Development of Assessable Standards for National Certification

Edited by Edward Fennell
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1. INTRODUCTION

Edward Fennell

The arrival in 1992 of the European 'Single Market', the uncertainties it brings, together with the acceleration of technological developments will result in an even greater need for the British economy to become more competitive. As markets and prices for products and services continue to fluctuate, firms and individuals must either adapt to change or become its victims. What an organisation requires of its people in such situations was summed up in a National Economic Development Office (NEDO) Report called "People the Key to Success", which refers to the need for individuals who are competent, committed to the pursuit of corporate objectives and capable of developing new ideas while coping with changing roles.

The need for such people was first identified in "A New Training Initiative A Consultative Document" (MSC) 1981. This foresaw the requirement for a new kind of standard — a "standard of achievement". This would be based on training to "agreed standards of skill" and would result in the formation of a more versatile, readily adaptable, more highly motivated and productive workforce which would assist Britain to compete successfully in the future.

In 1985 the Government established a Review Group to look at the existing Vocational Education and Training arrangements and make recommendations for improvements. These recommendations were accepted by the Government in a White Paper called "Working Together Education and Training" (Cmd No 9823, July 1986). In that White Paper the Government charged the Manpower Services Commission (latterly until 6th November 1990 the Training Agency) [TA] to work with industry to facilitate the identification of industry standards which could be embodied in new National Vocational Qualifications (NVQs) and would be accredited by the National Council for Vocational Qualifications (NCVQ). This remit has recently been extended to cover Scotland and Scottish Vocational Qualifications (SVQs) which will be accredited by the Scottish Vocational and Education Council (SCOTVEC).

Standards in themselves do not ensure effective training or learning. But, when training is based on invalid performance indicators, the value of that learning for the individual, the employer and the Nation as a whole is adversely affected. Standards will therefore only be of significant value if they are related to employment, focus on essential outcomes, and clearly define the competences and expected performance in such a way that they are fully understood by all employers, employees, trainers and assessors.

In order to foster efficient, cost-effective and systematic vocational education and training based on the "New Standards", the TA has invited and continues to invite the consumers of industry standards and NVQs/SVQs (employers, influential individuals and representatives from key organisations within the industry) to form themselves into Industry Lead Bodies (ILBs). The role of these ILBs is to identify, develop and maintain standards of performance required of employees. The importance of this function was re-emphasised in the White Paper "Employment for the 1990s" (Cmd No 540. December 88).

An ILB is therefore required to review all areas of its industry to identify and prioritise in an Action Plan those areas requiring standards development. It must also consult all areas of the industry on the acceptability of the standards, devise NVQs based on those standards and draw up plans for the promotion and adoption of the standards in the industry.

In the wider context it is desirable that:

- there should be inter-industry recognition
- standards should be easily interpreted and clearly understood by users
- credit accumulation should be facilitated
- confusion and increased costs inherent in a diversity of approaches should be avoided

All of this argues for a common approach.

It is not proposed that all industries should adopt identical procedures: there has to be a sufficient flexibility to allow for different needs and separate priorities. However, the benefits of a common approach as illustrated above are clear.

This book forms part of a series of publications which seeks to raise awareness of, and develop greater insight into, the theoretical underpinning of the methodology involved in standards development. It also seeks to foster and accelerate work to develop the standards identified in "A New Training Initiative", as the prime focus of training and the basis for new forms of qualifications. In order to harness the available national expertise on competence based standards, the

NOTE
1. On the 6th November 1990 The Training Agency (TA) was fully assimilated into the Employment Department to become the Training, Enterprise and Education Directorate (EDTEED). Any reference in the text to the future work of the TA should be taken to be EDTEED.
TA set up a Technical Advisory Group (TAG) in 1987 (the membership of which is shown in Appendix 1). The prime purpose of TAG was to act as a pool of expert advice and guidance and to foster the adoption of a sound methodology and a common approach to the form and structure of industry standards.

The TA established the Standards Methodology Unit (SMU) to foster relevant methodological and technical research and development work, to promulgate the principles of good practice and to oversee the work of the TAG. SMU has to date sponsored a range of work with different industries and relevant to different occupations. Different organisations have been encouraged to explore different methodologies. Much has been learned from this work which has led to the production of Guidance and Briefing Notes (see Appendix 2) for ILBs and Industry Training Organisations (ITOs).

The content of this book encapsulates much of that learning. However unless otherwise stated each Chapter reflects the agreed views of the authors and their interpretation of the deliberations within TAG.

This book will appeal in particular to those concerned with the technical aspects of standards development in ILBs and Awarding Bodies, as well as researchers, trainers, consultants and educationalists. However, it should be of general interest to anyone involved in vocational education and training.

Chapter 2 provides an overview of the model proposed by the TA for the development of assessable standards for national certification, and discusses costs and benefits and other issues concerned with implementation.

Chapter 3 specifies what we mean by occupational standards, the characteristics of units of competence and the definition of competences and performance criteria. It illustrates the broad nature of competence and explains the purpose and function of range statements in this definition of competence.

Chapter 4 discusses the role of knowledge and understanding in the specification of standards, the assessment of competence, and the provision of standards-based learning and training programmes.

Chapter 5 is an extract from a standards development project which devised a method of identifying knowledge in standards. The project was based in the Building Society Industry — an industry in which there are staff performing roles with a high knowledge content — but the methodology may well have wider applicability in other industries.

Chapter 6 explains the ‘what, when, where and how’ of designing assessment systems. It provides guidance on the verification process and on how assessment systems can be supported. Although necessarily long, it has been broken down into sub-divisions to highlight the complexity and inter-relationships between the different components of an assessment system for national certification.
THE PURPOSE OF STANDARDS

The need to foster the development of standards and link training to the needs of employment was identified in the New Training Initiative of 1981. Since then, successive White Papers have continued to emphasise the need for training to contribute directly to industrial and commercial performance. In ‘Employment for the 1990s’ it is stated that, ‘Our training system must be founded on standards and recognised qualifications based on competence — the performance required of individuals to do their work successfully and satisfactorily’. The importance of this statement is that it links standards and qualifications to the needs of work and the way in which people need to perform there.

The principal way in which this thinking is being promoted is through National Vocational Qualifications (NVQs) and Scottish Vocational Qualifications (SVQs). The Training Agency (TA) and the National Council for Vocational Qualifications (NCVQ), together with the Scottish Vocational and Education Council (SCOTVEC), have developed a programme in which the full range of occupational areas and the professions are included in the development of national vocational qualifications (NVQs and SVQs) and the occupational standards on which they are based.

Why, though, are national standards so important? The answer lies in the variety of ways in which such standards can be used. For example, they can contribute to:

- raising the ‘quality’ of occupational training
- providing goals for learners
- evaluating learning programmes
- assuring quality within an organisation
- giving credibility to learning programmes/training schemes
- qualifying for public procurement contracts
- enabling progression for individual
- forming a basis for credit transfer
- selection for jobs, education or training
- enabling transfer between jobs, occupations, education/training opportunities

For example, standards may be used as the basis of a job description, and can then be used as a reference document for developing job specifications for recruitment purposes. The same ‘template’ can be used to develop initial training programmes, defining objectives for learners which represent directly the needs of work rather than simply training.

For individuals there are clear gains in a standards system which makes explicit the expected work performance. For example, the individual’s goals can be easily expressed. What a training scheme has to offer can more easily be judged and a person’s suitability for a job more easily seen. For both employers and employees it becomes easier to plan learning, and it becomes easier to measure what has so far been achieved and what may still be needed.

Ultimately, however, it is not just the processes associated with human resource development which are intended to benefit from the development of standards. Above all standards are intended to help improve the performance of organisations (industrial companies, public administration and so on) including their response to change and new opportunities. In time they should directly influence:

- rates of production
- staffing costs
- equipment failure rates
- validity of selection of personnel
- accident rate

Less directly, implementation of standards could bring such benefits as:

- reduced insurance premiums
- certification for quality assurance
- reduction in bad publicity/increase in good publicity
- less fees for legal actions
- reduced level of complaints

If standards are to benefit the organisation they have to relate directly to the needs of that organisation and its operations. When standards are linked to the needs of the organisation, they provide the bridge for recognising the contribution and achievements of each individual to organisational outputs and development.

Standards of competence, like many other forms of standard, can be devised within individual organisations or on some other local basis. Increasingly, however, standards are being set nationally or even internationally. This book is concerned with standards which can be nationally recognised and assessed for the award of NVQs and SVQs.
The aim of chapter 2 is to introduce the key concepts involved in the development of standards for NVQs and SVQs.

THE STANDARDS MODEL

Occupational standards are being developed to meet a need for agreement on what constitutes acceptable performance in work. NVQs/SVQs are being developed to enable individuals' achievement of such performance to be accredited. The NVQs/SVQs, as will be shown, incorporate the standards. In doing so they create a range of possibilities for the uses of standards which would not exist if they were confined to use in individual organisations alone.

The form that standards take for the purposes of vocational qualification is a precise one. It is important to note that:

- standards are distinct from other frameworks which describe or assess individuals.
- standards are based on work performance — not learning or training performance.

Occupational standards are specifications of performance. They express what is expected of people in a job or work role. More precisely they consist of criteria with which an individual's performance in the activities of work may be compared and judged as competent or not. These criteria represent a specified level of performance required to satisfy the operational requirements of employing organisations.

Criteria may be expressed in several ways. In the approach which has been adopted, however, criteria describe the expected effect, or outcomes of activity.

This represents what has been described as functional thinking.

Functional thinking involves the separation of functional problems from physical ones. It is concerned with activity specified by its ends or outcomes rather than the means by which the outcomes are achieved.

An example of a standard within the occupational role of a dental surgery assistant is illustrated below.

The particular aspect of performance is:

Respond to, and assist with, dental and medical emergencies.

Performance is required to be judged against the following criteria:

- The patient is reassured throughout by verbal and non-verbal means
- Immediate/preliminary action is taken appropriate to the medical/dental condition
- The patient's pulse, temperature and breathing are monitored
- Medical assistance is called for as soon as is safely possible
- The patient's dignity is respected throughout.

The criteria are expected to be met in at least the following range of circumstances:

Faint, cardiac arrest, shock, anaphylactic shock, respiratory failure, diabetic coma, haemorrhage, inhalation of foreign bodies, epileptic fit, coronary, hysteria, etc...

From this it can be seen that standards do not directly describe people at all. There is nothing in the above standards which says that a dental surgery assistant should have particular qualities. The standards are a definition of performance which is regarded as satisfactory. NVQs and SVQs, by contrast, make a statement about a person. They attest that here is a person who is competent within a particular area.

Occupational standards are, therefore, not personal attributes. The ability or potential of a job holder or candidate for a job is certainly important, but it is not the same thing as performance in the job or in related jobs. Similarly, personal effectiveness may be important, but this is not what standards specify. What makes a good manager, for example, may be a proper subject for selection or training, but standards define what is expected of good managerial performance.

It must also be clear that it is expectations of work performance that are the focus of standards, not learning or training performance. The activities through which someone learns to do a job may be important, but they do not determine the standards. The knowledge and skills which may form the content of training may be essential for learning to do the job, but they are not themselves the job, and provide no direct benchmark for performance in the job.

Standards should determine learning/training rather than vice versa. They should be a major factor in determining the objectives for learning programmes for both groups and individuals, but the standards themselves should be independent of training or learning processes.

As an extension of this, standards should not be determined by assessment processes. Certainly
standards need to be defined in such a way that people can be assessed against them, but in terms of NVQs/SVQs and other applications, standards must be defined first and assessment designed to match them.

For standards to specify acceptable performance in work terms, they need to deal with the whole work role, not just discrete tasks. The Job Competence Model is being used to help shape standards in terms of competence in the whole work role.

The model has four components:

i) The specific technical aspects or tasks involved in the work role — activities with clearly discernable, tangible outcomes

ii) Contingency management — dealing with things that go wrong or with the unexpected

iii) Task management — handling the overarching management of the various technical and task components of the job, for example by setting priorities or allocating time

iv) The role/job environment — including both the physical environment with its health and safety implications and the interpersonal/interactive environment made up of colleagues, customers and clients or the public.

It is unlikely that the full operational requirements of organisations will be met unless all the components of job competence, as shown above, are represented within the standards.

STANDARDS IN NVQs/SVQs

The introduction of NVQs, and more recently SVQs, is the reason why most of the development and implementation of standards has been taking place. NVQs/SVQs are based on standards. There is, in fact, nothing about the concept of standards which requires them to be agreed nationally or to be linked with qualifications, and many organisations are making use of the standards model to examine their operations and human resource development processes from a local perspective.

The way in which an NVQ/SVQ is made up illustrates the standard model and its application.

An NVQ is ‘a statement of competence clearly relevant to work and intended to facilitate entry into, or progression in, employment and further learning, issued to an individual by an awarding body’. Possessing an NVQ/SVQ is a statement that one has achieved a level of performance agreed nationally to be sufficient for a specified range of work activities. This claim can be made because NVQs/SVQs use, as their criteria for competence, standards which represent expectations of work performance.

An NVQ/SVQ brings together accredited achievement of standards in related work activities. An NVQ/SVQ is a coherent collection of such achievements typically relating to a type of job or an occupation.

To gain an NVQ/SVQ, an individual has to satisfy an awarding body that he or she has performed at a level which satisfies all the standards collected together under the NVQ/SVQ.

A standard consists of an element, performance criteria relating to that element and a range statement.

An element is a precise description of what someone should be able to do as a necessary part of the unit. Like the units of which they are components, elements are also expressed in functional form; that is, they are expressed as outcomes rather than processes.

One or more performance criteria apply to each element. Each criterion defines a characteristic of competent performance of the element. All the criteria attaching to an element have to be met for the performance to be considered competent. The criteria discriminate between satisfactory and unsatisfactory performance.

Elements and performance criteria specify what is expected by way of performance in one regard, but only imply the contexts and circumstances of that performance. Different contexts may make different demands on the performer. It would therefore be risky to generalise performance across all contexts. With the element title, a range statement reflects all key parameters to which the standard applies. Various aspects of application can be specified, from the physical location in which performance takes place, to the various types of equipment or methods used.

If someone is to achieve the standard, the assessor must be satisfied he/she can perform adequately in the diversity of situations under the diversity of conditions defined by the range statements to the level specified in the performance criteria.

For the purposes of NVQs/SVQs, people’s achievement of standards is certificated in the form of units of competence. A unit represents achievement of a specified set of standards applying to an area of work activity. There is no absolute definition of a unit. The extent of the function — the breadth of the outcomes — has to be appropriate to the context of the NVQ/SVQ.

NVQs/SVQs each consist of a set of units. The number of units varies from one NVQ/SVQ to another, but the collection of units has to make sense
in employment. In other words, the achievement represented there must be recognised as having value, reflecting the expectations current in employment.

The structure of NVQ/SVQ units, elements, performance criteria and range statements is illustrated in Figure 1.

Assessment and Certification

An NVQ/SVQ requires, in addition to the standards on which it is based, a system for assessment and certification for accrediting individuals as competent. That system, like the standards themselves, is subject to the approval of NCVQ or SCOTVEC. Its operation is the responsibility of an awarding body.

Chapter 6 of this book describes in detail the range of mechanisms on which an awarding body can draw for its assessment and certification practices. This chapter offers an outline of the principles on which an assessment and certification system should be based.

Principles of assessment

The approach to assessment in NVQs/SVQs is designed to enable a useful judgement to be made about the individual; in particular that there is a high enough probability that he/she is able to perform to standard in the given job or work role in the future. The judgement is made on the basis of performance demonstrated by the individual concerned. The performance satisfies the specified performance criteria, and does so across the range of contexts defined by the range statements.

Traditional assessments make no such direct claim to the achievement of standards, being based variously on such measures as ability or knowledge.

The starting point for assessment in NVQs/SVQs is the set of standards. Assessment is a subordinate process. It does not provide a standard, but constitutes a judgement that the individual meets the standard specifying what is expected of him or her in a job or work role. This is different from much of traditional assessment in which the individual is required to pass a test. The test was a substitute for judging how people performed in work, and was often chosen because it was easy to use, rather than because it provided the information which was most needed.

Within assessment, therefore, it is necessary to gather evidence in order to be able to make the judgement that the individual performs to standard. If someone is to be assessed as having achieved a particular element of competence, there must be sufficient evidence that their performance meets the criteria for that element throughout the specified range.

It is essential to make the distinction between, on the one hand, evidence and, on the other, the judgement made on the basis of a set of evidence. Evidence can take many forms, and different evidence may be available for different individuals depending on circumstances. This does not matter. What does matter is that the judgements made about individuals in a particular element are consistent and fair. (See Part 6).

In the assessment system, there is considerable emphasis on workplace performance. At any one time, this provides evidence for one or more elements of competence. What a manager or receptionist or technician does when working is likely to tell us more about their achievement against standards than any test of theory or knowledge. This does not mean that assessment is simply a matter of knowing that someone has performed once or twice satisfactorily.

Assessment in the workplace can be just as rigorous as a conventional examination, and is often a good deal more relevant to the needs of organisations and individuals.

For candidates who are in a learning programme, evidence that they can perform to standard may be generated away from the job. This evidence is less direct, but nevertheless contributes to the overall weight of evidence by which the individual will be judged against the elements of competence.

It may be that naturally occurring workplace activity and the events of a learning programme do not provide sufficient evidence to make a safe judgement that an individual can perform to given criteria across the given range. In such cases, the assessment needs to make use of evidence specially elicited by such means as performance tests, written tests or oral questioning. Different sources of evidence have their advantages and limitations. It is important that such measures form part of the necessary set of evidence. However they must not take over and become the whole of the assessment.

Certification

Whatever the forms of evidence used — and evidence from the workplace must be included — an awarding body will need to rely on those people best positioned to report that evidence. Workplace supervisors, training officers, tutors and others in working and training organisations will have an observation and reporting role. The candidate, as the one person present on all relevant occasions also has an important contribution to make. It is the job of an awarding body to build a recording system to enable the flow of necessary information.
Figure 1. Details of an element, performance criteria and range located within unit and VQ structure.

Title — Financial Services (Building Societies)

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<td>Set up, monitor and maintain customer account.</td>
<td>Process for transfer of funds into and out of accounts.</td>
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Unit 2.0 Set up, monitor and maintain customer accounts

Element 2.1 Set up new customer accounts
Element 2.2 Amend and update accounts against instructions
Element 2.3 Process account statements on request
Element 2.4 Monitor the flow of funds into, and out of accounts

Element 2.1
Set up new customer accounts

Performance Criteria
(a) Internal/external documents are complete, accurate and legible, and delivered to the next stage in the process to schedule
(b) all signatures/authorisations are obtained to schedule and actioned promptly
(c) correspondence to customer is accurate and complete, all necessary documents enclosed, and despatched promptly
(d) correspondence to other branches of society and other organisations/professional agencies is accurate and complete, all necessary documents enclosed, and despatched promptly
(e) cash transactions and financial documents are processed correctly and treated confidentially
(f) computer inputs/outputs are accurate and complete
(g) on completing the setting up, the account is filed in the correct location
(h) indicators of contingencies/problems are referred to an appropriate authority

Range of Variables to which the element applies
Customer accounts
Investment — notice accounts, non-notice accounts.
Lending — mortgages, further advances, personal secured loans, unsecured loans, credit cards.

Unit 4.0 Create and maintain relationships with other organisations.

Unit 7.0 Contribute to the health and safety of the working environment.
A certification system must enable evidence to be gathered economically as well as thoroughly. Both workplace performance and specially elicited evidence may provide evidence relevant to a number of elements at any one time. Recording systems must take this into account. Further elaboration of this system can be found in Part 6.

