

Discussion Paper Series **2**



The Development of a
National System of
Vocational Qualifications



THE DEVELOPMENT OF A NATIONAL SYSTEM OF VOCATIONAL QUALIFICATIONS

A DISCUSSION PAPER

UNESCO-UNEVOC International Centre
for Technical and Vocational Education and Training
Bonn, Germany

UNESCO-UNEVOC Discussion Paper Series

Volume 1. Orienting Technical and Vocational Education for Sustainable Development

Volume 2. The Development of a National System of Vocational Qualifications

This paper was developed for **UNESCO** by the **Scottish Qualifications Authority**, Scotland, United Kingdom

Published by:

**UNESCO-UNEVOC International Centre
for Technical and Vocational Education and Training**

Hermann-Ehlers-Str. 10

53113 Bonn

Germany

Tel: [+49] (228) 2 43 37-0

Fax: [+49] (228) 2 43 37-77

E-mail: info@unevoc.unesco.org

Website: www.unevoc.unesco.org

Cover design: www.pinger-eden.de

Printed by: www.dpmoser.de

ISSN 1817-0382

All rights reserved

© UNESCO 2006

This document can be downloaded in PDF format from:

<http://www.unevoc.unesco.org/publications/>

The choice and presentation of the facts contained in this publication and the opinions expressed herein are not necessarily those of UNESCO and represent no commitment on the part of the Organization.

The designations employed and the presentation of material throughout this publication do not imply the expression of any opinion whatsoever on the part of UNESCO concerning the legal status of any country, territory, city or area or of its authorities, or the delimitation of its frontiers or boundaries.

SCOTTISH QUALIFICATIONS AUTHORITY

The Scottish Qualifications Authority (SQA) is the national body in Scotland for the development, accreditation, assessment and certification of qualifications other than Higher Education degrees. It is responsible to the Scottish Parliament and its Executive. Its functions are to

- Devise and develop qualifications, and keep them under review
- Accredite and validate qualifications (other than degrees) as meeting the requirements which SQA specifies and publishes
- Approve education and training establishments as being suitable for entering people for SQA qualifications
- Make arrangements for, and assist in and carry out, the assessment of people undertaking education and training
- Carry out a quality assurance function in relation to assessment conducted by SQA and by education and training establishments to ensure that assessment judgements are in accordance with the achievement criteria set for each qualification
- Determine the entitlement of a person to an SQA qualification and issue a certificate to record the achievement of the qualification.

More information about the Scottish Qualifications Authority is available by writing to:

Scottish Qualifications Authority
The Optima Building
58 Robertson Street
Glasgow G2 8DQ
Scotland
United Kingdom
Tel: [+44] 845 279 1000, [+44] 141 282 6500
E-mail: customer@sqa.org.uk
Website: www.sqa.org.uk

TABLE OF CONTENTS

Preface and acknowledgements.....	vii
Introduction and note on terminology	ix
1. THE AIMS AND FEATURES OF A NATIONAL SYSTEM OF VOCATIONAL QUALIFICATIONS	1
2. VOCATIONAL QUALIFICATIONS.....	3
2.1 The purpose of qualifications	3
2.2 Types of qualifications.....	3
2.3 Standards-based qualifications	4
2.4 Combining national standards into qualifications.....	5
2.4.1 Standards or units?.....	5
2.4.2 Is there a need for integration?.....	5
2.4.3 Defining characteristics for a vocational qualifications system.....	6
3 OPERATING THE VOCATIONAL QUALIFICATIONS SYSTEM	7
3.1 Involving stakeholders.....	7
3.2 Developing standards, units and qualifications.....	7
3.3 Managing learning.....	9
3.4 Assessment.....	10
3.4.1 Key features.....	10
3.4.2 Limitations of standards-based assessment.....	10
3.4.3 Grading.....	11
3.4.4 Mastery	11
3.4.5 Types of assessment	11
3.4.6 Internal assessment.....	12
3.5 Quality assurance and control	13
3.5.1 Centre approval	13
3.5.2 Vetting learning material.....	14
3.5.3 Vetting assessment instruments	14
3.5.4 Ensuring consistent assessment judgements	15
3.5.5 Statistical quality assurance.....	15
3.6 Data processing and certification	16
3.7 National monitoring.....	17
4 IMPLEMENTATION ISSUES.....	18
4.1 Infrastructure	18
4.1.1 The Scottish model	18
4.1.2 Variant 1 of the management model.....	18
4.1.3 Variant 2 of the management model.....	19
4.1.4 Discussion.....	20
4.2 Putting a new system in place.....	20
4.2.1 Stakeholder commitment	20
4.2.2 Resourcing.....	20
4.2.3 Promotion	20
4.2.4 Staff development	21
4.2.5 Scale and speed of development.....	21
5 NATIONAL QUALIFICATIONS FRAMEWORKS (NQFs).....	23
5.1 The general aims of NQFs.....	23
5.2 The characteristics of NQFs.....	24

