff training programmes

Reynolds (1996) argues that the major players in the retail sector are explicitly attempting to address the dangers associated with a 'cycle of failure', whereby the whole recruitment/retention/service function performs poorly. The dangers are that increasing use of part-time labour, extended trading hours, the need to control costs and narrow job design lead to a minimisation of the effort put into selection and training, poor service attitudes and high staff turnover. Such a cycle would be inimicable to attempts to provide higher levels of customer service and to develop a rich, mature customer service culture. So in order to counteract such dangers, supermarkets have introduced comprehensive staff development programmes. For example, Sainsburys introduced a competency-led approach to selection, recruitment, appraisal and training for all staff, and by 1996 "1,000 staff had achieved NVQ level 2 and a further 800 were working towards this level" and the company career development programme had "permitted 2,000 staff to pursue sponsored study and further education courses" (Reynolds, 1996, p. 74).

Elsewhere in retail, outside the supermarket sector, similar initiatives were taken by large retailers. While links were often made with further education and higher education institutions to offer higher level programmes, some companies also made use of workshops and assessment centres, so that staff could get their existing skills, knowledge and experience accredited, if appropriate. The use of methods of accreditation of prior learning meant that although experienced workers might thereby get additional qualifications, they did not necessarily undertake much additional training or learning.

A further trend within retail is for human resources development strategies to look beyond the confines of the company. For example, increasingly retailers and suppliers have been looking at training and development that examines issues across supply chains (King and Kruse, 1996). In such contexts if an attempt were made to formalise and accredit such development, then any system of additional qualifications would need to be sufficiently flexible such that achievements in related occupational areas could be recognised.

4.2 Additional qualifications in the print sector

4.2.1 Introduction

The most striking features of qualifications within the printing industry in England and Wales at the moment is the extent of fragmentation of existing qualifications and the very low initial take-up of National Vocational Qualifications (NVQs) in this area. Publishing NVQs were dropped because of lack of interest, and the occupational standards in relation to the newspaper industry are being revised. Design NVQs similarly failed to materialise as a viable entity and have now been dropped. The Print Industry Training Organisation (the British

Printing Industry Federation: BPIF) is, however, currently engaged in development work and the Print Occupations Lead Body set up a review of the existing NVQs, which also had a very poor initial take-up. The Print and Design sectors have therefore never had NVQs which act as industry standards, with the consequence that far greater attention has been given to an array of education-based qualifications, which are often used to help secure entry into employment in this sector. The industry though was hoping that the advent of Modern Apprenticeships in the sector would revitalise work-based training. Technically the print industry extends beyond traditional forms of printing to more specialised forms of printing processes, such as those used in the production of metal, ceramic and clothing goods

4.2.2 General features of vocational education and training in the sector

The old apprenticeship-based education and training in print was undermined by technological change and new forms of work organisation. The traditional training system was swept away along with most of the traditional jobs. Insofar as some traditional working practices remain, these jobs are now marginal and few formal training processes remain in place. The industry has been relying on the development of Modern Apprenticeships to regenerate work-based training in the sector. These are organised and funded in a new way, although in any event the Modern Apprenticeship deals with initial skills formation processes, rather than being directly relevant to a structure of additional qualifications.

The initial failure of level 3 NVQs to have more than a minimal effect in this sector is documented in the following sub-section, and employers also have reservations about some of the qualifications that are education-based. Even here, however, these qualifications tend to be more concerned with initial skills formation and would be used mainly to secure entry into (skilled) employment.

Despite the effective collapse of work-based training programmes leading to formal qualifications prior to the advent of Modern Apprenticeships, the sector itself is still important in terms of numbers of people employed. The total number of people employed in the printing industry is around 320,000, with the number of people employed in printing-related functions within the industry estimated to be in excess of 230,000, according to the 1996 Labour Force Survey. The Print Industry Lead Body estimated in November 1995 that there were approximately 8,000 companies in the sector, 80% of which employed fewer than 25 people, and small companies were the least likely to become involved in formal education and training.

The introduction of new technology, for example in the use of digital systems, has had a dramatic effect upon all aspects of the printing process. Most notably, changing work processes and the widespread availability of desktop publishing programs and relatively cheap high quality printers has meant that many people and organisations undertake their own printing. These trends have led to major reductions in the numbers of those employed in origination and operational printing within the print industry.