In addition to the obvious function of issuing certificates, an awarding body is responsible for ensuring that the system of assessment — of making judgements about individuals against the given standards — is economical, fair, and open to scrutiny. It must also ensure that certification is 'open' to candidates. Open in the sense that they can identify what is expected of them, see how judgements are made, and also open in the sense that people who feel that they are competent can obtain access to assessment and certification to test and confirm their belief.

An awarding body has to provide feedback to employers and others engaged in day to day assessment about the way in which that assessment is being carried out. The awarding body must also ensure that those involved in the assessment process are trained appropriately. Above all, the awarding body has also to satisfy itself and others about the validity and security of the judgements being made. Both these requirements may be bound up in the process known as verification.

THE STANDARDS AND NVQ/SVQ DEVELOPMENT PROCESS

Participants in Standards and NVQ/SVQ Development

Because many decisions to be taken in the formulation of standards are not purely technical, different practitioners may take very different views of what constitutes a standard, and a number of views may be equally valid. Standards development therefore seeks to draw on a wide range of understanding of an industry or an occupational area through designated Industry Lead Bodies (ILBs) or professional bodies.

Various organisations have been designated as ILBs. They include Industry Training Boards, non-statutory training bodies, professional institutions and, where there are strong cross-sector interests, consortia have been set up specially for this role.

Lead and professional bodies need to harness their wide range of understanding by means of representative or specialist working parties, the use of experts/consultants and wide consultation with practitioners in the industry/sector or occupational area.

The responsibility placed on lead and professional bodies is considerable. It is their task to ensure that the standards embodied within NVQs/SVQs satisfy three key criteria which have a profound effect on their usefulness. NVQs/SVQs should:

- represent the whole job
- have sufficient breadth to apply to a range of jobs and allow progression
- reflect what is expected of the individual in response to changes in the demands of the job.

Other bodies with a proper interest in standards formulation and the NVQ/SVQ development for any occupational area include the TA, NCVQ, SCOTVEC and Awarding Bodies.

Most ILBs will need or wish to work with an examining or validating body to form jointly an awarding body to set up and maintain a system for assessment and for the award of qualifications. Some lead and professional bodies are experienced in issuing vocational qualifications, and may be able to organise the assessment and verification process which certification demands.

The TA has instigated the new approach to standards and their development, setting the policy and commissioning development processes. It now has a particular interest in stimulating the identification of standards for all occupations in order to incorporate these standards in NVQs/SVQs. It is through the TA that ILBs are identified and the occupational area for standards development agreed.

NCVQ/SCOTVEC have the responsibility for ensuring that the necessary vocational qualifications are secured within the NVQ/SVQ framework which covers all occupations, and for identifying areas within the framework in which standards will need to be developed. The criteria laid down by NCVQ/SCOTVEC determine what constitutes an NVQ/SVQ. Similarly NCVQ/SCOTVEC will judge whether an individual qualification is consistent with the NVQ/SVQ framework. These criteria relate to the form and coverage of the standards and to the arrangements for assessment and certification.

Deriving the Standards and Developing NVQs/SVQs

A standards and NVQ/SVQ project typically has four products:

i) Standards of competence applied to an occupation or occupations

ii) Techniques for assessing people against those standards

iii) A system for formally certificating achievement
— awarding an NVQ/SVQ

iv) A strategy for implementing the standards and qualifications, including ways of ensuring that everyone who should know about the qualification gets to do so, and ways of maintaining the standards.

A standards and NVQ/SVQ development project

consists of all the activity which goes into delivering these products within agreed occupational boundaries — defined as an industry sector, a profession or a type of occupation, such as management.

Running a project involves applying the appropriate methodologies which exist for the development of each of these four products. Figure 2 gives an outline of these.

### Figure 2.
The project specification and technical activities for developing standards and NVQs/SVQs

<table>
<thead>
<tr>
<th>Design assessment processes and systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Identify aspects of workplace performance likely to provide evidence of competence</td>
</tr>
<tr>
<td>☐ Identify/develop complementary means of generating evidence</td>
</tr>
<tr>
<td>☐ Identify who will gather and pass on evidence</td>
</tr>
<tr>
<td>☐ Develop principles and mechanisms for combining evidence and using the evidence to assess competence against defined standards</td>
</tr>
<tr>
<td>☐ Identify who will assess competence</td>
</tr>
<tr>
<td>☐ Systematic introduction of assessment processes and system</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Develop certificating system</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Identify awarding body</td>
</tr>
<tr>
<td>☐ Agree recording procedures</td>
</tr>
<tr>
<td>☐ Design NVQ/SVQ and unit certificates</td>
</tr>
<tr>
<td>☐ Specify procedures for approving assessment centres</td>
</tr>
<tr>
<td>☐ Develop training/briefing for assessors</td>
</tr>
<tr>
<td>☐ Agree verification procedures</td>
</tr>
<tr>
<td>☐ Develop training/briefing for internal and external verifiers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Develop implementation strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Identify possible provision of learning opportunities and assessment arrangements and means of ensuring access for individuals</td>
</tr>
<tr>
<td>☐ Develop publicity and marketing approaches</td>
</tr>
<tr>
<td>☐ Arrange launch of NVQ(s)/SVQ(s)</td>
</tr>
<tr>
<td>☐ Develop policy on monitoring, review and updating of standards and qualifications</td>
</tr>
</tbody>
</table>

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**Agree project specification/brief among lead body, Training Agency, NCVQ, SCOTVEC**

- Draw up lead body action plan
- Identify area(s) in which standards to be set and NVQ(s)/SVQ(s) developed
- Plan development processes
- Plan initial marketing and awareness raising

**Identify and set standards of competence and structure of NVQ(s)/SVQ(s), using experience and expertise of competent practitioners**

- Identify key purpose applying to area and analyse to element level
- Identify performance criteria for each element
- Identify range for each element
- Form units of competence
- Test draft standards and units against expectations of practitioners in the field
- Consult appropriate groups on acceptability and implications of draft standards and units
- Field test the standards in typical assessment situations to determine whether they can be interpreted with adequate consistency
- Refine standards and units
- Determine framework for NVQs/SVQs in the area
- Design individual NVQs/SVQs

**Identify and set standards of competence and structure of NVQ(s)/SVQ(s)**

- Defmed as an industry sector, a profession or a type of occupation, such as management.

**Design assessment processes and systems**

- Systematic introduction of assessment processes and system

**Develop certificating system**

- Designing individual NVQs/SVQs

**Develop implementation strategy**

- While these technical procedures are distinct components of a standards and NVQ/SVQ project, they do not take place independently. They are interconnected and many activities run in parallel. The effective operation of this integrated operation is the business of project management.*

*Note: These technical procedures are distinct components of a standards and NVQ/SVQ project, they do not take place independently. They are interconnected and many activities run in parallel. The effective operation of this integrated operation is the business of project management.*
The initial stages of the process are concerned with reviewing the domain and identifying and prioritising those occupational areas requiring standards development. Factors which may be considered in setting priorities are the numbers in the occupational area or the key occupational roles. The process should not necessarily start with an assumed NVQ/SVQ.

The area is analysed in a top-down fashion. This involves identifying a key purpose for the occupational area (i.e. a description of the general purpose of the occupation). This statement is analysed and then broken down progressively into more specific aspects of purpose. Once these sub-divisions are small enough for assessable performance criteria to be set against each part, these become known as elements of competence. Elements and their respective performance criteria are grouped together to represent areas of competence which have stand-alone value to employers and are called units of competence. Further information is then added to describe the range of contexts to which the elements and performance criteria apply. At this point the setting of standards is completed.

The formulation of standards by progressive breakdown and setting of performance criteria and range statements has become known as Functional Analysis, and is described in more detail in Part 3.

Carrying out the analysis

It is of value to check, at an early stage, whether similar standards already exist or are being devised by another Lead Body. The TA, NCVQ and in Scotland SCOTVEC, should be able to advise on this.

The initial analysis may then be carried out by a small number of experts in the occupational area, in collaboration with someone who understands functional analysis. They may do this through a desk exercise or through the deliberations of a committee. In either case the success of the analysis will largely depend on how familiar the contributors are with the occupations concerned.

After the initial analysis, the standards should be subjected to wider scrutiny. They can be substantially refined through discussions with employers, supervisors, trainers, etc. It is important to talk to key personnel who are aware of current good practice and of ways in which the industry or occupation is developing.

The aim is to produce written standards which are sufficiently clear and explicit for those who carry out the assessment process, those who facilitate learning, and for the candidates themselves to be clear about what is expected of them.

Checking the analysis

The analysis must be checked with a wider audience because:

- it represents only the views of those who have contributed to it, and the smaller the group the less reliable the standards;
- the standards and definitions used may be understood differently by those who have not been involved in their development.

The most likely method of checking the analysis with a wider audience is by a questionnaire survey of a national sample of practitioners. They key issues to be addressed are:

- Are the standards expressed in such a way that users can easily understand them?
- Do the units encompass the key functions associated with the occupation?
- Do the elements encompass the key aspects of competence essential to satisfy each particular function?
- Do the performance criteria define the expectations of the occupational role?
- Do the performance criteria define a level of performance considered adequate by the majority of users?

Field-testing the standards

Exposing the analysis to a wide audience should allow the Lead Body to determine whether the standards encompass those things considered of key importance to the occupation. However, it will not show whether the standards can be interpreted with adequate consistency. Field-testing the standards in typical assessment situations is the only way to show whether the standards can be interpreted with adequate consistency.

The field tests should be carried out by people who have not previously been involved with the analysis, to ensure that the standards are self-explanatory. The outcome of the field tests may reveal where standards need to be more explicit or where they warrant revision, and may identify training needs for the assessors.

Maintaining the standards

Functional analysis is not a once-and-for-all exercise. Lead Bodies should ensure regular monitoring, updating and refinement.
Some weaknesses may reveal themselves at an early stage. Standards are unlikely to be perfect when they are introduced — even following the checking and field-testing described above. The methodology is still emerging and very few people have thought before in such detail about what they require of people-performance in particular functions. It is only to be expected that as the standards are introduced on a wide scale, users will come to question various aspects.

Other weaknesses may not be so apparent. In essence, employers will draw inferences from the national certification based on the standards. Only time will demonstrate how sound such inferences are. Where there proves to be a mismatch, it will be necessary to review the standards. However, it is likely that inadequacies which appear only after the passage of time will relate to nuances rather than major omissions.

Standards must also be reviewed if the occupations change or die out, or if new occupations emerge. In time, too, sectoral functions will change. Eventually it will be possible to make clearer the inter-dependence of functions within and across different sectors.

Clearly there is a need for the Lead Body to sustain its involvement, to monitor the acceptability of the standards and to identify their weaknesses as they are used by an expanding group.

For NVQs/SVQs, the standards are used as the basis for judging competence. Assessment processes are therefore needed. In addition, certification processes are needed for achievement of competence to be publicly accredited. Systems for both assessment and certification have to be developed in line with the principles discussed above and to satisfy the criteria laid down by NCVQ/SCOTVEC.

The formation of the NVQs and SVQs themselves involves a careful weighing of a number of factors. As stated earlier, standards and the qualifications in which they are used have uses within training and a variety of other organisational processes. The way in which standards are combined to form NVQs/SVQs has to reflect the needs of both employers and the individuals who are the subject of accreditation. NVQs/SVQs will determine vocational education and training programmes. They will provide a basis for progression and for selection for jobs.

NCVQ/SCOTVEC guidance includes criteria for the form that NVQs/SVQs must take. The identification of which units will be combined to form NVQs/SVQs does not, however, follow a technical or analytical formula. It is a matter for discussion and weighing of:

Technical issues

Policy considerations for the sector or occupation in question
Implementation issues.

CONCLUSIONS

The process of standards development and creation of NVQs/SVQs is in full swing. All areas of economic activity are becoming involved. Increasingly, lead and professional bodies and employers are becoming aware of the advantages of devising standards and embodying them in NVQs/SVQs. In time, as learners and workers at all levels come to achieve NVQs/SVQs, it is hoped that they too will begin to see how they can benefit.

A systematic approach to the development of standards is essential. The techniques required are not exceptionally difficult, but anybody engaging in the process needs to be well organised if the results are to be worthwhile. This chapter has introduced the main concepts involved in occupational standards. Other chapters of this book provide more detailed guidance on the individual stages of the process.

References

1 Employment Department, "Employment for the 1990s", Cmnd Number 540

2 Miller, R.B. Task taxonomy: science or technology, in Singleton, Ensterby and Whitfield, the human operator in complex systems. Taylor and Francis 1967


5 National Council for Vocational Qualifications (NCVQ), National Vocational Qualifications: Criteria and Procedures. NCVQ 1989


3. DERIVING STANDARDS OF COMPETENCE

Bob Mansfield

Our training system must be founded on standards — the performance required of individuals to do their work successfully and satisfactorily — ‘Employment for the 1990s’, Cmd No 540, Employment Department, November 1988.

1. INTRODUCTION

1.1. What are Occupational Standards?

Occupational standards as defined by Industry Lead Bodies (ILBs) are the foundation for our national system of vocational education, training, assessment, accreditation and certification. The term ‘standard’, when applied to the expected performance of individuals, can cause considerable confusion. This is because, in the past, standards were assumed to be an inbuilt feature of a number of different systems and processes. So, for example, people were characterised as being of ‘O Level standard’, where ‘standard’ indicated a level of academic achievement or intellectual development. Training and educational programmes were also described as being of a ‘high standard’ — which could have been a reference to the quality of equipment and resources, the length of time in training, the content of the course or the quality of the results. None of these meanings conforms to the concept of occupational standard used by the Training Agency (TA), the National Council of Vocational Qualifications (NCVQ) or the Scottish Vocational Educational Council (SCOTVEC).

Occupational standards, as they are described in the TA standards programme, are similar to the standard specifications used in industry, which describe in ‘ideal’ terms what a product should be like. The standard is not the product itself, nor the means of making it, nor the means of measuring and assessing its quality. The standard is an independent description of what the product should be like — a ‘benchmark’ against which all actual products are compared and accepted or rejected as appropriate.

An occupational standard is just the same — but applied to the performance required of people. Occupational standards describe in ‘ideal’ terms what people need to be able to do in employment for a given occupational area. Occupational standards are not descriptions of the performance itself (specific activities or tasks), nor the means of achieving competence (knowledge and skills learned through the training programme) nor the means of measuring quality or achievement (assessment), nor the process by which achievement is recognised publicly (qualifications). Standards are ‘benchmarks’: descriptions of the expectations of employment against which the actual performance of individuals will be compared and assessed as competent, or not competent as appropriate.

Occupational standards then, are independent of learning/training programmes, vocational qualifications and assessment systems. It is a primary focus of the new system that learning programmes, qualifications and assessment systems will be derived from clear and precise occupational standards, rather than standards being embedded unstated as a feature of qualifications, or within the processes of learning and assessment.

Standards, qualifications, assessment and learning are now separated but, nevertheless, related as follows:

The relationship between standards, assessment, qualifications and learning

This simple diagram allows us to describe each of these components separately, as follows:

- **Standards** — benchmarks or specifications of expected work performance
- **Assessment** — the means by which evidence of performance is collected, compared with the standard and a judgement about acceptable performance is made and formally recorded
- **Qualifications** — an appropriate set of standards, recognised by an industry or occupational sector as having relevance in employment, assessed through systems developed and delivered by a recognised awarding body. (A qualification which also meets the criteria of NCVQ/SCOTVEC is a National Vocational Qualification [NVQ] or Scottish Vocational Qualification [SVQ]).
- **Learning Programmes** — structured programmes of
training, development and learning designed to support individuals in the achievement of the 
standards.

Standards, then, should become the starting point for the Vocational Education and Training (VET) system. 
We need to develop occupational standards before we can develop the qualifications, assessment systems and 
training processes which will ultimately lead to the competent workforce which is intended to make our 
economy more competitive. This may seem obvious, but this confusion has been at the root of many of the 
problems in standards setting.

1.2 The Purpose of Occupational Standards

Occupational standards provide employers with precise, agreed and nationally applicable descriptions 
of what people in particular occupations are expected to be able to do. This has enormous advantages to 
employing organisations because it offers a standard template against which a number of human resource 
development strategies and practices can be referenced. For example, an occupational standard may be used as 
the basis for a job description because it precisely describes the outcomes expected in work roles. 
Equally, the standard can be used as a reference document for developing job specifications for 
recruitment purposes.

Once staff are recruited, the standards can be used to develop initial training programmes, using the 
performance criteria as targets of achievement and steps in the learning process for formative assessment 
and diagnosis of training needs. Training strategies as a whole can also be informed by standards both for 
training needs analysis, and for the development of in-service training programmes.

The same template can also be a source for the development of internal appraisal and assessment 
systems because, again, the standard describes precisely what is expected of job holders.

Finally, the standards — if incorporated into an NVQ/SVQ — offer job holders the opportunity to 
have their achievements nationally recognised. This is a potential motivator for staff, and also gives the 
employer the confidence that the company training contributes to the achievement of nationally recognised 
qualifications. The process of national certification also has implications for planned career development 
and progression of individuals.

Standards, therefore, are not just to do with the formal recognition of achievement through NVQs/SVQs 
(though this is an important and primary purpose). For industries and employers, the development of 
standards offers the opportunity to develop a single, coherent and consistent specification of quality 
performance which can act as a resource document for many HRD functions.

1.3 The Structure and Format of Occupational Standards

Occupational standards are developed and described in a format which is also used to model the ‘new’ Vocational Qualifications accredited by NCVQ/SCOTVEC. The TA encourages ILBs responsible for the development of standards to use a ‘functional’ analysis of the occupational area to describe broad work role expectations which are formed into units and elements of competence. Functional Analysis is discussed in greater detail in section 6 of this chapter.

Having developed a comprehensive framework of units and elements of competence, the next stage in 
standard setting is to attach performance criteria to each element. Performance criteria describe the critical outcomes which are sufficient to demonstrate competent performance in the element of competence. The performance criteria will inform the assessment process and also the design of the learning process. Note that they inform the process of assessment and training design but are not assessment or training specifications in themselves.

A final stage in the process is to identify the range of applications to which the standard is expected to 
apply. Because standards are written in terms of broad expectations and outcomes, the range of applications and contexts is not explicit. The ‘range statement’ sets the context and will further help determine the scope and method of assessment.

An element of competence, its associated performance criteria and range statement taken together, is a ‘standard’. The standards are grouped into units and the units are grouped into statements of competence which, with an appropriate assessment process, form the basis of an NVQ/SVQ.

The purpose of this chapter is to describe the characteristics of standards (elements of competence, 
associated performance criteria and range statements) and units of competence (coherent groups of 
standards).

2. STANDARDS AND COMPETENCE

2.1 A Broad View of Competence

Part 2 stressed the importance of ‘embedding’ a broad view of competence into occupational standards. 
Without such a broad view, the standards will be very limited in scope and may only refer to specific tasks.
Our modern economy requires a flexibility of response and an ability to manage change which has outdated our previous assumptions about VET. We work in an increasingly turbulent environment in which markets and technologies force adaptation and require a constant updating of skills. Models of VET which assume that industries are, and are likely to remain, the same will not serve our current needs.

In the 1950s and the 1960s, there was a degree of market and technological stability which meant that VET processes based on recognised tasks and underpinning skills were legitimate, since these were sufficient to fit people for a large proportion of their working lives. The turbulence of the 1970s and 1980s has changed this approach. People now have to constantly update their skills and need to be competent in a broader range of skills to survive in employment. In addition, the rate of economic development means that people need to be able to adapt and change in response to the changes in markets, production methods and forms of work organisation. Routine tasks, simple skills and stable work organisation are not enough to meet the needs of the modern economy.