In the past those seeking to enter the industry often obtained vocational qualifications (for example, BTEC First Diplomas) after programmes of study in colleges of further education. New entrants to the industry could also follow part-time courses (such as City and Guilds 524: a Level 2 equivalent qualification), although attendance on these courses would be at the discretion of employers. Those employees destined for craft status would then take a Level 3 Joint Training Council (JTC) certificate. This whole system was transformed by the advent of

NVQs, GNVQs and changes to existing qualifications, but the new system coincided with a dramatic reduction in the numbers entering the industry and in the numbers of employees also studying part-time for vocational qualifications. The new system is outlined in the following subsection.

4.2.3 Recent developments in the sector leading to changes in vocational education and training

The cumulative figures for completion of level 3 NVQs in the print sector (as at 30 September 1997) are as follows: Level 3 Machine printing - 10; Level 3 Origination - 39. The other 4 level 3 NVQs (controlling minilab equipment; machine binding; print commercial and print finishing) have not yet had a single successful candidate. The qualifications were accredited in January 1996 and are due to expire at the end of September 1998. The picture appears bleaker still, when it is remembered that most of the level 3 NVQ certificates were issued in 'origination'. This function could disappear altogether, given the existence of relatively cheap, easy to use, high quality software which means that many non-print organisations already carry out their own origination work and this trend is likely to continue.

However, this gloomy picture has been transformed by the development of Modern Apprenticeships in the sector. Over 700 young people had started Modern Apprenticeships by the end of January 1997, and by June 1997 there were almost 1000 people enrolled on BPIF courses, even if only 159 were at that time formally registered for a Level 3 NVQ. The imagery of the Modern Apprenticeship acting like a phoenix arising from the ashes of the demise of work-based training is a powerful one. The key aspect of the Modern Apprenticeship is that it represents a state-funded attempt to rebuild work-based training.

4.3 Health (medical technology) sector

4.3.1 General features of vocational education and training in the sector

Vocational education and training in the health sector is dominated by requirements of the National Health Service (NHS), although the private and non-statutory sectors are also significant. Nurses are the largest occupational group within the NHS and nursing is in the process of moving towards an all graduate profession. Besides the three year initial training now taking place within higher education, post-initial qualifications are increasingly based upon degrees rather than specialist diplomas. [Hence nurses, who did not follow undergraduate initial training programmes, can work towards degrees as part of programmes of professional development.]

Eraut and colleagues (1998) underline that "the range of knowledge and skills required by nurses is extremely wide. There is an increasing expectation for them to acquire and use scientific knowledge, while at the same time developing personal skills and a caring disposition in a context where the patient contact is reduced by increased patient/staff ratios and rapid patient turnaround. Moreover, claims to be a science-based profession are counterbalanced by important areas of tacit knowledge such as sensing patient concerns and monitoring their physical condition" (p17).

For nursing assistants, National Vocational Qualifications at level 2 have become increasingly important. These qualifications are undertaken at work, and while they may lead to "a better understanding of why there were doing what they were doing ... their work had not substantially changed and they had received no increase in pay ... [as] .. insofar as there was some role development it occurred over considerable time and involved further workplace training over and above the NVQ (Eraut et al, 1998, p17).

In the particular area of medical technology there has been a number of recent developments in vocational education and training which are detailed below.

4.3.2 Recent developments in the sector leading to changes in vocational education and training

There are three major recent developments in vocational education and training in the sector and they all impinge directly upon the area of medical technology. The first development was the advent of National Vocational Qualifications in the health sector. The take-up and completion rates for NVQs were very disappointing, as in many other sectors, with only 90,000 people achieving full certification in the period 1992-1997, even though the potential market for Care awards runs to several million people. In areas such as medical technology, where NVQs were competing against established technical qualifications, the take-up was particularly derisory. Potentially at least, however, NVQ units could be used to form a structure for additional qualifications in the sector and the issue is debated at length in the following sub-section.

The second development was the move to strengthen the initial training of nurses and some medical support staff by moving from diploma programmes sited outside HE to three year degree programmes based within HE. This has happened to the initial training of radiographers and the implications of this for the development of additional qualifications is also considered in a following sub-section.