2.2 The Job Competence Model

To encourage Lead Bodies to develop standards which are wider than the tasks or tangible activities which characterise jobs and occupations, the TA recommends the use of the Job Competence Model to ensure that standards reflect this broader view. The Job Competence Model suggests that all work roles have four key aspects or expectations:

i. The ability to perform the technical aspects of the work role — often specific, tangible activities which produce tangible outcomes — or products. This ability has often been referred to as ‘product skill’. In the Job Competence Model it is called ‘technical skill’. The model does not ignore or underrate technical skills, it merely puts these skills in context, together with the other skills that contribute to effective performance of work roles.

ii. The ability to manage variance in working practices and processes. For example, to be able to act positively when things go wrong, when breakdowns occur or when procedures are exhausted. This aspect is referred to as ‘contingency management skill’. As our industries move away from mass or continuous production processes and people are expected to contribute more to decision making and process management, these skills become even more important.

iii. The ability to manage the components of the job so that overall job and organisational objectives are achieved. This may involve deciding between competing options for standards, setting priorities, liking with other departments and functions. The ability is called ‘task management skill’. The management of total systems is an increasing feature of modern industrial and commercial operations.

iv. The ability to perform the job role within particular working environments which have specific characteristics. This will include the natural constraints in the environment (which will affect health and safety practices for example), the nature of interaction with colleagues or clients and the kind of work organisation in which the work role is located. The aspect is called ‘job role environment skill’. Modern economic systems have become more customer-oriented, and expect people to work in a variety of fast changing environments making job role environment skills increasingly relevant.

In the sections below, examples are given which show how aspects of this model can be embedded into occupational standards to ensure that a broad view of competence is reflected.

3. A STANDARD — ELEMENTS OF COMPETENCE AND PERFORMANCE CRITERIA

3.1 Definitions

An element of competence, with its performance criteria and range statement, constitutes a ‘standard’. This section describes the first two components of the standard — elements of competence and performance criteria.

Standards are detailed specifications which may be used in the processes of training design, and they are a focus for assessment. Assessments are made and recorded at the element of competence level — although they are only certificated at unit level (see section 5).

Standards are descriptions of outcomes — the results of activity rather than the inputs or processes which support the outcome. Some outcomes are tangible — they are the physical result of an activity (a product). But outcomes can also be intangible — the result of a cognitive or interactive process — eg a decision, advice or a sale. Examples of standards which are characterised by tangible and intangible outcomes are shown below (in the examples the standards are shown with their element title only, and these have been grouped into constituent ‘units of competence’ — this process is described more fully in section 5 of this chapter).

A unit of competence developed for the iron and steel industry, which is composed of standards with tangible outcomes, is:
Unit: Manufacture flat (steel) products by cold rolling

Element Title 1: Process materials to remove iron oxide
Element Title 2: Roll materials to specified thickness tolerances
Element Title 3: Bright anneal steel to specified mechanical properties
Element Title 4: Harden and temper steel strip to specified properties

A unit of competence developed for the financial services sector, which is composed of standards with intangible outcomes, is:

Unit: Provide information and advice and promote services to customers

Element Title 1: Inform customers about products and services on request
Element Title 2: Advise customers about non-FSA inclusive products and services which meet their identified requirement
Element Title 3: Promote the sale of additional products and services to existing customers
Element Title 4: Promote the sale of products and services to potential customers
Element Title 5: Ascertain customer details to determine eligibility for lending products

To be a complete standard, the element title requires both performance criteria and a range statement (see section 4). A performance criterion describes the critical outcomes which are evidence of competent performance — it is the answer to the question "how would I know that a candidate is competent in (element title)". Performance criteria are precise descriptions which are used as a specification to guide and structure assessment. As with elements, the outcomes may be tangible products or the non-tangible results of processes.

For example:

Element: Roll material to specified thickness tolerances

Performance Criteria:

(a) thickness measuring equipment is standardized/calibrated to produce the specified dimension
(b) materials are rolled to specified thickness and tolerance
(c) recoiling tension is compatible with materials' thickness and quality
(d) distortion during rolling is minimised
(e) production rate, shape and surface quality is optimised for individual rolling passes
(f) tracking devices are monitored and adjusted to minimise material damage
(g) protective oil is applied when specified

(the tangible outcome is the rolled material)

and

Element: Promote the sale of products and services to potential customers

Performance Criteria:

(a) appropriate and accurate information about the Society is offered
(b) potential customer needs and status are identified accurately and politely
(c) advantages and benefits of membership offered by the Society, and relevant to potential customer needs/status, are described clearly and accurately
(d) options and alternatives are offered where specific products and services do not directly match potential customer needs
(e) customers are offered the opportunity to make a purchase
(f) potential customers are treated in a manner which promotes goodwill

(the main outcomes are the quality of the information given, plus the treatment of the customer)

3.1.1. Internal structure

The title of an element of competence should conform to the general guidelines for all statements of competence — ie:

- it should refer to outcomes rather than activities, tasks or skills
- it should follow the structure of: active verb, object and condition (the condition can be omitted if it is immediately obvious from the verb and object)

The element does not exist on its own — it is inseparable from its performance criteria and range statement.

A performance criterion has a different structure to all other statements of competence (units and elements). A performance criterion consists of a critical outcome, and an evaluative word or phrase.

For example:

thickness measuring equipment is standardized/calibrated to produce the specified dimension critical outcome(s): the calibration of the thickness measuring equipment
Care should be taken in choosing the most appropriate evaluative statement because it is possible to over or under specify the standard. The most common mistake is to constantly use the term 'correct' (which implies only one possible outcome) when terms like 'accurate' or 'appropriate' are more representative of work practices and expectations.

### 3.2 Purpose of Elements and Performance Criteria

#### 3.2.1 Standards

Elements and performance criteria are the detailed specifications which help make units 'manageable' for the purposes of assessment and learning design. The element title should be a precise description of what somebody should be able to do, but still phrased as an outcome, rather than a specific task or activity.

For example:

- **Roll material to specified thickness tolerances**
  - rather than:
    - rolling (steel)
    - steel rolling practice (intermediate)
    - steel manufacture and processing
    - steelmaking (foundation — rolling techniques)

The performance criteria, together with the element and the range statement, is the standard. The performance criteria facilitates assessment, and may need to change to accommodate changes in technology and work organisation. Performance criteria must be realistic and represent the standards applied to the workplace — not 'ideal' standards which are not practised, nor 'training standards' which are not set at employment levels.

For example:

- recoiling tension is compatible with materials thickness and quality
  - rather than:
    - set the recoiling tension correctly
    - follow the recoiling setting procedure
    - demonstrate how to set the recoiling tension
    - draw a diagram of the recoil tension setting mechanism

#### 3.2.2 NVQs/SVQs

Elements, performance criteria and range statements indicate the 'content' of units for those involved in the design of learning to support achievement of the qualification, and are the descriptions of the outcomes which must be assessed to provide evidence of achievement. They are the primary focus of assessment although it is the unit which is credited towards the qualification.

### 3.2.3 Relevance and Breadth

When the analysis reaches element level, each unit and its constituent standards (element, performance criteria and range statement) should be examined to ensure that it contains all the expectations of the work role including the aspects of task management which 'bind together' the outcomes represented by the standards. Examples of element titles which reflect the broader 'task management' expectations are:

- Contribute to the co-ordination of, and the overall efficiency of the production process
- Train and instruct staff
- Contribute to the design and evaluation of equipment and systems
- Evaluate potential solutions against known technical constraints.

Each standard should then be examined to ensure that the performance criteria refer to the contingencies and uncertainties which may occur in the environment. The outcomes represented by the standards are rarely carried out against fixed and unchanging procedures and circumstances and the expectations regarding breakdowns and reactions to uncertainty should be included. Here, the example standard from section 3.1 above is reproduced with the 'contingency management' performance criterion underlined:

**Element: Promote the sale of products and services to potential customers**

**Performance Criteria:**

(a) appropriate and accurate information about the Society is offered
(b) potential customer needs and status are identified accurately and politely
(c) advantages and benefits of membership offered by the Society, and relevant to potential customer needs/status, are described clearly and accurately
(d) options and alternatives are offered where specific products and services do not directly match potential customer needs
(e) customers are offered the opportunity to make a purchase
(f) potential customers are treated in a manner which promotes goodwill

There is also an opportunity to identify the need for future flexibility at this level by including the requirement to be able to deal with new unfamiliar equipment, methods, processes etc. This is a new development and puts the ILB into a truly strategic
role in requiring that competent people are able to cope with future needs.

### CHECKLIST

does each element title:

- use a language which is precise and consistent with the recommended grammatical structure, and is an acceptable and distinct work role within the industry or occupation?
- describe outcomes, achievements or results of activity, rather than activities procedures and methods?
- describe outcomes which can be demonstrated and assessed?
- describe critical processes in instances where tangible outcomes are insufficient to describe successful performance?
- contain criteria which identify contingencies, variations and breakdowns which are an integral and essential part of overall performance?
- contain a range statement which identifies current and emerging context and applications to which the standard will apply?

do the elements, taken as a whole:

- identify within appropriate units, critical aspects of task management and co-ordination of work roles as suggested by the Job Competence Model?

is each performance criterion:

- composed of a critical outcome and a clear evaluative statement rather than a description of a process of instruction?
- expressed in a language which is as precise as possible, and which facilitates a mode of assessment?

do the criteria, taken as a whole:

- avoid descriptions of procedures and methods except where there is no other practical reference?
- identify critical contingencies and variances?
- describe only those outcomes which are essential for successful performance?

### 4. RANGE STATEMENTS

#### 4.1 Definition

A range statement is a description of the range of application to which a standard (i.e., the element and performance criteria) is intended to apply. A standard is deliberately broad in scope and does not specify particular equipment, materials, methods or processes — rather, it describes outcomes. The range statement identifies particular and significant ‘ranges’ of variation which fix the ‘domain’ of the standard by identifying how the element may be interpreted in terms of current good practice in the industry.

Range statements are intended to provide a focus for assessment and the specification of training programmes, although they are not assessment specifications in themselves. It is intended that the range statement is regularly updated to keep the standards up to date in terms of technology, processes and methods etc. For example, a standard for a training professional might include the performance criterion:

**visual aids and associated equipment appropriate to the presentation outcomes, content and the audience, are prepared and used**

A range statement would further define the nature of visual aids and equipment recognised within the profession as representing ‘good professional practice’. In the early 1980’s the ‘equipment range’ might have included:

- flip charts
- white boards
- video recording and playback systems
- overhead projectors and slides

In the 1960s the list may have been:

- chalk boards
- flip charts
- 16 mm projectors

In the 1990s the following may have to be added:

- interactive video systems
- computer-based presentation packages
- multi-media systems

#### 4.2 Structure

A range statement describes significant classes or categories which define the scope or domain of the standard. The categories may include:

- tools, equipment, machinery and plant products and services
methods, processes and procedures
clients and customers
physical constraints (health and safety etc)
environments

These categories will further specify the more general categories in the element title and the performance criteria. For example, for the element **Promote products and services to potential customers**, it would be necessary to specify the range of products and services for the particular occupation or work role, and the range of different customers likely to be encountered in normal practice.

The classes should be listed in sufficient detail to provide an assessment focus. Including a class (like ‘disabled customers’) means that a sample from that class will need to be assessed. Classes can be made more general or more specific — eg:

**range of customers**
- disabled
- elderly/retired
- children
- adults
- group representatives

A less specific range of customers would be:
- personal customers
- corporate/group customers

This range implies that any differences in personal customers are not significant.

A more specific range of customers would be:
- physically disabled customers
- customers with hearing difficulties
- customers with sight deficiencies
- customers with speech impediments
- elderly/retired
- children
- adults
- group representatives.

In this case there would be a need to sample from each of the specific examples of disabled customers.

There are instances where the range statement may include examples to illustrate what should be included in the range. In this case, the examples are not separate samples but merely illustrations — in which case they should be phrased by using the term ‘including’ — as follows:
- disabled customers (including customers with hearing difficulties, sight deficiencies, speech impediments etc)
- elderly/retired
- children

- adults
- group representatives.

If a class is not included in the range then it is not significant in terms of assessment. For example, the range statements for building societies do not refer to large or small societies (range of size), nor branch and head offices (range of locations). This means that any actual differences in practice or application between large and small societies, or branches and head offices are not sufficiently significant to warrant separate samples for assessment purposes. Competence demonstrated in one context is sufficient to infer competence in all other examples.

Because range statements are inclusive categories the terms ‘either’ and ‘or’ should not be used. The categories are not assessment options. They are assessment sampling categories so each should be sampled. Which particular instances within the categories should be sampled are identified when the assessment system is in place — not in the standards specification.

### 4.3 Function of Range Statements

#### 4.3.1 Standards

Range statements provide the key link between standards (which are deliberately general) and current occupational activities (which are specific). The range identifies the scope of assessment. The range is designed to be easily updated so that standards remain relevant and up to date. The range statement assumes that standards are common across the categories and classes described in the range — but if the range is extended to include applications which have different standards then a new element must be developed.

For example, in determining the range of products about which information must be given, it is necessary to tie down the occupational sector to which the element applies. In financial services the product range includes mortgages, personal loans, foreign currency etc. The performance standards (the performance criteria) applying to each of these products are the same — so, for each product and service, ‘product features and advantages are described clearly and accurately’ applies as much to mortgages as it does to loans. Products which conform to this standard may be added to and removed from the range as required.

However, if the characteristics of products change markedly — as happened with the introduction of the Financial Services Act (FSA) in 1986 — then the range cannot accommodate new and significant differences in standards. The FSA introduced a legal requirement concerning the quality of advice which applied to a set range of products. These products...
could no longer be listed in the range statement together with non-specified products because the standards applying to them were different. Thus, the financial services sector developed two separate element titles — each of which had slightly different performance criteria:

- Inform customers about non-FSA products and services on request
- Inform customers about FSA related products and services on request.

In each standard the range specified the non-FSA and FSA related products respectively — because different standards applied to each range.

In this way the range statement is an important barometer in the process of updating and changing standards. New applications and methods are introduced into range statements as they emerge and can suggest a change in standards (by the addition of new performance criteria or the development of separate elements).

4.3.2 NVQs/SVQs

Range statements facilitate the development of appropriate assessment processes by defining the expectations which the standards designers have in terms of the specific activities and focus of the standards. The range states the scope of assessment and is a major quality assurance instrument for standards and their associated NVQs/SVQs.

Each category in a range statement is an indicator of a ‘sample’ which must be included in assessment. So, for example, the range categories loan services, mortgage services, foreign currency mean that a sample should be taken from each category since each suggests a different application of the standards. The list does not mean that a sample from one category is sufficient evidence of competence in all categories. Nor does it mean that only one example from each category is sufficient evidence of competence in the category — this will be specified in the assessment system and the assessment instruments chosen at a later stage in the development process.

4.3.3 Relevance and breadth

Range statements are developed specifically to maintain the relevance of qualifications, by keeping them up to date with changing practice, and ensuring occupational breadth by specifying the range of coverage which must be included in assessment.

Range can cover tangible requirements, like equipment and products, and also contingency requirements, like a range of variances which might not appear in normal practice. In the example given in 4.2 above, the range of customers included disabled customers, and it might also include customers who exhibit behavioural difficulties.

Range statements can be the focus for including new and emerging systems and processes which are significant to the long term growth and competitiveness of industries. For example, new technology applications can be included in the range in anticipation of industry wide adoption — which forces the assessment and learning systems to work in advance of emerging practice to prepare people for the future needs of the economy rather than historical needs.

<table>
<thead>
<tr>
<th>CHECKLIST</th>
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<tbody>
<tr>
<td>does the range statement:</td>
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<tr>
<td>- describe both existing and emerging practice?</td>
</tr>
<tr>
<td>- specify classes and categories (not each individual instance) in sufficient detail to enable an assessment schedule to be developed at a later stage in the standards development and certification process?</td>
</tr>
<tr>
<td>- only include categories where a difference in application is significant?</td>
</tr>
<tr>
<td>- avoid acting as an assessment specification?</td>
</tr>
<tr>
<td>- set specific boundaries of application, each of which must be included in an assessment sample?</td>
</tr>
<tr>
<td>- in some cases act as a reminder of specific instances which might be missed, in which case the term “including” should be inserted before the specific instances (eg: medical emergencies — including heart failure, cardiac arrest...)</td>
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</tbody>
</table>

See References and Notes at the end of this chapter on ‘Range Indicators’.

5. UNITS OF COMPETENCE

5.1 Definition

A Unit of Competence does not have a precise technical description. Rather, ILBs have to use informed judgement to decide when an appropriate level of detail has been reached through the functional analysis process. Some guidelines for deciding are:
a) are the statements at this level, representative of 'marketable competences' and would employers take them seriously as tangible work roles or functions?

b) are the statements starting to look like the kinds of major work roles or functions which are common in the industry?

c) is this the kind of level of generality/detail that might be the focus for assessment?

d) would units group together at the next stage 'up' in the analysis to form credible qualifications?

For example the statement 'install and commission telecommunications equipment and systems' might be a candidate for a unit. In terms of the criteria a) - d) outlined above the following comments might be made against:

a - The statement would be somewhat beyond the expectations of an employer although it would certainly be recognised. In terms of marketability it is rather too broad since the functions involve at least three different work roles, each of which is separately recognised in the industry.

b - The statement is a tangible work role. There are departments which are responsible for carrying out this function which is expressed within the normal language of the industry. Nevertheless, the comment in a) above still applies — the statement 'contains' a number of work roles which are seen as quite different.

c - This is not really an issue since we have sufficient clues from the comments at a - and b -, to suggest that this role is rather too broad in scope to assess.

d - Grouping this function with other related functions (like 'maintain and repair telecommunications equipment and systems', and 'design and develop new telecommunications products and services') is the final and most obvious signal that this statement is too broad to be a unit. A qualification covering design, installation, commissioning, repair and maintenance is clearly too broad in scope for the industry since it covers a number of NCVQ/SCOTVEC levels, whole departments and even different specialist companies. We need to undertake a further analysis to see whether units would emerge, although we could bear in mind that although the statement is too broad as a unit, it may well form the basis for a 'statement of competence' — or an entire qualification.

The next stage of analysis throws up three functional statements:

- install and commission telecommunications equipment and systems
  - identify, assess and specify system requirements
  - plan the installation of a telecommunications system
  - install and commission telecommunications systems

When matched against the criteria, these 'smaller' statements are much better candidates for unit level. Each represents a broad work role which is contained within single sections and departments, the roles are different (specifying requirements, planning, installing/commissioning) yet each is 'larger' than a specific task or job. The three statements would group together to form the basis of a qualification in telecommunications systems installation. Consequently, this would appear to be a viable set of units.

5.1.1 Internal structure of a unit

A unit should conform to the general guidelines for all statements of competence — ie:

- it should refer to outcomes rather than activities/tasks or skills
- it should follow the structure — active verb, object and condition (the condition can be omitted if it is immediately obvious from the verb and object)

for example:

- process the transfer of funds into, and out of, accounts
  
  active verb: process
  
  object: the transfer of funds
  
  condition: into, and out of, accounts

rather than:

- cash handling and till operating
  
  account management
  
  financial documentation 1 (or 2)
  
  financial services level 1 intermediate

5.2 Purpose of a Unit

5.2.1 Standards

Units describe key work roles which should make sense to most employers in the occupational sector. Units should 'approximate' to the scope of job roles in a sector. They may be used (apart from their role in qualifications) as a basis for internal appraisal or job descriptions.
5.2.2 NVQs/SVQs

Units are the smallest unit of accreditation and facilitate credit transfer and accumulation. Units may be entered into the National Record of Vocational Achievement (NROVA) and Record of Education and Training (RET), where they can be accumulated to form a complete Vocational Qualification. It is intended that different examining and validating (EV) bodies offering qualifications in the same occupational area at the same accreditation level will offer comparable units which have ‘currency’ with all the EV bodies. Unit descriptions will also be the primary source of access in England and Wales to the NCVQ database, which means that they will have a role in career counselling and selection. Most NVQs/SVQs will also list the unit titles. This means that units will be the most ‘visible’ part of standards as they appear in NVQs/SVQs so it is especially important that the titles are clear and meaningful to all potential users.