The third development within medical, nursing and allied education and training programmes is the move towards problem-based learning. This has acted to give such programmes a distinct vocational emphasis, acknowledging that learning in education and practice settings had to be brought much closer together. This has implications for additional qualifications in that initial training and continuous professional development programmes were brought much closer together, giving a much reduced "qualificational space" within which distinctive additional qualifications would fit. On the one hand, initial training had been dramatically refocused in an innovative way, such that (graduate) entrants would be expected to possess a greater depth and breadth of knowledge and be more likely to be able to apply this knowledge and understanding in practice. On the other hand, innovation within programmes of continuous professional development in the health sector also acted to 'lift' such learning and development into formalised education and training provision, particularly in the form of Masters programmes. The significance of these developments for a possible role for additional qualifications is also outlined in a following sub-section.

Review of care sector NVQs

In the Care sector overall, from the launch of the Care Awards in 1992 to June 1997, only just over 90,000 NVQ certificates were awarded, in a potential market for these awards of several

million people. The vast majority of certificates issued were below level 3 (the skilled worker level). Overall, there were 283,000 registrations in this period, but the certification rate was generally only around 15% of registrations. A major review of the Care Awards was undertaken (December 1995-July 1997), with particular attention being given to major problems with the national occupational standards ("the review sought to simplify the language and presentation" of these) and assessment procedures (the review sought "to ensure an approach which is both consistent and which seeks to remove excessive burdens of assessment.")

The Review also proposed the previous pattern of awards be restructured, such that instead of 45 awards, there would be just 15. While some of these were to generic awards, others were job-specific: for example, there were three awards for physiological measurement technicians. The reduction of the number of awards was accompanied by proposals for a deliberate blurring between award structures by the Care Sector Consortium (the industry lead body in this sector) in order to promote flexibility, multi-skilling and progression. This was seen as following changes in practice, whereby "the traditional boundaries between health and social care have ceased to exist [and] there have been changes in work roles with multi-skilling now very prevalent."

The (lack of) demand for NVQs in medical technology

The cumulative figures for completion of NVQs in the health (medical technology) sector (as at 30 September 1997) were as follows:

Level 3 Care (clinical imaging support) 1
Level 3 Health Care: physiological measurement (audiology) 29
Level 3 Health Care: physiological measurement (neurophysiology) 9
Level 3 Health Care: physiological measurement (respiratory physiology) 13

These qualifications were accredited in November 1992, and the first candidates registered in 1993. By September 1997, only 175 candidates had registered for these awards. Of the 114 candidates who had registered by December 1995, less than 40% had successfully completed the award (10 out of 25 in Respiratory Physiology; 25 out of 65 in Audiology; and 8 out of 24 in Neurophysiology).

The Review emphasised that the take-up of NVQs for physiological measurement technicians (PMTs) "has been extremely limited, competing college/academic awards are more acceptable to employers and status is an overriding consideration by practitioners when viewing the merits of NVQs." The major competing awards were National Certificate/Diploma and Higher National Certificate/Diploma in Science (Medical Physics and Physiological Measurement). The competing awards had an established labour market value, and were highly regarded by employers. For example, employees in the National Health Service who achieved the part-time National Certificate were recognised for grading as technicians. The awarding body for both the NVQ and established awards was EDEXCEL (formerly BTEC).

EDEXCEL were reluctant to phase out the established award, while problems remained with the NVQs, particularly in relation to problems associated with funding. Additionally the review made it clear that "there is also a reluctance by practitioners to use NVQs and to move away from Department of Health training manuals." Finally, "the non-interest of Scotland in

these awards is also clear." The viability of the awards was questioned, but there was a reluctance to discontinue NVQs: "politically to remove the awards would be very unpopular." The compromise was to accredit the NVQs until 2001, but to "undertake a mapping exercise involving EDEXCEL's non-NVQs and these PMT awards, the mapping to focus on the degree of commonality and transferability across the awards as regards underpinning knowledge and understanding and assessment methods (including independent assessment) and with a view to either phasing out or to defining the awards as related qualifications to the NVQs". It was also expected that major problems with the standards and assessment processes would be addressed by the year 2000.

The established suite of National Diploma/Certificate and Higher National Diploma/Certificate awards in this area have served as entry points into PMT jobs. They are well respected by employers, considered to be high status by practitioners and give access to higher education and/or continuing professional development. In such a context, and given their considerable problems in the past, the PMT NVQs are likely to remain a marginal option, with the most likely outcome a 'merger' of the two types of qualification to define the awards as 'related qualifications to the NVQs.'