5.2.3 Relevance and breadth

When the structure of units is developed the units as a whole should be examined to ensure that they reflect broad responsibilities and expectations which are consequent upon the environment in which the work roles are performed. These will include:

- the constraints of the natural environment — health and safety, hygiene, confidentiality etc
- the nature of relationships with other people in the environment
- the kinds of work organisations typical of the environment.

Examples of these broad ‘environmental’ units are shown below:

- Monitor and maintain the safety of the individual, other workers and members of the public within the working environment
- Establish and maintain effective working relationship with other people in the workplace
- Instruct and advise customers on the function, use and routine maintenance of telecommunications equipment and systems
- Maintain system specifications and installation standards in field and on site environments.

### CHECKLIST

**is each unit:**

- expressed in a language which is precise and consistent with the recommended grammatical structure and is an acceptable and distinct work role within the industry or occupation?
- composed of standards (elements, performance criteria and range statements) which have a coherent relationship with each other, and which, taken together, are a description of outcomes, achievements or results of activity, rather than activities procedures and methods?
- of sufficient ‘size’ and scope to be recognised by an employer as a credible achievement in its own right?

**do the units identified within the standards framework, taken as a whole:**

- identify key restraints, health and safety, interpersonal and organisational work roles?
- identify all the work roles within the occupational sector?
- identify emerging work roles as well as current ones?

### 6. HOW STANDARDS ARE DERIVED

6.1 Carrying out the Functional Analysis

The process of functional analysis starts with a group activity to outline the standards framework which will provide a starting point for detailed field analysis.

The group needs to agree to a set of ground rules for the analysis process — which are:

- the purpose of the activity is to develop standards — not training or assessment systems
- standards are outcomes, not the means by which outcomes are achieved — and each statement in the analysis must be an ‘outcome statement’ as described in other sections of this chapter
- the analysis process is flexible and allows for changes at every stage — consequently people should not become defensive about areas which they regard as special or particularly important
- the standards developed are a classification of
the occupational area — therefore the classification must follow the rules of all classifications. As far as is possible and practicable:

- it must be complete (all occupational roles and categories must be contained within it)
- categories must be mutually exclusive (each category or unit must be different to other categories to avoid duplication)
- it must be credible and fit for purpose (it must be credible with the sector as a representation of what happens in the sector. This does not mean that the language needs to be simplistic, but it must make sense)

### 6.2 Determining the 'Key Purpose'

The key purpose is a 'functional definition' of the entire occupational area in outcome terms and it should be capable of describing the occupational sector, organisations which operate specifically within the sector, key groups or departments in organisations as well as the expectations of individuals. This is a strength of the analysis since it provides broad links between individual performance and national standards. The figure below gives some examples of key purpose statements which have been produced by some sectors.

<table>
<thead>
<tr>
<th>Original Sector Title</th>
<th>Key Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel Manufacture</td>
<td>manufacture and supply a range of iron and steel goods, by processing raw materials, to meet anticipated and actual market requirements</td>
</tr>
<tr>
<td>Building Societies</td>
<td>provide financial advisory and investment services to individual and group (non-corporate) customers</td>
</tr>
<tr>
<td>Training and Development</td>
<td>develop human potential to assist organisations and individuals to achieve their objectives</td>
</tr>
</tbody>
</table>

Each statement can also be applied to all levels within the occupation as follows:

- the purpose of the building society sector is to
- the purpose of each building society is to
- the purpose of each building society branch is to
- the purpose of customer advisors is to
- the purpose of each individual customer advisor is to

provide financial advisory and investment services to individual and group (non-corporate) customers

The key purpose is not unlike the idea of a 'mission statement'. The development of the key purpose is the most important stage in the analysis because it is from this statement that all other stages will be developed.

### 6.3 Rules of Analysis

Having established a key purpose, the group will need to consider the question of 'disaggregation rules' which are the criteria used at each analysis stage to break statements down into smaller components. At each later stage of analysis it is useful to consider what 'rule' should be applied — and the rule should ensure that the components follow general classification rules:

- it continues to be a complete description of the occupation
- it generates categories which are exclusive (as far as practical)
- it is a credible reflection of what happens in the occupation.

<table>
<thead>
<tr>
<th>Active verb/phrase</th>
<th>Object (what)</th>
<th>Conditions/Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>manufacture and supply</td>
<td>a range of iron by processing raw materials</td>
<td>to meet anticipated and actual market requirements</td>
</tr>
<tr>
<td>provide</td>
<td>financial advisory investment services</td>
<td>to individual and group (non-corporate) customers</td>
</tr>
<tr>
<td>develop</td>
<td>human potential</td>
<td>to assist organisations and individuals achieve their objectives</td>
</tr>
</tbody>
</table>
6.4 Applying Classification Rules to Functional Analysis

There are a number of different kinds of rules which will be appropriate to different occupational sectors — here are some examples:

- stages in a process or system — like 'input, process, output'
- processes which are circular — like 'identify needs, diagnose, act, evaluate ... identify'
- 'objects' which are quite distinct — like processes applying to organisations, and processes applying to people
- different products which will require different standards
- different methods which will require different standards.

There are many such rules and occupational specialists will need to develop those which are the most appropriate for each stage of the analysis of the sector. It can be helpful to list all the variances within the occupational sector which will have to be taken into account at some stage in the analysis; and ensure that these are accommodated if they are found to be significant. This does not mean that all differences have to be evident in unit or element titles; the differences listed may not have a significant bearing on the standards applied to them. For example, the iron and steel industry listed the following variables:

In the resulting analysis, different customers and quality specifications had no direct bearing on standards, so neither of these distinctions appear in the units, element titles, performance criteria or range statements. It was also found that different products were not as important as different manufacturing methods — in fact different manufacturing methods took account of most product differences.

6.5 Developing Units, Elements, Performance Criteria and Range Statements

This process continues until a level of analysis is reached which starts to identify potential 'units of competence'. At this stage, the guidance given above on the development of units and standards applies.

An extract from a fully worked example from the steel industry is shown below, together with a description of the rules used at each stage of the analysis (figure 2). Some of the statements still require further development, but the figure shows how a function can be tracked down to a unit level.

Figure 2:

KEY PURPOSE: Supply a range of iron and steel products by processing raw materials, to meet anticipated and actual market requirements

1. Obtain the raw materials and services required for the manufacturing process to meet anticipated and actual market requirements
2. Manufacture iron and steel products to meet anticipated and actual market requirements
3. Finish iron and steel products to customer or storage requirements and prepare for despatch
4. Shape finished products by cold working

NOTE: The bold line and type shows the detailed route taken to develop the Units and Elements structure

- = point at which a 'rule' is applied
1. System - input (obtain supplies), process (make products), output (deliver)
2. Process - making bulk steel, shaping, finishing
3. Method of changing shape - hot working, cold working, casting
4. At point four two rules are applied - method and product

Boxes marked like this indicate where the structure requires further development
Note that different rules can be applied at the same level to adjacent statements — at stage four two different rules are used which reflect practice in the industry. The first rule breaks down the statement ‘shape finished products by hot working’ by method of hot working, because the methods used in the industry are quite different and generate different operations, processes and standards. The statement ‘shape finished products by cold working’ uses the type of product to produce component statements because in this part of the sector the methods are broadly the same (applying pressure with rollers), but the products produced call for different processes and standards.

7. ASSESSMENT AND CERTIFICATION

Because issues relating to assessment and certification are discussed fully in Part 2 it is not necessary to summarise them at this juncture.

8. CONCLUSIONS

The development of occupational standards involves two related processes; the analysis of the occupational area through a process of functional analysis, and the development of standards in the form of elements of competence, associated performance criteria and range statements.

Undertaking this process involves understanding the technical criteria and constraints which apply to any research and analysis process. These are outlined in detail above and in Part 2. In addition there is a requirement for a thorough knowledge of the performance standards applied in the occupational area. These two attributes do not necessarily go together. Consultancy agencies may be competent in providing the analysis services but will not have detailed knowledge of the occupation (except in rare cases), and occupational specialists are unlikely to have the necessary skills of occupational and functional analysis.

ILBs are advised to seek specialist help before attempting to conduct an analysis and associated standards development programme. Standards will not emerge by simply discussing experience, nor will they emerge automatically from the technical analysis. ILBs and technical consultants need to work together to share skills and experience to produce valid and credible standards.

In the first instance, ILBs are advised to contact the TA who will be able to offer initial help and advice.

REFERENCES AND NOTES


2 Range Indicators — In the case of cross sectoral standards it has been found to be extremely difficult to define precise range statements. This has led to the view that there are two types of range information: range statements (which act as described above) to identify sample classes for assessment; and broader information which we called range indicators, which are at a greater level of generality, and which identified the classes themselves. These range indicators would subsequently be developed into precise range statements.

Range statements are specifically to do with qualifications since they are the mechanism by which the standard is attached to the assessment process. In some instances, the range determines the level of the qualification.

Some standards are developed in this way. A qualification at a certain NCVQ level is envisaged and standards are developed to ‘fit’. In these instances the range statements are an integral part of the process.

In other cases, more general standards are developed within a broad cross-sectoral framework, from which units are then selected to form a number of qualifications at a number of levels. In these instances, range statements cannot be developed until the qualifications structure is in place; range indicators are used to identify the classes for later development.

It is clear that standards are being developed at two levels of generality: broad ‘cross-sector’ framework like the management and training and development standards, and ‘occupational’ standards which are more closely linked to one occupational area. The relationship between these two kinds of standard is currently unclear; is the former merely a framework within which standards will subsequently be developed?

Given no clear answers at present, it may be useful for practitioners to adopt the two levels of generality in developing range information.

1 The example statement is hypothetical and is used for illustrative purposes only.

2 The National Record of Vocational Achievement offered by NCVQ and the Scottish Record of Education and Training offered by SCOTVEC provide the facility to accumulate individual units of competence.

3 Suggestions for running analysis workshops are outlined in ‘Competence and Assessment’ Special Issue No 1, produced by the Training Agency free of charge, 1989.
4. UNDERSTANDING THE PLACE OF KNOWLEDGE AND UNDERSTANDING IN A COMPETENCE BASED APPROACH

Alison Wolf and Lindsay Mitchell

1. INTRODUCTION

This chapter seeks to clarify the role of knowledge and understanding in the specification of occupational standards, the assessment of competence, and the provision of standards-based learning and training programmes.

Section 2 discusses how knowledge and understanding can be conceptualised in an occupational competence-based system. Section 3 discusses how knowledge and understanding requirements may be identified and the way in which this process contributes generally to effective standards development. Section 4 discusses methods of assessing underpinning knowledge and understanding in the context of the general assessment of competence, with particular reference to current misconceptions. Section 6 ends with some action points for standards development particularly related to assessment.

2. THE RELATIONSHIP BETWEEN COMPETENCE AND KNOWLEDGE AND UNDERSTANDING

In the standards development programme, competence is defined as 'the ability to perform the activities within an occupation or function to the standards expected in employment'\(^1\).

Standards focus on the purpose of activity and describe in outcome terms what any individual performing a particular role should be able to do, i.e. they state work expectations. The performance criteria, in particular, describe how one can recognise that this has been achieved. Standards do not describe particular abilities which individuals have. Nonetheless, it is clearly the case that there are preconditions for competence. An individual will not be able to meet the standards for competent performance unless he or she has acquired the relevant underpinning skills and underpinning knowledge and understanding.

Skills, knowledge and understanding underpin, and are integral to, competent performance. If standards are well and fully specified, they should assist the clarification of the knowledge and understanding implied by a unit or element of competence, both for learning and assessment purposes. However, this is not always as easy as may first appear as one cannot 'see' knowledge and understanding.

Also, a particular piece of competent behaviour will generally involve selecting the correct knowledge from a wider knowledge base, and applying it appropriately. Because the identification of underpinning knowledge and understanding is more problematic than for underpinning skills, it is on these that this chapter focuses, although their status within competence is no different from that of 'skills'.

In some elements, the task of identification is simpler because the performance criteria clearly imply that it would be impossible to perform without underpinning knowledge and understanding. For example, the catering element on boiling/simmering food, contains the performance criteria:

- Food immersed in liquid at correct initial temperature
- Even cooking without burning, sticking or drying out.

These imply knowledge of cooking procedures and timings (e.g. so much per pound) for the foods commonly prepared by boiling/simmering in commercial establishments. In many other cases however, the identification of knowledge and understanding is more problematic. This chapter provides guidance as to how this problem may be tackled.

3. THE IDENTIFICATION OF UNDERPINNING KNOWLEDGE AND UNDERSTANDING

Competent behaviour frequently requires a far greater amount of underpinning knowledge and understanding than is actually used on any given occasion. This is because the situations in which people operate may be highly varied and indeed unpredictable. Even when most performance is routine, the notion of full occupational competence encompasses the ability to deal with the full range of possible non-routine situations. Competent behaviour in such situations may require the selection and integration of knowledge quite different from that inherent in routine activities.

3.1 Specifying Range

Range statements define in detail the situations and circumstances under which it would be reasonable to assume a competent individual could perform adequately. The identification of the range of circumstances or variables to which an element of competence applies is, therefore, the first step towards identifying the underpinning knowledge and understanding which an individual uses in order to
perform; and on which an assessor may draw to infer an individual's capability to meet the occupational standards. Range statements are the 'application of standards in context' and they describe in detail, for those using the standards, the actual situations and circumstances in which all individuals are expected to demonstrate capability. Range statements perform the function of relating standards to current practice.

For example a unit from commercial horticulture might include the element:

Maintain the soil condition and physical appearance of bed/border.

Here, competence in the work role will necessarily require underpinning knowledge and understanding, including, specifically, the ability to identify common weeds, and knowledge of available chemical sprays and type of weeds for which they are suitable. However, the knowledge and understanding requirements can be seen more easily if a range statement is added to the element. For example:

Acid and alkaline soils; fast-draining and waterlogged sites; chemical and biological controls, selective and non-selective methods of weed control.

The range statement is not in itself a statement of underpinning knowledge and understanding requirements. It is an aid to standards development. However, by specifying and contextualising the coverage of the element it describes, it clarifies for both trainers and assessors what knowledge and understanding are likely to be required for occupational competence. It will also be the case that changes in the occupational context, e.g. in products used or services offered, will imply changes in the range statement, and in the underpinning knowledge it implies, rather than revision of the elements and performance criteria themselves.

Devising range statements is not essentially any different from the overall process of standards development. ILBs will find the job competence model outlined elsewhere in this book helpful in assisting them to specify the full range of situations covered by an element. Some ILBs have found it helpful to brainstorm, and to avoid specifying only routine occurrences, by asking: What if such and such happened? Would the element as it stands ensure that someone knew what to do?

This process can be illustrated from current and recent experience of one ILB. For example, the Retail Certificate contains the following element and performance criteria:

**HANDLE AND RECORD PAYMENTS MADE BY CHEQUE AND CREDIT/DEBIT CARDS**

- Correct price/code entered into till
- Price/total due stated verbally to customer
- Receipt of cheque/credit card acknowledged verbally
- Cheques and credit documents complete, accurate and authorised by an appropriate authority
- Payment procedure completed accurately
- Transaction carried out politely and in optimum time.

This basic formulation was reached fairly early in the definition of retail standards. However, when the ILB working group came to review the element, they concluded that the element was not, in fact, fully specified. In particular they questioned whether they would be confident that someone judged competent on this element would know what to do if the following situations arose:

'A card was presented which was not accepted by a store or was a new card just launched onto the market.'

Or

'A cheque presented was stolen or forged or filled in incorrectly.'

The ILB reached the conclusion that they could not be confident competence had been attained. Consequently they added to the element the stipulation that it must cover procedures for dealing with a range of cheques, credit/debit cards, and errors on cheques. This range statement clarified the extent of the underpinning knowledge required for someone performing this element and thus throws light on the situation for both assessors and trainers.

Range statements of this type may be quite brief, or quite long and exhaustive. It depends on the nature of the element, and the degree to which an ILB considers that requirements must be extremely detailed and explicit for the benefit of scattered trainers, novice assessors etc. For example, within the pharmacy specialist competences for the retail certificate, we find that the element on handling prescriptions specifies coverage of:

- contraceptive items (because there is no charge on these)
- prescriptions where the form is completed by people exempt from charge
- products incurring multiple charges

The range within elements covering sale of "medicine counter" products is far larger. It contains:

analgesics; vitamins & tonics; laxatives; anti-
diarrhoea treatments; medicated skincare; eye and ear care; antacids; contraceptives; paediatric health care and another 15 categories.

In each case, the performance criteria involve the need to match products to customers’ needs and characteristics (e.g. whether they have a heart condition, or drive frequently and must not become drowsy), explain instructions, draw attention to dosage requirements and precautions, and explain safety factors. A considerable amount of underpinning knowledge and understanding can be inferred from the element and performance criteria plus range statement which could not be inferred easily from the criteria alone.

As noted earlier, fully specified standards will help clarify the training/learning which an individual will need in order to become competent to meet the standards. The standards in themselves are not a training syllabus and plan. Rather, they are the template from which training plans (including the acquisition of underpinning knowledge and understanding) and assessment strategies are derived.

3.2 Rethink Criteria

Sometimes when people feel the need to add knowledge specifications to standards, they are identifying a problem with the standards as they are expressed at the time. That is, they may be pinpointing something important which the elements and performance criteria are failing to pick-up. It may be suggested, for instance, that it is necessary to know/understand why certain procedures are being followed. If so, and existing performance criteria do not ensure such understanding, this will generally signal the need for additional performance criteria rather than range statements. It is not acceptable to add required ‘understanding’ as a separate part of an element or unit.

For example, in many financial occupations, occupational competence requires that people understand why they are entering particular items in particular ledgers. There is general agreement among the relevant ILBs that correct performance of particular tasks will generally not be an adequate demonstration of this. However, it is not satisfactory to have an element or performance criterion which simply states ‘understands basic accounting principles’. As with any other performance criterion, one needs specificity and observable evidence. Possible performance criteria within context might include:

- Entries/accounts are identified correctly as assets, liabilities, expenses or revenues.
- Double-entries are accurate and mutually consistent with each other.

In summary, the performance criterion is identified by asking how one recognises that someone did have the understanding required.

In general, it should be emphasised that:

- Knowledge and understanding are part and parcel of occupational competence, in that it is through acquiring underpinning skills, knowledge and understanding that an individual is able to perform to the standards required.
- Direct consideration of knowledge and understanding requirements can assist in the specification of standards. However, direct specification of knowledge and understanding is not appropriate in a unit or element of competence.

If the standards (including the specification of range) do not help clarify the underpinning knowledge and understanding required for learning and assessment, then reconsideration of the standards and further definition of performance criteria are appropriate.

4. THE ASSESSMENT OF KNOWLEDGE AND UNDERSTANDING

Knowledge and understanding are necessary for performance; in fact, they are often learned and acquired through it. Even if they are learned separately, it has been argued that if someone has demonstrated competent performance in the workplace, then they must, by definition, have demonstrated command of the underpinning skills, knowledge and understanding required too. No other assessment or evidence will be relevant or necessary.

It is certainly true that performance in the workplace provides evidence of underpinning knowledge and understanding. It is also true that there may be elements where a quite limited amount of directly observed workplace performance provides adequate evidence to this effect. However, in practice, it will be very rare for such direct evidence of performance to permit one to infer competence over the full range of relevant circumstances. It follows that it will also be inadequate to infer that someone has acquired all the relevant underpinning knowledge and understanding. Specification of range statements makes the adequacy/inadequacy of evidence from workplace performance clearer, as well as helping clarify the type of supplementary evidence (whether it be further evidence of performance or of knowledge) which may be required during assessment.