Overall then, the initial skills formation processes overwhelmingly rely upon gaining established PMT qualifications, usually through an education-based route, which does though involve clinical placements. The work-based PMT NVQs would appear more appropriate for those already in employment in the health sector. The demand to achieve a full qualification by this route however is severely circumscribed. However, potentially at least, achievement of some of the NVQ units could be used as additional qualifications for employees seeking to develop their skills. [Practitioners might be reluctant about such developments if they felt it would undermine their identity as specialists.] The following commentary therefore is based on the role PMT NVQ **units** could play in building up 'additional qualifications', as it is clear that the full qualification will seldom be used in this role in practice over the medium term.

Structure of physiological measurement technician NVQ units

The level 3 PMT awards in respiratory physiology, audiology and neurophysiology (as revised in draft form in 1997) all contain 5 common mandatory units. These units are generic and comprise the following:

- acknowledge people's equality, diversity and rights
- promote, monitor and maintain health, safety and security in the workplace
- support and control visitors to services and facilities
- receive, transmit, store and retrieve information
- contribute to the effectiveness of work teams.

Any prospective technician or existing technician working in a different area is already likely to have a level 3 qualification, such as a National Diploma, or even a higher technical qualification. They may have a little interest in the generic units, particularly if they have performing effectively in this manner in their current jobs. [The sharing of these generic mandatory units had led the accrediting bodies to suggest that the three awards be merged, and that different groupings would be available on an optional basis. This did not find favour as according to the Review "the practitioners would lose their identity as specialists, and the market for the awards would disappear. It is also argued that employment grades are very

different between the disciplines and the retention of the three qualifications reflects the needs of employers and employees."]

The more specialist units, however, could be used as the basis of additional qualifications. For respiratory physiology there are three specialist mandatory units:

- (R1) Maintain the performance of equipment for respiratory investigations
- (R2) Record and report the respiratory function of patients
- (R3) Administer and monitor the effect of bronchodilator drugs on patients

These units contain the following elements:

Unit R1 Maintain the performance of equipment for respiratory investigations

R1.1 Maintain respiratory equipment and consumables
R1.2 Calibrate respiratory equipment
R1.3 Maintain the performance of respiratory equipment through quality assurance

Unit R2 Record and report the respiratory function of patients

R2.1 Plan respiratory investigations
R2.2 Prepare the patient and equipment for respiratory investigations
R2.3 Monitor and record the results of respiratory investigations
R2.4 Complete and report the results of respiratory investigations

Unit R3 Administer and monitor the effect of bronchodilator drugs on patients

R3.1 Prepare materials and equipment for the administration of bronchodilator drugs
R3.2 Prepare patients and administer bronchodilator drugs
R3.3 Measure and record responses to bronchodilator drugs

For audiology there are four specialist mandatory units. The units and elements are as follows:

Unit A1 Establish and report the presence, nature and extent of patients' hearing loss

A1.1 Prepare patients for hearing tests
A1.2 Plan a programme of hearing tests
A1.3 Establish the presence, nature and extent of patients' hearing loss
A1.4 Evaluate and record hearing test results

Unit A2 Improve patients' hearing through the selection and application of hearing systems

A2.1 Obtain aural impressions
A2.2 Select, fit and adjust hearing systems
A2.3 Advise patients with hearing loss and who use hearing systems
A1.4 Evaluate and record hearing test results

Unit A3 Review patients' management of hearing loss and provide support and advice

A3.1 Review progress and advise patients on rehabilitation
A3.2 Adjust hearing systems on behalf of patients

Unit A4 Maintain and calibrate audiology test equipment

A4.1 Maintain audiology test equipment
A4.2 Calibrate audiology test equipment

For neurophysiology there is a single specialist mandatory unit: (N1) record and report conventional electro-encephalograms (EEGs). In order to get a neurophysiology NVQ, candidates would need to complete two out of a possible four further specialist units, in addition to the five generic and one specialist mandatory unit, in order to get the full award. [Only nine candidates nationally achieved the full award from 1993-September 1997.] The specialist mandatory unit (N1), however, could be used with any or all the other specialist units as 'additional qualifications.' The specialist units and elements are as follows:

Unit N1 Record and report conventional electro-encephalograms (EEGs)

N1.1 Plan EEG recordings
N1.2 Prepare equipment for EEG recordings
N1.3 Prepare patients for EEG recordings
N1.4 Monitor and record EEGs
N1.5 Implement and monitor activation procedures during EEGs
N1.6 Complete and report EEG investigations