The assessment of knowledge and understanding must be approached within the complete context of evidence collection and not as a separate enterprise. The primary objective of assessment is to ensure that
sufficient evidence of good enough quality is collected from which competence can be inferred more safely'. This may mean, among other things, collecting evidence that underpinning knowledge and understanding have been acquired in a form which allows for their application in performance.

This evidence may come wholly, or only partly, from workplace performance. It may also come from any other known form of assessment. There is no one-to-one correspondence between the assessment of underpinning knowledge and understanding and the type of assessment procedure used. Any assessment of competence which is carried out will inevitably provide evidence about acquisition of at least some of the 'underpinning' skills and knowledge. Equally when existing evidence is, in the assessor's judgement, inadequate to demonstrate the necessary underpinning knowledge, supplementary assessments may take any form; including the demand for more workplace performance.

Often however, a judgement that available evidence is inadequate to demonstrate competence will be associated with:

- **Lack of access to workplace situations over the full range**
  
  For example, candidates for certification may either not be currently employed, or may be working in places which only deal with a sub-set of the competences and situations covered by standards. Many small catering establishments do little beyond frying, deep-frying and grilling a limited range of dishes. Conversely, in large catering establishments, junior employees are given very little opportunity to display command of task-management skills such as planning the preparation of dishes to ensure their completion by a deadline. Collection of supplementary evidence (either through performance or questioning, whichever is the most appropriate) in these areas can, and should, be designed to assess relevant knowledge and understanding; for example, of the application of fat/flour ratios in baking, or of modal preparation and cooking times for a wide range of ingredients in planning of meal preparation.

- **Cost/time constraints and improbability of critical situations occurring naturally**
  
  For example, medicine counter assistants in pharmacies need to be aware of the requirements of diabetics, and the risks to them of certain products. Some common cold and cough medicines include decongestants such as pseudoephedrine which are unsuitable for diabetic patients. Moreover, many contain ordinary sugar. However, the likelihood that an assistant will be able to display application of the relevant knowledge while being observed or assessed in a shop is very small. Supplementary evidence (for example, in the form of questions or a case-study incident) may be appropriate.

A subset of this category (relating especially to health and safety) consists of situations which are not only unlikely to arise naturally, but which everyone would prefer to avoid. For example, it is frequently important to know the consequences of avoiding recommended precautions when mixing and using chemical sprays, not only in terms of human health and safety, but also in terms of effects on crops, soil quality, and insect life. Supplementary evidence here might include questioning on the consequences of omitting particular components or behaviour.

- **Problems of attribution**

  For example, a number of different people may have contributed to a particular product, service or other outcome; either directly, or through the decision making process. It may therefore be impossible or not cost-effective, to credit a given person with that outcome (whether sound or otherwise). Similar problems occur where there is an extended time delay between the occurrence of an action and the opportunity to assess it. In such circumstances other people are then likely to become involved; the outcome becomes unattributable; and supplementary evidence is needed. Finally, there are cases where there is no obvious right action, solution or decision. It will be risky, if not impossible, to attribute achievement to an individual, and additional evidence will be required.

Evidence can be collected through a range of assessment instruments and situations. Assessments which directly question underpinning knowledge and understanding are acceptable and valuable ways of collecting such supplementary evidence, although they are not the only method. What is important is that, whatever format is used, the emphasis should be on the application of knowledge and understanding to the occupational context.

5. THE RELATIONSHIP BETWEEN ELEMENTS OF COMPETENCE AND THE ASSESSMENT OF KNOWLEDGE AND UNDERSTANDING

It will often be the case that there is no one-to-one correspondence between a particular element of competence, or performance criterion, and a particular piece of underpinning knowledge and understanding. The larger the knowledge base, and the more varied and unpredictable the work environment, the more
often this will be the case.

For example, standards for auditing for accounting technicians specify a wide range, and correspondingly large amounts of underpinning knowledge and understanding. A particular accounting technician may never have occasion to review the valuation of Intellectual Property assets in the course of carrying out audit compliance checks. It is, nonetheless, important that she or he works within the relevant legislation and codes of practice, not only because the issue might have arisen in an auditing context, but also because the very same technician may need to refer to this knowledge in the context of preparing tax returns.

This situation has obvious implications for assessment practice, since it is impractical to assess underpinning knowledge and understanding exhaustively and repetitively for every element where the same content applies. In many occupations the overlap seems to apply only to elements, and not at the unit level. In this case, it is perfectly possible for assessments to supply supplementary evidence of knowledge and understanding relevant to more than one element at once. The situation at unit level is more problematic, since units can be entered on the National Record of Vocational Achievement (NROVA) in England and Wales or Record of Education and Training (RET) in Scotland and accumulated over an indefinite period of time. Essentially it would be necessary to ensure that it was safe to infer that the candidate was competent on the whole of a unit prior to the unit being credited to that individual. It is up to the particular awarding body how this process is handled as long as it is consistent with NVQ/SVQ criteria that the units credited are in fact units of competence and not units of convenience!

Processes designed to clarify the nature of underpinning knowledge and understanding need to continue to the point where informed persons agree on what they see as required. This agreement should cover both the assessment and learning/training implications. The process is the same whether the clarification comes via additional performance criteria, or through range statements. How quickly consensus is reached, and how specific the resulting elements become, will vary with the nature of the occupational group concerned, and the degree to which there is pre-existing consensus about the nature of underpinning knowledge. In general, knowledge and understanding requirements should be related to the broad concept of competence as set out elsewhere in this book.

6. ACTION POINTS FOR STANDARDS DEVELOPMENT

The identification of underpinning knowledge and understanding does not imply some new process, different from that of standards development overall.

On the contrary, fully specified standards (including range statements) help to clarify the underpinning knowledge and understanding required to enable an individual to reach, and assess whether they have attained, the standards required for competent performance.

Knowledge is not something to be contrasted with performance.

On the contrary, all performance implies and requires knowledge. Knowledge and understanding enable an individual to perform competently.

Performance and underpinning knowledge and understanding do not require completely separate assessment methods and systems.

On the contrary, knowledge and understanding can be assessed in the performance domain. Assessments which concentrate on knowledge and understanding can provide important supplementary evidence about a candidate’s capability to meet the occupational standards.

Performance within an occupation is the key consideration when identifying and assessing underpinning knowledge and understanding, just as it is with other aspects of occupational standards. 'Input' measures, such as the number of courses taken, are no more acceptable here than for the elements or units as a whole.

REFERENCES


2. The National Record of Vocational Achievement by NCVQ, and the Scottish Record of Education and Training offered by SCOTVEC provide, the facility to accumulate individual units of competence.
INTRODUCTION

This chapter is an extract from a Standards Development Project Report called 'Understanding Knowledge'. The project set out to pilot a method for identifying knowledge in standards and reflects the methodology outcome of that project. The project was set in the Building Society Industry (an industry in which there are staff performing roles with a high knowledge content) but the methodology may well have wider applicability in other industries.

The National Council for Vocational Qualifications (NCVQ) requires that the statement of competence which forms the basis of National Vocational Qualifications (NVQs) should incorporate specified standards in:

- the ability to perform in a range of work-related activities; and
- the skills, knowledge and understanding which underpin such performance in employment.

The NCVQ has not yet issued guidance as to how, in practice, this underpinning knowledge and understanding should be incorporated into the statement of competence.

The flow chart (figure 1) is an attempt to develop a method for identifying underpinning knowledge and understanding. A detailed technical paper on the arguments underlying this approach has been produced by the authors of this chapter and is available from them. The chapter summarises and builds on the technical paper, but does not go into the arguments in any depth. The flow chart itself has been tested to date with two occupational groups and proved to be usable. However, further development work is still needed to provide a fully operational tool. The flow chart and the technical paper are both based on a model of assessment of occupational competence. Further papers are also available on this issue. A brief summary of the model is given initially to set the context.

AN ASSESSMENT MODEL

Assessment of occupational competence is derived directly from the statement of competence for a particular work role. The elements and performance criteria which describe the occupational standards form the basis of the assessment process. Assessment involves collecting evidence and making decisions based on the evidence. In a competency-based system, the assessment decision centres on whether competence can be safely inferred or not from the evidence available. A successful performance is one where the candidate meets all the criteria associated with an element in a single performance (or in repeated performances). Normally, more than one successful performance will be necessary before competence can be inferred with confidence.

Valid evidence is that which closely matches the specification embodied in the standards — ie the elements of competence and performance criteria. Consequently, it is necessary to examine the elements of competence and performance criteria to decide what evidence is required for each one. It is at this point that the distinction between performance or knowledge evidence can be introduced.

It is only after decisions about the nature, source and quantity of evidence have been made that the types of assessment method can be considered. In order to inform and refine each stage of the process involved in selecting assessment methods, it is necessary to consider not only how much evidence is available, but also the types of evidence available and whether performance or knowledge evidence is more appropriate. Designers of assessment systems need to constantly refer back to earlier stages in the process to ensure that a valid and reliable system is developing.

USING THE FLOW CHART (Figure 1)

The identification of knowledge is an assessment issue which concerns the quantity (how much) and quality (described as 'clarity') of evidence that is available from which to infer an individual's competence. Evidence, from which inferences of competence can be made, can be of two types — performance and knowledge. Knowledge evidence is used when the evidence that is available (practicably) from performance is insufficient, either due to its amount (there is not enough to make a safe inference) or clarity (the evidence could mean different things).

In many instances performance evidence will be sufficient and clear, at other times it will not. For example, a competence as straightforward as sharpening a knife is safely inferred from the observation of a number of performances to determine that a safe and approved method is being used, and the checking of the sharpness of the edge on each occasion to ensure that the outcome has been achieved. On the other hand, the development of long term and more complex competences, like advising customers, may require evidence in addition to that available by direct observation of the process and the outcomes. The flow chart draws out those instances
where performance evidence is insufficient or unclear, and then identifies knowledge which can provide supplementary assessment evidence to increase the probability and confidence that competence has been attained. This identification process together with the elements and performance criteria will also inform the attained. This identification process together with the elements and performance criteria will also inform the.

The flow chart is divided into two areas. The left hand side (Track 1) is concerned with the sufficiency (quantity) of evidence that is available from performance which is limited by the fact that an element implies competence over a range of variables. This is solely to do with the impossibility or impracticality of observing a candidate on all the possible occasions for which the different variables are brought into play. The use of complex product knowledge which is needed in order to advise customers on a full range of products and services is a classic example.

The right hand side (Track 2) is concerned with the clarity (quality) of evidence that is available. This is where the evidence gained from performance cannot sufficiently isolate particular performance criteria. For example, if an assessor were to observe a candidate operating a computer system, observation alone would not isolate whether the candidate was taking regular back up copies of valuable and sensitive data. It may be necessary for the assessor to seek evidence that the candidate is able to distinguish between routine data and highly confidential and sensitive data; and able to discriminate between security routines associated with each type.

The procedure for the use of the flow chart is to take an element and its performance criteria and to question it in turn against: both tracks (NB some elements will not need assessment in addition to the assessment of performance). If evidence from observation (natural or simulated) is sufficient, then additional evidence is simply not required, and will not add to the reliability of the assessment system. On the contrary, additional evidence which does not increase reliability means that the system is more expensive to manage because it wastes assessor and candidate time.

**Track 1 — The Sufficiency of Evidence**

Are there a significant range of variables on which the element draws in relation to the products and materials or the methods, techniques, procedures and processes? If the answer to this is no then the track is not of relevance and attention should shift to the second track. The answer will be yes when the element is not specifically focused on one particular product, material or method.

The underlying assumption is that performance evidence is preferable because it directly samples competent activity, but a number of constraints mean that it may not be feasible for the full range of variables to be sampled (like all types of customer or product in the case of customer advice). If performance evidence is available for successful performance of some of the variables of the element, then a decision about competence will be safer if we also collect supporting knowledge evidence. Which knowledge should be assessed, where and how often is essentially a political decision which must be made with the advice of industry and the examining and validating bodies. These will be set in the framework of NCVO/SCOTVEC criteria.

There are then three possible ways in which this range of variables may be of importance:

i) cases where the candidate has to reproduce knowledge in order to achieve the element (or criterion), ie is it necessary to know certain things about a range of products, processes etc, which are drawn on to reproduce the knowledge in certain contexts. The reproduction of knowledge must be accurate — that is, it must be an accurate reflection of the knowledge, but not necessarily repeated ‘parrot fashion’. For example, it would not be acceptable to tell a customer everything you know about a product or service; only that information which is relevant to the customer’s needs, an accurate summary appropriate for the purpose. If this is the type of knowledge needed, the route then moves to the right and questions which of the variables are to be assessed in performance and which are not. Those which are not will need to be ‘isolated’. The evidence required in these circumstances will be evidence of outcomes — i.e only that knowledge actually required to perform during that specific situation. It would not be appropriate to test for all the knowledge that candidate knows and can repeat outside of this specific situation. (This is a form of the assessment of underpinning knowledge).

ii) cases where it is necessary to compare and contrast between characteristics in order that a correct alternative is selected, ie does the candidate have to choose from a range of information that is available in order to select the only alternative that fits the purpose in hand. The standard is described as correct because the one chosen is the only alternative that fits both the purpose in hand and the need, ie the choice is for one option, not many. For example, if a customer asks a sales assistant which type of video camera can be used for direct playback through a TV monitor, there is only one correct answer — a Camcorder.

It is necessary to specify knowledge with greater precision than in the ‘reproduce’ category as it is not only a matter of reproducing the information base, but
of weighing up the possibilities in order to come to the correct decision. The example above is very simple — in practice candidates may have to choose from very complex categories.

Once again some of the variables will be assessed in performance and the need is to determine those that are not so covered. The outcomes of the process of making the selection, ie of comparing and contrasting can also be assessed; but note there will be many cases where the choice could be arrived at by chance, or by other criteria apart from the correct one.

Economically, therefore, it may also be appropriate to assess the inputs, ie the knowledge base itself on which the performance draws. A word of warning here, however; it is such inputs which often form the basis of assessment of knowledge and understanding in traditional examination systems. Whilst they are of importance to some extent, they should not be over-emphasised nor allowed to dominate assessment practice. Knowledge of inputs does not guarantee successful performance, but taken together with evidence from performance the inferences will be safer. However, assessment based on knowledge inputs alone are questionable and often low in validity.

iii) where it is necessary to select between a range of alternatives in order to optimise a course of action or a decision, so that the result is the most appropriate for the circumstances, ie where the candidate has to balance a number of ‘choice criteria’ so that the best possible solution is arrived at in the circumstances. The standard is described as ‘appropriate’ because there is no one correct solution. What is arrived at is a balance of all the factors involved (with some perhaps unable to be maximized because of the effects of another) to reach an acceptable result.

Again some evidence will be gained in performance whilst some inferences can be made through the assessment of the outcomes or the reproduction of knowledge. Additional evidence can be gained by assessing the inputs ie the knowledge base on which the decision making process draws. What is of particular importance is not only that the individual came to the appropriate decision in the circumstances but how s/he reached it. The assessment of the processes by which the action was decided may therefore also be of importance and help make safer inferences about competence.

The extraction of these factors will identify and ensure sufficient assessments across the range of variables. Track 2 should now be examined.

Track 2 — the clarity of evidence

Track 2 is used where the assessment of knowledge is necessary in order to more clearly isolate particular criteria. The aspects for which this is necessary relate to the nature of competence, ie the link to the work role. (The job competence model developed by Mansfield and Mathews has been used to structure the questions here). Each criterion related to an element is looked at in turn for the evidence that is available from performance. It is worth noting here that different forms of assessing performance will give different evidence upon which to make decisions of competence.

For example, the ability to act appropriately in a contingency situation (where there is uncertainty or where procedures break down) is likely to give better evidence if assessed during normal ongoing work than if a simulation is set up. This is because factors such as recognition of warning signs, speed of action etc, cannot be easily simulated. However contingencies are undesirable and steps are taken to ensure that they do not occur. Some are very rare and may carry enormous health and safety implications. Simulations may, therefore, be the only possible means of assessing performance. Decisions about the most appropriate means will need to be made by the certificating body.

This track is split into four sections which correspond to the job competence model. Each section has a number of questions associated with it which are related to the aspects of the work role. The questions themselves should be self-explanatory from the flow chart (fig 1). A description of the job competence model is contained in earlier chapters and is not therefore elaborated upon here. However, the task management aspect of the model is concerned with optimising and balancing tasks and is already picked up in the optimisation section of Track 1.

SUMMARY

The flow chart is one step in the process of developing an assessment frame for occupational competence, ie for the elements and performance criteria which are contained in a statement of competence conforming to TA/NCVQ/SCOTVEC guidance. If a truly competence-based system of training and assessment is to be established such detailed analysis is essential, although much of the necessary work will take place at the development stage with decisions on the types of evidence and the appropriate assessment (if based on validity requirements) being fairly long-lived.

Once the knowledge has been separately drawn out for each element and criterion it is possible to re-organise and group knowledge requirements to form the structure of the necessary learning programme. Knowledge may be grouped into, for example, ‘produce characteristics or general theories and principles’, which may be a more convenient way of organising learning process. Such a strong explicit link
between knowledge and the requirements of the work role should prove a positive influence on the integration of learning and achieve the objective of making vocational qualifications and their associated learning programmes more relevant to the emerging needs of industry and the economy.

REFERENCES AND NOTES

1 The initial ideas upon which the project was based was presented in a paper to the Training Agency's Technical Advisory Group on 22 June 1988, where it received backing as a fruitful line of enquiry.

2 A safe inference is one which allows the assessor to be able to state with confidence that, based on the evidence collected, the candidate will be able to consistently repeat the performance described by the element.

INTRODUCTION

The basis of assessment is the generation of evidence by candidates to show that they can achieve the published standards. That evidence is collected by assessors who judge whether it is sufficient to merit accreditation. Their judgements are subject to a system of verification to confirm that they are accurate. Certificates are awarded to the candidates by the Awarding Body on the basis of the assessment. These requirements are illustrated diagrammatically by the pyramid below.

The requirements of the assessment system for national certification can be achieved in different ways. The candidates can generate different types of evidence which are all relevant to the same standards. The assessors will then have to address this evidence in different ways. There is a wide range of methods of verifying the assessors' judgements — from repeating the assessments to statistical monitoring. Different combinations of these approaches will make up different assessment systems, all of which can lead to the same national certification.

This chapter aims to help with the design of such systems. It is addressed to Industry Lead Bodies (ILBs), which are responsible for developing the published standards, and to Awarding Bodies which are responsible for the assessment and certification of candidates. Each, therefore has a role to play in the design process. ILBs and Awarding Bodies usually work together at this stage to combine the ILB's knowledge of the background to the standards, and the Awarding Body's knowledge of the administrative requirements of national certification. While most of the references in this chapter are to the needs of Awarding Bodies, this is only because it is the Awarding Body which implements the system. The ILB, by developing the standards, determines the requirements of the system and is thus the close partner of the Awarding Body. Indeed in some cases, the ILB also takes responsibility for assessment and certification, and so becomes an Awarding Body.

The different layers of the pyramid are discussed separately below. In reality, however, they all interact together. For example, a decision to use a particular source of evidence to assess candidates will determine the task required of assessors and the verification requirements of the Awarding Body. Such a decision has to take into account the overall objectives of the assessment system and how the logistic needs of such a system can be met in the particular occupational area being certificated.

These overall objectives and needs are described in more detail below. The design of an assessment system for national certification is a complex process.