Unit N2 Record and report visual evoked potentials

N2.1 Prepare the environment and equipment for obtaining visual evoked potentials
N2.2 Plan recordings of visual evoked potentials
N2.3 Prepare patients for recording visual evoked potentials
N2.4 Monitor and record visual evoked potentials
N2.5 Complete and report the results of visual evoked potentials

Unit N3 Record and report brainstem auditory evoked potentials

N3.1 Prepare equipment for obtaining brainstem auditory evoked potentials
N3.2 Plan brainstem auditory evoked potentials
N3.3 Prepare patients for brainstem auditory evoked potentials
N3.4 Establish auditory thresholds and record brainstem auditory evoked potentials
N3.5 Complete and report results of brainstem auditory evoked potentials

Unit N4 Support clinicians during investigations of the peripheral nervous system

N4.1 Prepare equipment for investigating the peripheral nervous system
N4.2 Prepare patients for investigations of the peripheral nervous system
N4.3 Assist clinicians during investigations of the peripheral nervous system

Unit N5 Record and report somato-sensory evoked potentials

N5.1 Prepare equipment for obtaining somato-sensory evoked potentials
N5.2 Plan recordings of somato-sensory evoked potentials
N5.3 Prepare patients for recording somato-sensory evoked potentials
N5.4 Monitor and record somato-sensory evoked potentials
N5.5 Complete and report the results of somato-sensory evoked potentials

4.3.3 Availability of Additional Qualifications in the sector and the demand for them

A range of NVQs are available in the health sector, which could form the basis of Additional Qualifications. There is very little demand for full NVQ qualifications in technical areas such as PMT or technical cardiology. The units, however, could theoretically act as a structure for additional qualifications in the future, as any employee moving into such specialist areas would need to be able to perform to the standards underpinning the specification of the NVQ units and elements of competence. A number of problems remain in practice.

For example, anyone moving into the area would in any event be trained to the appropriate Department of Health standards, including coverage of a body of underpinning knowledge and understanding. Subsequently, a person's employment record would show the training and experience he or she had as a technician. If a record of training and experience is deemed sufficient by employers and, if coupled with substantive pre-entry qualifications, is highly valued by practitioners, then it is difficult to see what is the 'added value' for individuals in getting their skills formally recognised through NVQ units, particularly if major problems continue with assessment, standards and funding.

Development of knowledge and skills in employment in technical areas in the health sector such as radiography training

A unitised system could offer the prospect of a basis for a structure of additional qualifications in technical areas in the health sector. NVQ units, as currently constructed, however, are unlikely to be fit for this purpose. This is because while changes are being made to the specification of standards and to the assessment processes, there is still a reluctance at policy level to accept that the model as currently implemented is fundamentally flawed in relation to assessment (Butterfield, 1995; Wolf, 1995) and that it operates without any sign of understanding the nature of practical knowledge (Eraut, 1997). The criticisms with the assessment model have already been rehearsed at length, but it is worth examining the implications for the development of meaningful additional qualifications in the light of recent evidence of how knowledge and skills are developed in employment in technical areas in the health sector (Eraut et al, 1998).

The study by Eraut and colleagues (1998) focused upon the nature of learning at work, and one of the groups they studied comprised technicians working in the health care sector: radiographers and cardiac technicians. The focus in this report will be upon radiography training: "radiography training has changed in the last three years from an initial qualification, based on a Diploma programme, run in Schools of Radiography with extended periods of apprenticeship type training in hospital departments, to a Degree level education programme based in a University with associated hospital departments providing some clinical placements during the training period" (Eraut et al, 1998, p17).

This upgrading of the initial qualifications is significant. There has been a strong trend within the health care sector, most notably in nursing, to see a degree as the expected initial qualification. This is coupled, however, with equally strong trends to change the nature of education within medical and allied fields to make it much more oriented towards problem-based learning. Such higher education has a much stronger vocational emphasis, compared to the more academic approach previously prevalent in the early stages of medical education.