The overall objectives of any system to assess competence for national certification are the same:

- All of the standards must be assessed.
  Assessment of a unit of competence must cover, but be limited to, the unit's elements and their associated performance criteria. Assessment for national certification must cover, but be limited to, the units which make up the certificate. Other characteristics of individuals, no matter how fascinating, must not be allowed to influence assessors' judgements, or interfere with the correct assignment of competence.

- The evidence should relate clearly to the standards.
  The link between evidence and elements should be obvious. Assessors should not have to make too great an inferential leap between what they observe and what it means in terms of the judgement of competence. Designers need to make sure that the rules for deciding when performance criteria have been met are clear, rational and reasonable. Where necessary, rules particular to the activity in hand should be developed, which are consistent with the element and performance criteria on which the assessment is based.

- The evidence should cover the range of contexts for the standards.
  Before attributing competence, it is necessary to ensure that the quantity and quality of the evidence is sufficient to infer competence over the range of contexts to which an element and performance criteria apply. In many circumstances, it will be impossible to assess
performance across the full range of possible situations. The task of the designer will then be to ensure that any gaps in coverage are addressed, through the collection of supplementary evidence, and that no important types of context are omitted.

- The evidence must allow assessors to distinguish between those who meet the standards and those who do not.

Rules must be written in a way that allows assessors to decide from available evidence whether candidates are above or below the required level of performance. It is immaterial whether assessors feel that they can make finer distinctions concerning the relative merits of candidates. It only matters that assessors have a clear idea of what will constitute competent performance and can identify when an individual achieves it.

- The assessment must be open to verification.

The Awarding Body needs to be able to verify the assessment to ensure that the published standards are being interpreted in a uniform way, and thus that the same unit of competence awarded to candidates from different centres has the same meaning. The choice of which sources of evidence are to be used by assessors must take into account available methods of verification. Each type of assessment has corresponding verification requirements and can only be used if these requirements are met.

The best assessment system for a particular national certificate will be one that meets these objectives, and also best satisfies the additional logistic needs described below. The interaction of these factors in different contexts means that the best system for national certification in one occupational area may not be the best system for national certification in other areas. Each new system has to be considered from first principles to arrive at the best solution.

- Access for all potential candidates:

Anyone who can perform the activities defined in the elements of competence to the standards described in the performance criteria should be able to gain access to accreditation; but the adoption of particular methods may mean that some groups of individuals are unable to gain access. For example, if assessment is only through collecting evidence in the workplace, assessment is only open to those who have access to the workplace. Alternative assessment methods should be made available for any groups of individuals who may be interested. System designers, while they are developing the prime methods of assessment, may only wish to bear this requirement in mind, but when the prime method is up and running they should come back to considering alternatives.

- A manageable work-load for assessors:

Assessors should not be in a position where they can readily be pressurised by either time, commercial, candidate or other pressures to change or speed up their decisions and thus reduce their quality. Assessors need to be protected from such pressures. This may be by negotiating additional time for assessors to carry out their role, or may be by choosing assessment methods where the assessors are put under less pressure.

- Support from the organisations involved:

Systems based primarily on the assessment of performance can only be introduced where there is an assurance that the employers and staff at all appropriate establishments are able and willing to support the assessment process.

- Administrative simplicity for the Awarding Body:

Once assessment methods have been agreed for each individual standard within units of the qualification, rationalisation and grouping of assessment methods should occur whenever possible for administrative simplicity.

ASSESSMENT

Generation of Evidence

What sources of evidence can be used?

There are four basic sources of evidence that candidates can perform the activity described in an element to the standard defined in the performance criteria.

- Historical evidence.

This is evidence resulting from activities which the candidate has undertaken in the past either at work or elsewhere. The evidence may be already available. For example, articles which the candidate has made or even qualifications which the candidate holds. Alternatively, the evidence may need to be generated by the candidates. For example, in creative areas candidates may be required to prepare portfolios of their work, or in other areas to prepare written reports of projects which they have completed.

This source of evidence has always been used in accreditation, but to a relatively minor degree. Awarding Bodies are now investigating its potential for wider use.
• Performance at work.

This is evidence generated by the candidate at work. Again, the evidence may already be available. For example, the candidates’ employer’s normal records (production records, quality control records, paper or computer files) may provide evidence. Alternatively, the evidence will be generated while the candidate works. Both the process of work and its outcomes can be considered as evidence. The assessment will involve observation of the activities as they occur and checking of the outcomes.

This source of evidence has been used increasingly by Awarding Bodies as standards-based assessment has become more common. Obviously, it is limited to candidates who have access to the workplace. It also, almost certainly, requires that the candidates’ immediate supervisors or managers act as the assessors who evaluate the evidence.

• Performance on specially set tasks.

The specially set tasks can be skills/proficiency/competency tests or projects/assignments. These can be considered to be at the ends of a continuum concerned with the degree of guidance which is given to the candidates. In skills/proficiency/competency tests the candidates are guided along fairly tight lines. In projects/assignments candidates are typically given more leeway. They have greater freedom of action and can demonstrate more readily the fullness of their capabilities. On the other hand there is more chance that the evidence will not relate directly to the element and performance criteria in which the assessor is interested.

Traditionally performance on specially set tasks has been the most commonly used method of collecting evidence of candidates’ performance for accreditation.

• Questioning.

This category covers all those techniques in which the candidate is posed questions. The questions and/or responses may be delivered orally, in writing or through a computer.

Awarding Bodies often combine questioning techniques with other assessment methods, such as the assessment of work activities, in order to gather further evidence on the candidate’s underpinning knowledge and understanding.

Which should be used?

All of these sources of evidence can be used. In most assessment systems it will probably be wisest to use more than one of them, offsetting the strengths of one source of evidence against the weaknesses of another. The combination of sources of evidence may be across the qualification as a whole, with different units assessed in different ways, or across individual units with different standards assessed in different ways or even across individual standards with different performance criteria assessed in different ways. This last option is illustrated by examples in Appendix 2. However, when deciding to combine different sources of evidence in an assessment system, the logistic need for administrative simplicity must be borne in mind. It is pointless to design a system which is too complex to be used. The benefits of adding extra sources of evidence to the assessment process must be balanced against the increases in costs so incurred.

Strengths and Weaknesses.

The following section outlines the strengths and weaknesses of the various sources of evidence, and puts forward suggestions as to how the weaknesses may be overcome.
HISTORICAL EVIDENCE:

**Strengths**

The potential strengths of using historical evidence are in the quality and quantity of the evidence available, and in the time saved for both candidates and assessors. If candidates have been working in the occupational area for some time, then they will have quite likely carried out the activity described in an element far more frequently than would normally be required for accreditation, and in so doing will have dealt with a far wider range of contexts. Allowing evidence of such work to be taken into account for assessment can save both the candidate's and the assessor's time. This time saving can be the difference which encourages experienced individuals to gain accreditation, rather than leave such matters to trainees.

**Weaknesses**

1. The currency of the evidence is important. Competence can deteriorate over time. Skill decay may mean that the candidate cannot perform to the required standard anymore. A long time gap may also mean that the whole knowledge base has changed, principles as well as methods and facts.

2. The question of comparability arises if accepting someone else's definition of standards. Are their standards the same as the nationally-recognised standards? Does their assessment relate to the same or similar elements?

3. At the extreme, candidates may try to pass off other people's achievements as their own. More commonly, candidates will have been part of a team, and the task of the assessor will be to disentangle the individual's part in, for example, the production of a report or the design of material in a portfolio.

**Methods of overcoming them**

1. There are no hard and fast rules that can be applied to decide when evidence is no longer current. Designers will have to decide what is the typical speed of loss of competence and what is a reasonable time for relearning before accepting prior experience as evidence.

2. Evaluate the assessment method used and the standards applied against the published national standards.

PERFORMANCE AT WORK:

**Strengths**

Occupational competence is defined as the ability to perform the activities required in an occupational area to the standards expected in employment. It follows, logically, that the best evidence of an individual's competence is that generated through performance at work. Indeed, direct observation of performance at work is usually the measure against which other methods are evaluated. This evidence is the only type that takes into account both the time pressures and pressures from inter-personal relationships which can interfere with performance. Assessment can be unobtrusive, and the conditions are close to the reality of work. Extra pressures may arise, but only because candidates know they are being assessed.

**Weaknesses**

1. Workplace pressures can mean that assessors find it difficult to dedicate much time to assessment and the necessary record-keeping. It has to be fitted into what may already be a packed timetable.

2. Local standards will operate and may be different from the national standards. It is possible that the local standards will interfere with the correct application of the national standards.

3. The assessment of competence may be contaminated by the fact that assessors know the candidates and like or dislike them for other reasons.

4. Some assessors may be responsible for very few assessments and thus not have the opportunity to develop expertise. This may result in less accurate decisions.

**Methods to overcome them**

1. Prepare the assessment materials and recording formats, and train the work place assessors so that a minimum of time is required.

2. Any differences between local and national standards should be made explicit and emphasised during training. The application of national standards can be monitored by external verifiers.

3. Training should focus on the explicit performance criteria. Implicit criteria, for example, 'do I like this person?', need to be separated from the assessment. The assessment itself can be monitored by internal and external verifiers.

4. If possible use more than one assessor. Encourage assessors to meet to exchange views and experiences.
5. When collecting evidence via direct observation, particular attention has to be paid to the adequacy of the sampling of that evidence. Sampling too easily becomes partial if attention is not paid to planning the assessment process.

5. Plan the nature and frequency of sampling carefully to ensure adequate coverage.

PERFORMANCE ON SPECIALLY SET TASKS:

Strengths

Test conditions can be standardized in a way that direct observation cannot hope to emulate. Assessors are more likely to be experienced and to have time to devote to assessment. Evidence is therefore likely to be collected and interpreted more accurately. More efficient use can be made of assessment time by including activities which may take months to arise naturally in the workplace.

Weaknesses

1. The size of the inferential leap from the observation of performance to the assigning of competence. All such evidence involves some degree of abstraction in the sense that it is not a real work task being observed but a simulation which can be more or less lifelike.

2. One-off assessments are vulnerable to the many sources of error which affect performance such as being late because the test centre is hard to find, the particular mix of assessment tasks being more familiar to some candidates than others, and so on.

3. If the structure is very loose, for example in projects and assignments, it is difficult to predict exactly what evidence will be generated.

4. Off-site assessments are more likely to introduce pressures which are not typical of real work conditions. Candidates who suffer from exam nerves are likely to underperform in such situations.

Methods to overcome them

1. Make simulations as lifelike as possible.

2. Arrangements should be made to elicit evidence on more than one occasion, even for the same element of competence.

3. Both assessors and candidates should be informed what they are expected to do, when and why. After the evidence has been generated, any gaps can be identified and additional evidence sought to fill them.

4. On-site assessments are to be preferred or, failing that, try to recreate the feel of being on-site by allowing candidates to use their own materials etc.
QUESTIONING:

Evidence collected during questioning techniques will rarely be sufficient to assign competence. Most jobs require knowledge and understanding to be applied in support of activities, and knowing what you should do is not the same as being able to do it in practice. Questioning techniques will normally be used as adjuncts to other sources of evidence.

Strengths

Questioning can address competence across a wide range of contexts in a relatively short period of time. It is relatively quick to assess the answers. These attributes make it an economical supplement to other sources of evidence.

Centrally devised questioning can be used in many different centres, again saving money by removing the need for all the assessors to spend time preparing their own questions; but locally devised questioning also has strengths in being able to be designed specifically to complement the other evidence gained (filling in the gaps), and to deal specifically with local requirements (where these are reflected on in the national standards).

Both centrally devised and locally devised questioning needs to be well prepared so that it is rigorous, detailed and standardized. With techniques such as pre-set answer tests and computerised testing, errors attributable to the interaction between candidate and assessor, or any other errors resulting from pressure on assessors, can be removed. Avoidance of these sources of error prevents their interfering with the assessment's validity.

Weaknesses

1. The size of the inferential leap from judging the answer to a question as correct, to assigning competence.

2. Requiring additional competences (eg memory of facts, verbal skills) to those required at work.

Methods to overcome them

1. Use questioning in support of performance evidence. Devise questions which mirror the requirements of work rather than test abstract theory.

2. Do not exceed in the questioning the requirements of literacy, decision making or powers of expression required in the occupational area.

Collecting of Evidence

How much evidence is needed?

Assessment must cover every element. However, it is nonsensical, indeed impossible, to observe, judge and record all the available evidence. The amount and coverage has to be weighed against the cost of collecting the evidence on a particular element. Some elements or activities will require considerably more evidence than others before it is safe for competence to be attributed.

The amount and coverage of evidence will be guided by the descriptions of range which determine those applications on which a candidate is stated to be competent when an award is made. When a candidate is accredited with a unit, a public statement at the time of accreditation is made that the Awarding Body is confident that the candidate is able to perform to the standards stated in the element and performance criteria across the range of applications given. This means that sufficient evidence needs to be gathered across the discriminations specified in the range for these inferences to be made.

Having an understanding of the notion of 'sufficiency of evidence' is crucial where the assessment process allows information to be collected by a number of methods. There is no point in collecting additional evidence which does not assist any further in the judgement about the candidate's competence. Imagine that you are trying to decide whether someone has mastered a particular element of competence. You collect some evidence using one method and decide on the basis of it that there is about a 50/50 chance that the candidate is competent. You then collect some more evidence using the same assessment method and decide that the chances are now about 60/40 in the candidate's favour. As you go on collecting evidence using this method, there may come a point when there is no longer any increment in your degree of confidence in the candidate's competence. In the above example this might come when the odds are about 75/25 in the candidate's favour. At this stage it might be that it is impossible using this one method to sample fully the range of contexts required for competence to be assigned. At this point you would have to use another method to achieve any incremental gain. More importantly, using another method when you had reached the 60/40 point may have jumped you straight to odds as high as 90/10. All of the extra observation using the first method to get you from 60/40 to 75/25 would really have been wasted. When you are no longer gaining any useful information, then it is time to consider using another assessment method.

The illustrative figures used in the discussion above are arbitrary. In designing a new assessment system,
the probability of a candidate being competent (which is considered sufficient to merit accreditation) will be influenced by the risks and benefits involved in attributing competence. There are circumstances in which it will be prudent to have more evidence than is usual in most cases. The most obvious are occupational areas where high risks are associated with less than competent performance, and where periodic assessment may need to continue after the competence is first attributed, to ensure that it is maintained. For example, this is the case in the assessment of airline pilots.

Many resource and scheduling problems can be traced to making the assessment task too difficult. Some consideration has to be given to how much an assessor can reasonably be expected to handle in one assessment session. This is especially true when assessors are having to gather evidence while they are also performing another role, as happens with assessment in the course of ongoing work. Assessors cannot be expected to hold too many criteria in their minds and apply them to the performance they are observing, nor should they be asked to cover too many elements at once. Such highly complex assessment tends to be associated also with excessive form filling and data recording, which only serves to exacerbate the difficulties. Under those sorts of pressures, the quality of assessment will diminish unless the assessment task is kept to manageable proportions.

When and where should the evidence be collected?

Once someone is judged to be competent and awarded a certificate, it cannot usually be taken away. This does not mean that assessment of competence should be a one-off event. The final decision to attribute competence will often be made only after several interim decisions that the candidate is not yet ready. The decision point will be determined by a rule stating how long someone must have been performing up to a standard before there can be confidence that the competence is secure. At the other extreme are special one-off assessment events, which may be used as final checks on competence or as a means of providing necessary supplementary evidence. One-off assessment will be cost-effective only if there is good reason to believe that candidates are likely to prove competent. Setting up special events is a waste of time and money if eighty per cent of candidates fail. A balance obviously needs to be struck between the needs of candidates and the constraints on organisational resources.

In deciding on the frequency and spacing of assessments, there are three variables which should be taken into account. There are:

i) Assessment should be more frequent the closer one gets to the point of accreditation. While the candidate’s competence is still developing rapidly, there is little point in doing any assessment for accreditation, although some form of assessment will be needed to check that development is not going off the rails.

ii) If the risks attached to less than competent performance are high, then it may be necessary to continue to assess for some period after the candidate is first judged to be performing competently.

iii) If the assessment is of a large and complex activity, then for purely practical reasons assessments will be less frequent than for shorter simuler activities.

In deciding on the location of assessment, the most important considerations centre on what evidence is needed and where this evidence is most likely to be found. If the evidence is readily available by direct observation of performance at work, and the candidates’ employers will support this method of assessment, then it can be used. If not, then ways of generating evidence by creating assessment events must be found. Consideration also has to be given to the organisational aspects of the delivery of assessment. Planned programmes integrating training and assessment are to be preferred over unplanned programmes or ones which duplicate resources.

Judgement of the Evidence

Who should judge the evidence?

This question is often left far too late in the design process. It is possible to design an assessment system that is a model of precision and sophistication, only to find that there are no assessors available to run it. The issues of who, what, when and how should not be considered in sequence during the design process. They need to be considered in parallel, because the constraints imposed by the answer to one question affect the answers to the other questions.

The people on whom it will be possible for an Awarding Body to call will differ according to the different sources of evidence used.

Historical evidence:

Historical evidence can differ greatly between candidates and can require particularly skilled assessors to evaluate. It is likely that an ILB or Awarding Body will need to limit the number of centres where such assessment can be offered and to provide the assessors with additional support. The centres are most likely to be educational or training organisations and the assessors are most likely to be drawn from their staff.
Performance at work:

Performance at work almost certainly has to be assessed by the candidates' supervisors or immediate managers. These are likely to be the only people who can and will keep a close enough eye on the candidates' progress. It is worth noting that the candidates themselves, and their peers, can contribute to the collection and judgement of evidence, although it is likely that in such situations additional evidence will also be required.

Performance on specially set tasks:

Performance on specially set tasks can also be assessed by the candidates' supervisors, or, away from the workplace, by their instructors or teachers. However, because the tasks are normally timetabled in advance, it is also possible to arrange for assessors to come in from outside. The former, 'internal assessors' have the advantage of having other relevant evidence available to them to inform their judgement of the candidates' competence. The latter, 'external assessors' have the advantage usually of greater experience in assessment, and because they do not know the candidates, are less open to charges of bias. Ideally, both internal and external assessors should be used.

Questioning:

Evidence generated by questioning can also be evaluated by internal or external assessors. If the questioning is oral and in the workplace, then the former have to be used, but if it is written then external assessors can be involved by post (as is done when the scripts from written examinations are marked by examiners). The advantages of the two types of assessor in this situation are similar to those in the assessment of performance on specially set tasks. However, external assessors are likely to develop even greater expertise when they have large numbers of candidates' scripts to mark. This method will also enable the Awarding Body to monitor the assessment more easily. This adds weight to the argument for using external assessors.

What are the pitfalls for these assessors?

There are a number of pitfalls for assessors whatever sources of evidence are being drawn upon, all of which can lead to inaccurate assessment. One of the main purposes of training for assessors is to describe the pitfalls and alert the assessors to ways of avoiding them. Most refer to the behaviour of the assessors, and so are relevant, whatever type of evidence is being assessed. Training would normally deal with some of the pitfalls in the following list:

- A lack of direction
- The assessors answering their own questions
- An illusion of validity
- Stereotyping
- Similar-to-me effects
- Halo effects
- Contrast effects

One principle of all good assessment is knowing what you are looking for and where you expect to find it in the performance or output of candidates.

- The assessors answering their own questions
  One of the most common failings of inexperienced assessors and interviewers is the tendency to offer answers or options to candidates. Unless the giving of options is explicitly allowed in the assessor instructions this should be avoided. Closely related to this is the finding that the more talking assessors do while using questioning techniques, the more likely they are to pass the candidate, irrespective of how competent they are.

- An illusion of validity
  Assessors often come away from an assessment with a good feeling about how the assessment went and therefore assume that they must be correct in their assessment decision. Unfortunately, it may just mean that the candidate was very likeable, and the assessor is confusing pleasantness with ability.

- Stereotyping
  There are circumstances in which stereotyping can be useful, but none of them apply to assessment. Assuming a whole range of attributes by categorising candidates in some way, breaks all the tenets of good assessment practice. Assessment requires collection of relevant evidence.

- Similar-to-me effects
  The main danger here is giving candidates the benefit of the doubt when they don't deserve it. The thought process runs something like this: 'This candidate is just like me at that age. I made it, therefore the candidate must also be all right.' Obviously, this has nothing to do with being competent now.

- Halo effects
  This is probably the most common source of error in assessments. It involves making the assumption that just because one piece of performance was good or bad, all the candidate's performance will be equally good or bad. Assessment must be carried out across the full range of requirements and each piece of evidence judged individually against the appropriate performance criteria.

- Contrast effects
  Some days an assessor will assess a stream of
particularly good or poor candidates. The danger is that a candidate will then appear who is on the borderline but who seems in contrast to the other candidates to be better or worse than is the case in reality. Attention to the performance criteria is important to avoid this danger.

- First impressions and immediacy
  The danger here is that having gained a first impression, an assessor spends the rest of the assessment trying to prove that the impression is correct, rather than paying attention to the evidence. This is particularly problematic when the impression is gained from face-to-face contact. The situation is much more immediate and tends to carry more weight in assessors’ minds, often quite unjustifiably.

- Puffery
  Assessors need to be careful that they are not taken in by the ability of almost all candidates to be on their best behaviour and to be pleasant for short periods of time. This is more of a problem with one-off assessments than with continuous assessment.

- The tone of the assessment
  Assessors have a general tendency to prefer candidates who agree with them. This is not such a problem when the assessment is concerned with undisputed facts or practices, but can become an issue when it is concerned with understanding of theories or models which are still being developed.

- Assessing progress rather than achievement
  There is a tendency to assess by reference to a candidate’s effort and progress rather than their achievement of the standards. If candidates work hard and improve their performance considerably, assessors may decide that they deserve to pass. But the only question should be, ‘Have they attained the standards?’

**VERIFICATION OF THE PROCESS**

**Methods of Verification**

Verification is a general term, used to describe the checks and balances in the assessment system which ensure that what should happen when candidates are assessed, does happen. Verification’s primary purpose is quality assurance. By confirming that candidates from all centres are assessed in the same way, with a common interpretation of the published elements and performance criteria across the range of contexts specified, it enables users to have confidence in the system of assessment and the resultant certification.

Verification includes procedures applied before, during and after assessment. The range of procedures available to Awarding Bodies is wide and growing wider as innovative methods are introduced to complement novel assessment systems. In any particular system, the methods available are influenced by the location of the assessment and by the sources of evidence used.

Verification procedures applied before the assessment is made, include:

**Confirmation of the —**

- Required facilities through centre approval
  Centres are only allowed to administer or carry out assessments if they can demonstrate — usually by a self-report questionnaire, or during a visit by an agent of the Awarding Body — that they have the facilities and equipment required.

- Competence of assessors and examiners through registration and appointment systems
  In order to qualify and become registered/appointed as an assessor/examiner for an Awarding Body, it is necessary to fulfil the published qualifying criteria. These criteria usually refer to expertise in the occupational area to be assessed, expertise in the process of assessment, and availability to assess. (The terms assessor and examiner are used interchangeably, although there is a tendency for ‘assessor’ to be used for people who assess locally, and ‘examiner’ to be used for people appointed directly by the Awarding Body.)

- Relevance, accuracy and intelligibility of written materials through editorial panels
  Written materials which will be presented to the candidates (practical requirements, written tests etc) are reviewed in advance by a group to confirm that they will enable assessment of the relevant standards and that they will be intelligible to candidates. These groups are often called ‘moderating’ groups or committees.

- Response of candidates and assessors to written materials through pre-testing
  Assessment procedures of any kind should be tried out before they are used for accreditation. The trials should use subjects representative of the candidate population. Questions for successive versions of written tests can be pre-tested on a routine basis.

Verification procedures applied during the assessment
process include:

Multiple assessment through —

- Using more than one assessor/examiner

  Systems frequently require that more than one assessor assess candidates so that they can compare notes, identifying and resolving any discrepancies in their judgements. Assessment which is internally carried out might require two internal assessors to work together, or an internal assessor to work with an external assessor. In the latter case, the role of the external assessor is to ensure that the national standards are applied and to prevent local drift. Written scripts which are marked centrally can be marked by two examiners independently.

- Standardization

  Where three or more internal assessors at a centre assess candidates independently, they can exchange a selection of evidence which they have collected from candidates and each reassess independently the others’ materials. They can then try to resolve any discrepancies. This process of standardization can be applied with groups of assessors or with groups of centres (or even with groups of Awarding Bodies as is done in the GCSE system).

- Sampling by internal or local verifiers

  An individual at a centre which provides assessment internally is appointed to verify the internal assessors' judgements. The role is commonly called 'internal verifier' or 'countersigning officer'. Internal assessors at different centres can also use a 'local verifier' in an analogous role. The individual concerned draws on other sources of evidence for a sample of candidates to compare with the assessors' results.

- Sampling by external verifier

  An individual is appointed by the Awarding Body to verify the judgements of assessors at several centres. The external verifier has the advantage over internal verifiers of seeing the standards interpreted at a number of different centres. Thus he/she is more likely to identify interpretations which, although common to all the internal assessors at a centre, differ from the interpretations elsewhere. In addition to checking the results for a sample of candidates and reviewing assessment records at a centre, the external verifier acts as the Awarding Body's representative at the centre.

Verification procedures applied after the assessment has been carried out include:

Inspection of records using —

- Statistics

  The statistical monitoring of awards made at particular centres or even by particular assessors cannot be an adequate means of verification on its own. However, the statistics can identify anomalies in the pattern of awards which can then be investigated, most probably by external verifiers. The specialist statistical evaluation of particular assessment methods, which is a subject in itself, can also point out anomalies and can even help to identify such problems as poor wording of instructions or criteria.

- Moderating instruments

  This technique has mainly been a subject of research so far, rather than being used in practice. It is a development of statistical monitoring. The idea is that the awards are not monitored in isolation but are compared with other measures of the candidates, such as their scores on externally prepared tests. General relationships between the patterns of awards and the other measures are derived. Centres, or individual assessors, whose results depart from the general relationships are investigated. Again, the statistics are not adequate in themselves but identify anomalies which might require investigation.

This is no more than a brief review of methods of verification. The application of the methods described requires similar attention to detail to the application of assessment using the different sources of evidence described elsewhere in this chapter. Indeed, verification and assessment are inextricably linked. The one depends on the other. One particular application of verification methods is described below: it is an application which has received considerable attention because of the increasing use of assessment based on performance at work.

Centre Approval

There are two common types of procedure. The first approach grants approval to an organisation and allows the organisation to manage its own sites (allowing them to assess or withdrawing that right) according to the Awarding Body's guidelines. The second approach grants approval to the individual sites. Under these circumstances the Awarding Body deals directly with large numbers of sites which wish to act as assessment centres.

Approval procedures are normally intended to:
• check that the conditions under which the evidence is to be collected and judged represent the necessary conditions for the valid assessment of the relevant units of competence

• check that the centre has sufficient human, capital and physical resources to continue to deliver the assessment over time

• gain the commitment of the centres to the task in hand and to the fundamental principles on which the system is run

• emphasise to those who intend to offer the assessment the responsibility they are taking on, and ensure that participation is not entered into lightheartedly

• demonstrate to the public and the users of the certification the seriousness with which the assessment and accreditation has been undertaken

• give confidence to candidates that the certificate which they receive has national value and recognition, and they they will be fairly treated because the assessors and the centre have been put under scrutiny.

After initial approval, the Awarding Body needs to check that the centres who offer the assessment are continuing to meet the criteria of delivery to which they contracted in the approval process. The Awarding Body will have to isolate factors such as equipment, site facilities, materials etc which may have changed to the detriment of the assessment, check that there has been no loss in personnel which materially affects the assessment, and then check that the centre continues to provide a suitable environment in which the assessment can take place. Much of this information will have to be gleaned from others, and by continually scanning the environment to pick up clues about changes which organisations may not communicate to the Awarding Body.

Registration of Assessors

Criteria for registration of assessors need to address four fundamental requirements. The assessors must be:

• Available to carry out the assessments
  This means not only that they must be in a clear position to observe performance or outputs, but also that they must have enough time to do the assessments properly, and that their availability should coincide with the candidates’ readiness to be assessed.

• Able to interpret the performance criteria
  In some occupational areas it will be possible to write performance criteria in such a way that any reasonably intelligent person could do the assessment. In others, the assessor will need specialist knowledge in order to recognise when a performance criterion has been met. For example, imagine a data processing manager who acts as assessor for four programmers. Would an assessor who is an expert in COBOL be able to judge whether programmes were compact if the candidates programmed in LISP, PASCAL, Assembler and C respectively? The answer is almost certainly no!

• Able to manage the assessment process
  Competence in being able to perform an activity does not mean competence in being able to assess whether someone else is performing to the standards required. Training is a potential means of ensuring that assessors are aware of pitfalls and are able to modify their behaviour to ensure that they avoid them.

• Willing to undertake the work involved
  If assessors are keen, then so much the better. If not, then ways of motivating them need to be found. The role of assessor could be written into job descriptions. Assessors themselves can be certificated. Perhaps most importantly, the implementation of training and assessment to standards could make their own jobs easier and their sections of the organisation more efficient and productive. A word of caution however; some of these changes have implications for organisational politics. Changes in status may also be changes in power. Sensitivity to such issues is important, and representatives of the occupational area should be consulted for advice.

Use of Internal Verifiers

The internal verifier’s role is to oversee internal assessors and to liaise with the Awarding Body. Like internal assessors, they are appointed from people who work in the same organisations as the candidates. In systems where internal verifiers are used, there will normally be one appointed at each approved centre, while several internal assessors may be appointed.

Internal verifiers oversee the internal assessors by sampling assessments and countersigning the decision to award competence on an element. In effect, the internal verifier guarantees that the evidence collected and judged against the standards is of sufficient quantity and quality to infer competence. This means that there is a second opinion on the evidence at the front line. This process also enables the Awarding Body to have greater confidence that the assessments
are carried out to the specified standards.

Internal verifiers are not expected to watch over internal assessors every time they collect and judge evidence. Rather, like the assessor, they will be seeking to gain evidence that the assessments made meet the criteria laid down. This will be through observing an assessment as it takes place, or through looking at the outcomes of an assessment, such as the documentation produced by some of the candidates. A surprising amount of information can be gleaned from such record scrutiny, which can then put the internal verifiers on the right track for further investigation.

In some systems, internal verifiers also hold regular meetings with the internal assessors. The purpose of the meetings is to develop further the assessors’ and the verifiers’ expertise. They also serve to support and reassure the assessors by enabling them to discuss problems and successes with their colleagues. Typically, an agenda might include:

- A review of assessment conducted since the last meeting
- An exploration of any technical or administrative issues that have caused difficulties
- Development exercises such as assessment of case-studies using written materials, audio or video recordings, or role plays.

Internal verifiers have a crucial role in encouraging and assisting new internal assessors to enrol on training courses at the earliest opportunity. They should provide additional guidance and support until the new assessors become more confident in their position.

Internal verifiers liaise with Awarding Bodies, largely through the exchange of documentation. They have to not only complete their own documentation, but also to advise and encourage the internal assessors to complete theirs. This may become a particular issue in those systems where internal assessors combine an assessment role with other roles, especially with their everyday jobs. Records should be completed at the time the evidence is collected and judged. It is all too easy for this to be the first area of practice to slip when there are time pressures. Verifiers and assessors may need constant encouragement to realise good record keeping is as critical as making accurate assessments. Assessments without documented evidence may as well never have taken place.

Use of External Verifiers

The unique role of external verifiers is as the Awarding Body’s visiting representatives to approved centres. They are appointed from people outside the candidates’ organisation. One external verifier will be appointed to be responsible for several approved centres. If there are not internal verifiers, then the external verifier will also take responsibility for the internal verifiers’ role as described in the previous section. In addition, external verifiers may oversee the work of external assessors in a similar way.

The external verifier is important in providing feedback and guidance for internal verifiers and assessors to:

- Encourage and remind them that they are working in a national system of accreditation which is based on the assessment of candidates against nationally-recognised standards
- Improve and develop their assessment practice, both in general and in particular
- Exchange information with them on problems, difficulties and successes.

External verifiers should give constructive feedback to internal verifiers and assessors which will assist and improve practice while still encouraging them to remain working within the system. An internal assessor’s job is not easy whether they are paid, voluntary or undertake the work as part of their normal function. Much as they are encouraged to give constructive feedback to the candidates to help them become more competent, the internal assessors need similar feedback themselves.

For external verifiers, this will mean looking at the general practice of internal verifiers and sometimes focusing on a smaller sample of the internal assessors’ activities as well. As the external verifiers are in the position of looking at a number of assessments or other activities within the system, they are in the position of passing on lessons learned from one area of the system to another. This will contribute to the development of assessment practice within the system in general. The external verifiers are also a mechanism by which the ILB can obtain information on changing industrial practice. It will be necessary to emphasise and demonstrate to external verifiers the vitally important role of providing such information for ILBs.

CERTIFICATION

Issue of Certificates

Candidates’ achievements are recognised by the issue of certificates. As the systems of qualifications are built on the basis of recognising achievements as they are gained, an Awarding Body will have to develop a mechanism which can record on a central data bank, credits over time. Each candidate must receive recognition, in some form, for the units on which they
have been credited with competence to date. Awarding Bodies are in the position of being able to choose whether a certificate is issued for each unit or only for an overall grouping of units which will make up a particular qualification. There must be credit recognition for units, however, within a time span which does not compromise the position of the candidate in terms of gaining employment, access to courses etc.

The issue of certificates, like so much else in the system, depends on the flow of accurate, timely information from the assessors through the internal and external verifiers to the administrators. The exact design, content and layout of the certificate will depend on the ILB and Awarding Body in question, and the requirements of NCVQ or SCOTVEC. An agreement will need to be reached between them on the most appropriate way of expressing the overall title of the qualification and its units of competence, in addition to how and where each of the interested parties will be represented on the certificate. It is necessary to detail the specific units which constitute the qualification in any situation where more than one combination is used, ie where the qualification can mean a number from a range of options rather than a particular set of units.

Appeals from Candidates

All accreditation systems should make information available to candidates about:

- the criteria against which judgements of competence are made
- the way the system operates.

Such openness should mean in its turn that the candidates are less likely to feel cheated or unfairly done by as long as the system is operating as it should.

However, there will always be times when candidates will seek to question what has happened. This may be simply because the candidate requires further information, either because mistakes have been made, or because the candidates have overestimated their own competence. The accreditation system must also make information available to candidates about how to appeal.

Generally a candidate’s first line of enquiry will be the internal assessor, but if the assessor fails to resolve the difficulty then it is likely that the internal verifier will become involved. The internal verifier should be able to advise the candidate of the sort of expectations they may have, and they should also be in a position to evaluate whether the candidate has justification for the complaint.

In systems where there are no internal assessors, or in cases where candidates judge the internal assessor’s and verifier’s responses unsatisfactory, the candidates’ next line of enquiry should be direct to the Awarding Body. The response of the Awarding Body will depend on the nature of the appeal and the method of assessment to which it refers. However, it is likely to draw on the expertise of the external verifier.

Appeals can have a positive effect on the system, in that they are one means of ensuring that the quality intended is being maintained. They can serve to nudge assessors and verifiers to think more clearly about the quality of their delivery and make them aware of the importance of their actions by underlining the seriousness of the activity for the candidates themselves.

SUPPORT FOR THE SYSTEM

Guidance Materials

Guidance needs to be available for each participant in the system: the candidates, the assessors, the internal and external verifiers, and the administrators. This will help ensure:

- the system can continue to function even if the key developer(s) or administrators move on
- each aspect of the system has been thought about, and the ways in which each part contributes to the whole is clear
- each participant has the requisite, suitable information on their role and how this relates to the roles of others
- the manner in which quality will be assured.

It is particularly important to note the role which guidance plays in the continuation of the system as a
whole. All assessment systems which are fully thought through, such as advanced and developed selection systems, have clearly documented manuals on their purpose and use. For example such documentation is common for the delivery of standardized tests.

No system should rely for its delivery on an internalised process within one or two individuals' heads. This is obviously a drawback in the sense that those individuals may suddenly leave or become incapacitated and be unable to continue. Such reliance on individuals also usually means that some, if not all, of the decisions which are being made are ad hoc and may be based on personal criteria rather than publicly available criteria. This is against the principles of accreditation systems being open to public scrutiny.

All accreditation systems for the assessment of occupational competence to nationally recognised standards must have publicly available documentation which describes the criteria by which sufficient evidence is collected and judged. This places large demands on designers at the initial stages, but will help ensure that the system is logical, valid and works as it should.

Administrative Forms and Procedures

The accreditation system will have to be designed in such a way that there

- are records which encourage completion and which contain sufficient, valid and reliable information
- is a system which gets the information in the right form to the right person at the right time.

The whole system must be geared up to be fully responsive to change. It must have procedures which:

- gather the information
- structure the information
- pass the information on
- evaluate the information
- change structures and processes in response to the evaluated information

Throughout the life of the system, the flow of information will need to be monitored to ensure that it serves rather than undermines or stultifies the system. Any complaints or evidence that the records and guidance are problematic, restrictive or encouraging bad practice should be taken seriously and evaluated for their validity. Where possible, appropriate actions should be taken to ensure that the information is as appropriate as it possibly can be.

Training for Participants

Staff training is the normal way of assisting the development of competence. Training is not an end in itself. It must not be assumed that because someone has completed a training course or an open learning package that they are now a competent assessor or verifier. Training also requires some form of assessment of performance plus continual monitoring over time to ensure that competence is maintained.

To assist in the design of the training and of the assessment, national standards are being developed for assessors and verifiers. These will describe the performance expectations of assessors or verifiers in terms of elements of competence and performance criteria. They will be generic standards, in that they should apply to assessors and verifiers in all sectors of industry and commerce.

In the meantime, a number of Awarding Bodies have analysed the requirements of their own systems of assessment and have written their own standards for their assessors and verifiers. Their training, registration of assessors, and appointment of verifiers are based on these standards. Until the national standards are available, this is the best model to follow in setting up a new system of assessment. The training courses run by the different Awarding Bodies follow a similar pattern. In general, they are:

- related to the content of the guidance materials which support the system
- structured around the requirements of the assessors, internal verifiers and external verifiers (which should be made clear to the participants)
- designed to give the assessors, internal verifiers and external verifiers an opportunity to practice assessments using the actual units, elements and performance criteria, and with the recording sheets with which they will work in the field
- long enough to provide plenty of time for discussion and clarification of the issues. Time spent at this stage is an investment for the future.

At some point in time, the Awarding Body will have to recognise that there are one or more individuals who, while they may be excellent at carrying out their normal work roles, are not cut out to be assessors or verifiers. A procedure for removing such individuals from the assessment process needs to be developed if the technical quality and public credibility of the system is to survive. It is worthwhile thinking through how the initial selection and training process may feed into this, so that such decisions may be taken at a stage where they are likely to cause the least harm to the system and the individuals involved.
Feedback from a Phased Introduction

If a new system is based on an experienced Awarding Body's existing practices, then it might be possible to launch it nationally without further research. However, if a system is innovative it is likely to need a slower introduction with careful monitoring. If the organisation offering accreditation has not acted as an Awarding Body before, then this also implies a slower introduction of the system while the organisation builds up experience. In general, new systems and untried procedures should be introduced in a controlled way.