This move away from sub-degree technical qualifications was also apparent in more specialist areas. Thus some areas of radiography practice, such as radionuclide imaging, mammography, body scanning and medical ultrasound, require specialist qualifications. Increasingly, however, these are offered as part of taught Masters programmes. Continuing Professional Development at any stage in a radiographer's career, involving more detailed and rigorous examination of techniques and practices within general radiography, could therefore be incorporated within substantive high status qualifications. The Masters programmes also cover research methodology, management and supervision, and facilitate flexibility, progression and have a high labour market utility, when individuals are seeking promotion or transfer. In such circumstances, for graduates to take NVQ units would seem to add little value for their own career development, compared with the acquisition of units or modules which could at some stage count towards a Masters degree. In any event, it is also possible to undertake specialist training linked to the use of new techniques, which is not necessarily externally accredited.

Even without further specialist qualifications, however, diagnostic radiographers have to "produce a picture fit for the purpose in a reasonable time using a wide range of equipment in a variety of different locations and in different circumstances" (Eraut et al, 1998, p17). For example, they may work in theatres or specialist units as well as in their own department, or they may be working alone overnight. Radiographers also have to accommodate to "local ways of presenting the pictures (common views and angles and reporting procedures) to meet the preferences of different medical staff. They also need to be able to manage patients with different levels of tolerance, comfort and anxiety under varying medical circumstances. They work as part of a team and have to appreciate the different roles and challenges confronting other members of that team. They may be called upon to teach or supervise others. Overall, they need the technical know-how to make things work and get what they want and the personal skills involved in relating to internal and external customers" (Eraut et al, 1998, p18).

The key point about such a detailed delineation of what radiographers do is to emphasise the general point that formal education and training [and certification] contribute to only a small proportion of learning at work (Eraut et al, 1998). In particular, a developing understanding of situations, colleagues, the work unit and the organisation are examples where learning primarily occurs while working, rather than in a formal setting. Similarly, much learning that occurs at work depends upon utilisation of knowledge resources outside formal education and training settings. Thus radiographers learn from fellow radiographers in their immediate work group, other colleagues, and utilise a "rich variety of professional networks ... largely dependent on personal contacts.... There was also some evidence of "invisible colleges" in the health professions which extended beyond close personal contacts but also depended on occasional meetings for their sustenance" (Eraut et al, 1998, p. 25).

The challenges inherent in the work itself, including being 'on call' and the need for on-going mutual consultation with colleagues, stimulate learning while working. This is often reinforced

by organisational climates, which acknowledge the value of education and training and which support the existence of professional networks. Support for both formal and informal learning is therefore often quite strong. The implications of this for additional qualifications are that there is scope for specialist qualifications, skills and new techniques. However, for graduates who have already completed substantive initial education and training programmes, which emphasise knowledge development and the intertwining of learning and practice, such formal technical skills development is likely to be a relatively small part of their learning as a professional. This is in line with the finding of Gear and colleagues (1994) study of informal learning in the professions, which emphasised that most professionals had some idea of the learning outcomes they wanted but followed an emergent strategy which took advantage of learning opportunities as they arose.

The above should not be interpreted as downplaying the significance of technical skills development per se, but rather can be used to understand why there is relatively little interest in formal external accreditation of such technical skills. The work of a radiographer as a whole encompasses so very much more in terms of experience, learning and development than mastery of particular techniques that to be acknowledged by colleagues and others as an experienced professional, capable of high level performance in a wide variety of settings and contexts, will always carry great weight. In such circumstances, any major formal additional qualification will have to engage more fully with a variety of aspects of performance in current and possibly future roles. This is the rationale behind offering Masters qualifications, with an emphasis upon developing a deeper understanding of practice, coupled with a broader programme of learning and development.

From the perspective of the Additional Qualifications Project it is clear that the new Masters programmes come much closer to meeting the functional and formal criteria for 'additional qualifications' than other types of qualifications, particularly NVQs. The Masters programmes can certainly be regarded as 'locks' for innovation, whereby new types of more practice-oriented programmes are 'lifted' into the standardised education and training provision. With their emphasis upon management and supervision, as well as specialist practice, they can play a role in individual career development, whether the occupational mobility is horizontal, diagonal or vertical. Additionally, the qualification falls within the compass of mainstream higher education, and hence opens up opportunities for further education and training.

Some of the formal criteria for 'additional qualifications' are also met. The target group are skilled technicians; the training is formalised, certified and stands in a clear relation to initial (graduate) training; supplying greater breadth, depth and opportunities for personal learning and development. The programmes generally run for two years part-time, which is equivalent to one year full-time. The only criterion not met is that the qualifications are not generally delivered and are certainly not completed within one year of initial training.

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