The purposes of such phased introductions of assessment systems are to check that the assessment methods gather and judge the evidence in a manner which gives sufficient quality and quantity, and to check that all the processes and parts of the system fit together and operate as intended.

All new systems need fine tuning; it is impossible to get them completely right first time. The lessons learned during the early phases of the system's introduction can be implemented as soon as is feasible, and once there has been verification that they are not particular to only one site or individual. By the later phases, the system should be running smoothly.

The following are questions facing an Awarding Body when it comes to plan the phased introduction of a new and innovative system for national certification.

Which centres to select?

The nature and number of those chosen is important. It is unlikely that it will be possible to cover all those who are interested, and in any case this could be a mistake. It would imply a confidence in the system which might not be wise at this stage, and might give more headaches than it is possible to cope with. The coverage should be sufficient to:

- give enough evidence on the adequacy and efficacy of the process
- cover the majority client group for the assessment methods which are to be used
- evaluate different assessment environments and contexts which might have an effect on the assessment/verification
- meet any political issues which may arise.

Which candidates to select?

Choice will obviously be constrained by the centres chosen, but during the early phases the Awarding Body should attempt to gather a range of those who are likely to seek accreditation, such as those who are already in post and those who are going through training and education courses. Whilst the review will concentrate on one client group, it should be looked on as an opportunity to gather information on issues of access and assessment for others.

Which assessors and verifiers to use?

Assessors and verifiers used in the early phases should also be representative of the group as a whole. For example, if the assessment will be drawing on a number of professional groups to act as assessors, and these work in different environments or come to the assessment from different backgrounds, then the Awarding Body should seek to involve as representative a sample of these groups as possible.

What information to collect?

The Awarding Body needs to collect information about the assessment to confirm that the methods it has chosen to use are working as intended. It will need to monitor which evidence is being used to assign competence so that it can judge whether this is sufficient and of good enough quality. It will want to draw on more than one assessor (or verifier) to judge the same evidence to ensure that different assessors interpret the performance criteria in the same way.

The Awarding Body will also want to monitor the efficiency of its own procedures (its guidance, forms, centre approval mechanisms, appointed mechanisms for assessors and verifiers, deadlines etc) to check that they enable the system to run smoothly for all candidates. In so doing it may realise that not all of its control mechanisms are necessary, or alternatively that additional mechanisms are necessary to ensure quality.

Finally, the Awarding Body should consult the participants in the system — candidates, assessors and verifiers. The participants can often provide feedback on those areas of the system which require improvement. They can identify unclear or ambiguous situations where they were unsure of requirements, where to obtain information or to whom to turn for guidance and advice, all of which will inform the need for better specified information.

All of this information is particularly important during the system's introduction, but remains important during its life. Although less effort is required to monitor a successful ongoing system than to adapt and evaluate an experimental system, similar information should be sought periodically to ensure that the system continues to achieve its goals.
SUMMARY

To recap, the requirements of an assessment system for national certification are:

• generation of evidence by candidates

• collection and judgement of that evidence against the published standards by assessors

• verification that the assessors share a common interpretation of the standards by the Awarding Body

• issue of certificates to the candidates by the Awarding Body.

The system designed to meet these requirements must ensure that all of the standards are assessed, the evidence relates clearly to those standards, the evidence covers the full range of contexts for the standards, and that the evidence is sufficient to enable the assessors to make valid judgements. It must also lead to access for all potential candidates, a manageable workload for assessors, support from the organisations involved, and administrative simplicity.

There are four main sources of evidence that candidates are competent. These are:

• historical evidence resulting from activities the candidate has undertaken in the past

• performance at work

• performance on specially set tasks such as skills / proficiency / competence tests or projects / assignments

• questioning, whether delivered orally, in writing or by computer.

All of these sources of evidence can be used in an assessment system. It is usually better to use more than one source of evidence offsetting the strengths of one against the weaknesses of another. But when different sources of evidence are combined to assess a standard, a unit or all of the units in a qualification, the system should be designed to remain easy to use. The benefits of using additional evidence must be weighed against the costs.

All of the sources of evidence have their own particular strengths and weaknesses. In particular questioning should not be used alone but only to supplement performance evidence.

The amount of evidence required depends on the range of contexts specified in the standards and the degree of certainty desired before accreditation is issued. The degree of certainty will need to be greater in high risk occupational areas. The evidence need only be collected when the candidate is likely to be judged competent. It should be collected wherever it becomes available.

The assessors who are available to judge the different sources of evidence differ. Historical evidence requires specially trained assessors who will probably be staff at educational or training institutions registered to take on this task. Performance at work almost certainly has to be assessed by ‘internal assessors’ who will be the candidates’ immediate supervisors or managers. Performance on specially set tasks can also be assessed by internal assessors, but, because the tasks can be timetabled in advance, they can also be assessed by ‘external assessors’ sent by the Awarding Body. Candidates’ answers to questions can be judged by internal assessors, external assessors or examiners, or even by computer depending on how the questions are administered.

There are a number of pitfalls for assessors which can apply almost regardless of the type of evidence being judged.

Assessment of competence for national certification needs to be verified to ensure that the assessors share a common interpretation of the standards and to enable users to have confidence in the assessment and resultant certification. Verification procedures can be applied before the assessment to confirm that the facilities, assessors and written materials are suitable. Verification procedures can be applied during the assessment using more than one person to assess concurrently, to ensure a common interpretation of the standards. Verification procedures can be applied after assessment by inspecting records, to identify anomalies in the patterns of awards.

The verification of assessment based on performance at work is particularly difficult and a system has evolved involving centre approval, registration of assessors and the use of internal and external verifiers.

Certification procedure must allow candidates to receive records of the units which they have achieved as well as certificates for whole qualifications. They should incorporate appeals procedures for candidates.

Before a new system of assessment for national certification is introduced, there should be available:

• guidance materials for all participants, i.e. candidates, assessors and verifiers

• administrative forms and procedures which will enable information to be sent to the right people at the right time
• training for assessors and verifiers.

The new system should be introduced in phases to enable fine tuning from early feedback.
APPENDICES

APPENDIX 1

A Note on Assessing Underpinning Skills, Knowledge and Understanding

All competent performance is underpinned by skills, knowledge and understanding.

If sufficient evidence to attribute competence can be gained from performance at work or from simulations of performance at work, then no more evidence of the underpinning skills, knowledge and understanding need be collected. This will be the case when the performances at work or simulations cover the entire range of contexts specified for all of the standards.

If, however, insufficient evidence to attribute competence is available from performance at work or its simulation, then there is a need to supplement this evidence with that from other sources. This will be the case when the range of contexts sampled at work or in simulation is too narrow. One of the options open is to generate evidence on the skills, knowledge and understanding underpinning competence in the additional contexts. This can be done by requiring candidates to take skills tests or to answer questions.

It would be unwise to base the attribution of competence entirely on such evidence of underpinning skills, knowledge and understanding. The assumption that an individual who has demonstrated possession of these requisites can always translate them into competent performance at work may not hold. But when there is already evidence that a candidate can perform competently at work in certain contexts, assessment of the underpinning skills, knowledge and understanding required for the other contexts mentioned in the standards may be sufficient to complete the attribution of competence.

APPENDIX 2

Examples Showing How Different Sources of Evidence Can be Used in Assessing the Same Standard

Access to assessment should be allowed to all individuals who are competent. To achieve this, assessment systems commonly need to allow candidates to be assessed in a variety of ways. The systems need to be as flexible as possible without being unnecessarily complex and without losing technical adequacy. While it is unreasonable to expect that any system will be able to meet every possible contingency, the chances of candidates being refused access because the system cannot accept their evidence should be minimised.

Set out below are three examples of systems which allow alternative sources of evidence to be used in assessing the same standard. In each case, there is a preferred pattern of assessment, but allowances have been made for various sorts of situation which might arise. Although the examples are at different NVQ/SVQ levels and involve different types of evidence, the same range of evidence sources is applied in all. The choice of what sources of evidence to use does not depend on the level of qualification or the type of element.

Example 1: Financial Services — Pensions Administration

These standards are the basis of a level 4 NVQ/SVQ. They were developed by the Pensions Management Institute (PMI) which is both the ILB and the Awarding Body. They comprise 12 units, of which five are assessed by the NVQ/SVQ by observation of performance at work, and seven by completion of case studies. The example comes from one of the units currently assessed by case studies. It concerns the calculation of retirement benefits for members of a pension scheme.

<table>
<thead>
<tr>
<th>Element</th>
<th>Determine retirement benefits for members without past histories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance criteria</td>
<td>a) All changes to personal details are recorded accurately</td>
</tr>
<tr>
<td></td>
<td>b) Full range of requested options which are allowed by member’s record, scheme rules and legislation are shown</td>
</tr>
<tr>
<td></td>
<td>c) Scheme definitions (i.e. pensionable service, salary, accrual rates) are applied accurately, taking into account any special conditions</td>
</tr>
<tr>
<td></td>
<td>d) All relevant legislation is applied correctly, according to dates of joining/leaving scheme</td>
</tr>
<tr>
<td></td>
<td>e) Calculations for each option are set out according to in-house procedures</td>
</tr>
<tr>
<td></td>
<td>f) Calculations are arithmetically correct</td>
</tr>
<tr>
<td></td>
<td>g) Manager is consulted where benefits are likely to exceed Inland Revenue maxima or where augmentation payment is required</td>
</tr>
</tbody>
</table>

Range

- Full pensions, cash sums with reduced pensions and spouses’ pensions
- Normal, ill-health, early and late retirements
- Members who were new joiners with no past histories
The first pattern of assessment for this standard is entirely by performance on specially set tasks, namely case studies. The PMI have prepared fictitious pension scheme booklets and written case studies on these schemes by inventing members whose personal details cover the situations defined by the standard’s range statement. This pattern of assessment is realistic, makes efficient use of the candidates’ and assessors’ time and is easily verified. It ensures coverage of the range and opens access to candidates who are not working in the pensions industry.

However, the PMI is also investigating a second pattern of assessment which is for the standards to be assessed by observation of performance at work in the same way as the other units in the qualification. This pattern could only be used for candidates who have access to the workplace, and it would demand more of their time to ensure that the full range of situations had arisen. However, this second pattern of assessment would enable training and assessment to be timetabled in stages in a complementary manner.

Example 2: Financial Services — Building Society Sector

These standards are intended mainly for customer advisers. They are the basis for a level 2 NVQ/SVQ. The main assessor is usually a nominated supervisor in the candidate’s branch who is considered to be suitably experienced. The preferred method of collecting evidence is via observation of performance at work. However, it is recognised that supplementary evidence will be required in some branches where the range of products and services is insufficient for a full assessment of competence to be made. In these circumstances performance on specially set tasks (usually case studies) and questioning techniques can be used. A bank of questions for use in such situations is held centrally and can be sampled by assessors. Assessment by case studies or questioning will often be carried out by trainers.

Element

Advise customers about non-FSA-inclusive products and services which meet their identified requirements

Performance Criteria

a) Customer needs are identified accurately
b) Features, advantages and benefits of services sufficient to meet customer needs are described clearly and accurately
c) Example calculations are correct
d) Appropriate information is accessed from available resources (including Viewdata)
e) Customers are acknowledged promptly and treated politely
f) Customers are treated in a manner which promotes goodwill
g) Information and advice outside the job holder’s responsibility is passed on to a recognised authority

Range of Variables to which the element applied

Products:

Investment — instant access, higher rate, notice account, regular savings
Lending — mortgages further advances, personal secured loans, unsecured loans, credit cards
Insurance — property, personal, travel
Services — foreign currency, travellers cheques, credit card, share dealing
Customers — minors, teenagers, 16+, middle-aged, pensioners, professional contacts, companies, non-residents, groups.

The alternative patterns of assessment combine observation of performance with simulations and questioning in different ways. The first alternative would be suitable for a branch where the full range of variables has a reasonable chance of occurring naturally, and where it can be assumed that sufficient evidence of the candidate’s knowledge and understanding of the product range could be gained from the observation of performance. The second would be suitable for a branch where business is typically restricted to lending and investment. In both cases customer handling is assessed by observation of the process on a regular basis. It is difficult to assess properly by any other means.
Example 3: Business Administration — Secretarial

These standards were developed by the National Working Party for Secretarial Standards (who have also developed further guidelines on evidence requirements omitted from this illustration). The example is taken from a unit which forms part of a level 3 NVQ/SVQ. The focus of the element is on organising skills and attention to detail. Note that both the performance criteria and the range statement are extensive and imply that the candidate has to be good at keeping a number of ideas in mind. Again, the preferred method of assessment is observation of performance at work by workplace supervisors or managers. Supplementary performance evidence is collected via simulations. These methods are thought to be sufficient and questioning techniques are not thought to be necessary.

Element

Arrange travel and accommodation

Performance Criteria

a) Travel, accommodation, entertainment and personal requirements are identified
b) A clear and accurate itinerary, containing all the arrangements made, is compiled well before the date of departure
c) A proper balance is maintained between economy and the efficient use of time, in accordance with the organisation’s rules and procedures
d) Selected bookings are correctly made and confirmed
e) Travel documents are obtained and checked, and any discrepancies identified and rectified
f) Credit transfers, currency and travellers’ cheques are arranged correctly
g) Medical packs are arranged for overseas emergency and high risk areas
h) Safety/working practices are always followed and implemented
i) Security and confidentiality procedures are always followed and implemented.

Range Statement

Competent performance must be demonstrated across a range of:

- Destinations — UK; European; intercontinental
- Accommodation types and requirements — hotels; residential centres; overnight; meals only.
- Health and insurance requirements — pre-travel; vaccinations and medicines during travel; personal accident; baggage and car insurance.
- Travel documents — passport; visa; international driving licence.
- Monetary requirements — foreign currency; traveller’s cheques; letters of credit; valid credit and charge cards.

The alternative patterns of assessment outlined below show ways in which observation of performance at work and of performance on specially set tasks can be mixed when assessing this standard. The first alternative could be suitable for a candidate working for a senior executive in a national company who often has to travel abroad. The second could be suitable for a candidate who works for several managers whose travelling never takes them out of the UK. In both cases the criteria referring to performance over time are assessed by reference to performance at work. This is because such criteria can only be assessed properly in work contexts.
NOTES ON CONTRIBUTORS

Edward Fennell

Edward Fennell is a freelance journalist specialising in issues of employment and training. He worked as a careers adviser for seven years before turning to full-time writing. In addition to editing Competence & Assessment for the Training Agency he also currently edits INSIGHT and contributes regularly to The Times. He works extensively in video and audio and was part of the team which produced the latest NCVO videos on the NCVQ system.

Norman Gealy

Norman Gealy MA CPsychol is a partner in the consultancy Moloney and Gealy. Before this he worked for the Psychological Corporation in New York, and for the City and Guilds of London Institute where he headed the Department of Industrial Training, Testing Services and Research. During his 15 years experience in the field of assessment he has worked extensively across the service, process and manufacturing sectors and with all levels of staff from operatives to senior management. Norman Gealy has been involved in the standards-based training and assessment movement since its inception. He acted as series editor for the Training Agency's Guidance Notes and has contributed to Competence and Assessment. At Moloney and Gealy he has developed standards, assessment systems and NVQs with the Chemical Industries Association, the Association of the British Pharmaceutical Industry, and the Pensions Management Institute. At present he is developing standards and standards-based assessment with the Institute of Chartered Accountants in England and Wales.

Charles Johnson

Charles Johnson BSc PhD CPsychol AFBPsS is a director of Psychometric Research and Development Ltd whom he joined in 1986. There he has particular responsibility for the development and implementation of human resource programmes and systems. His work has included the design and implementation of assessment systems, recruitment processes, management of change programmes involving the introduction of IT and job redesign, and development programmes for middle and senior management. Previously he worked as a principal psychologist in the Cabinet Office (MPO) Recruitment Research Unit.

Bob Mansfield

Bob Mansfield trained as an aeronautical engineer before entering full time education in social sciences at the University of Leeds. He joined an Industry Training Board in 1977 as Senior Training Development Adviser specialising in group working systems, industrial relations, training design and management development. A director of Barbara Shelborn Developments Ltd since 1982, Bob Mansfield acts as a consultant to a wide range of public and private sector bodies, advising on the development and delivery of occupational standards. He has contributed to the development of a number of models and techniques now widely used in the UK Standards Development Programme.

Bob Mansfield is a regular contributor to conferences and seminars dealing with standards development, vocational education systems and training policy, and is the author of a number of technical papers and guidelines in these areas.

David Mathews

David Mathews runs David Mathews Associates, a consultancy based in Wimbledon and involved in the methodology and practice of standards development and implementation with the Training Agency, NCVQ and bodies as diverse as the lead bodies for housing and environmental conservation, the NHS and the Institute of Directors. He was previously a member of The Training Agency's Technical Advisory Group, deputy director of the Work Based Learning Project at the Further Education Staff College (FESC) and a member of the earlier ESF-YTS Core Skills Project. In these roles he was closely involved in developments leading to the approach to standards of competence used in National and Scottish Vocational Qualifications. David Mathews worked for a number of years for the Engineering Industry Training Board where he was involved with research and development in selection and the transition from school to work.

Candace Miller

Candace Miller is a freelance researcher and consultant in the field of vocational education and training. Over a number of years she worked for the Scottish Vocational Education Council, and for one of its predecessor organisations, on the development and administration of both traditional forms of syllabus/examination arrangements and the National Certificate modular provision. In 1986 she was appointed Research Officer on the 'Accreditation of Work-Based Learning Project', later becoming Coordinator of that project. Currently working on a number of research and development projects for both public agencies and Lead Bodies, she has a particular interest in the specification and assessment of occupational competence. Candace Miller was a member of the TA Technical Advisory Group from 1986 until it was disbanded in early 1990 and has contributed several articles to the TA publication 'Competence and Assessment'.

Lindsay Mitchell

Lindsay Mitchell is a social science graduate with considerable experience and achievements in educational research in the UK and Europe. Following a successful career in public educational research institutes, Lindsay joined SCOTVEC in 1986 as project director of the 'Competency Testing Project' which produced an important and influential report ('Insufficient Evidence') on assessment systems and evaluation.
Lindsay joined Barbara Shelborn Developments Ltd in 1988 and became Director of Research in 1989. She acts as a consultant to Lead Bodies, TA, NCVQ and a number of professional bodies on the design and development of standards and assessment systems. A specialist in evaluation systems, Lindsay directed the technical evaluation team for the Management Competences Project and acted as technical consultant to the Care Consortium Support Workers Project.

Lindsay Mitchell has published widely in the fields of standards development and assessment.

Alison Wolf

Alison Wolf holds a research lectureship at the Institute of Education, University of London (Department of Mathematics, Statistics and Computing). She directs a number of research projects concerned with training and assessment, and especially with the development and measurement of generalisable, higher order skills. She has also worked extensively on industrial and workplace mathematics, and on the integration of mathematics and technology in secondary schools.

She was a member of the Training Agency’s Technical Advisory Group and recently co-edited with Harry Black a book “Knowledge and Competence”. Alison is currently a member of the Training Agency’s Knowledge Advisory Group and involved in examining the place of Knowledge and Understanding in National Vocational Qualifications in a number of different vocational contexts at a number of NVQ levels.
APPENDIX 1

The following served on TAG for some or all of its 3 years existence.

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Lindsay Mitchell*
Liz Wilson*
Alison Wolf

* Indicates continuous membership of the Technical Advisory Group. Jan 87 — Dec 89

APPENDIX 2

STANDARDS METHODOLOGY UNIT: Guidance and Briefing Notes

Development of Assessable Standards for National Certification Series:


The Training Agency (1989). Guidance Note 2: Developing Standards by Reference to Functions


Briefing Series