5.2.1	Levels.....	25
5.2.2	Volume.....	26
5.2.3	Design rules (rules of combination).....	26
5.3	The management of NQFs.....	27
5.4	The Scottish Credit and Qualifications Framework (SCQF).....	27
6	CONCLUSION.....	29

PREFACE AND ACKNOWLEDGEMENTS

One of the main functions of the UNESCO-UNEVOC International Centre is knowledge management and information sharing. Particular attention is given to promoting best practices and innovations in technical and vocational education and training (TVET) and education for the world of work, with special reference to meeting the needs of developing countries, countries in transition and countries in a post-conflict situation. The Centre also seeks to help bridge the gap that often exists between research, policy and practice in the area of education for the world of work.

To address these functions, the UNESCO-UNEVOC International Centre is in the process of developing an extensive publications programme in the form of an **International Library of Technical and Vocational Education and Training (TVET)**, to be published by Springer (the Netherlands). The following volumes are currently under preparation:

- International Handbook on TVET
- Book Series "Current Developments in TVET: Issues, Concerns and Prospects"
- Handbook on TVET Research
- National Profiles of TVET Systems
- A New International Journal of TVET: Studies in Vocational Learning
- Annotated Bibliographies of TVET
- Discussion Paper Series.

The current Discussion Paper examines various aspects of development of national qualifications and provides guidance for countries aiming to set up or reform their qualifications systems.

The introduction of, or major changes to, a national qualifications system can have a huge impact on the life and work of many individuals – as learners, employees and employers and on the national economy as well. This paper draws on lessons learned from extensive reform of the vocational qualifications system that was initiated in Scotland in the mid-1980s. The aim of the radical changes was to develop a standards-based, coherent, credible system which would be able to respond quickly and flexibly to emerging needs and re-train and re-educate individuals to meet the new challenges.

Prepared in the context of vocational qualifications, the contents of this paper are generally applicable to other countries and to any qualifications that are based on standards of performance.

This paper was developed for UNESCO by the Scottish Qualifications Authority – the national body in Scotland responsible for the development, accreditation, assessment and certification of qualifications other than Higher Education degrees.

The UNESCO-UNEVOC International Centre would like to express special thanks to all colleagues in the Scottish Qualifications Authority who contributed to the production of this publication.

Rupert Maclean
Director
UNESCO-UNEVOC International Centre

INTRODUCTION AND NOTE ON TERMINOLOGY

The aim of this paper is to inform readers about the development of national qualifications systems and to provide guidance for countries aiming to set up or reform their systems. The paper is written in the context of vocational qualifications – that is, qualifications that are designed to prepare people for work or to assess their performance in the workplace. Nevertheless, the contents are generally applicable to any qualifications which are based on standards of performance. It also gives some information about the development of a National Qualifications Framework that allows comparisons to be made between qualifications.

The paper draws on the experience of the Scottish system of vocational qualifications since the mid-1980s, when the system was subject to a series of major reforms. It covers both the development of the integrated and comprehensive system of vocational qualifications (which is SQA's responsibility), and the introduction of the Scottish Credit and Qualifications Framework which includes these qualifications.

Section 1 of the paper looks at the background to vocational education and training (VET) reforms in Scotland. Subsequent sections focus on the qualifications themselves and the infrastructure required to develop and operate the qualifications. Finally, the paper describes national qualifications frameworks in general terms and the Scottish Credit and Qualifications Framework (SCQF) in particular. The SCQF was launched in 2000 to bring together general, VET and university provision with a view to supporting and increasing lifelong learning in Scotland.

There is a considerable variation in terminology between countries. This paper uses the following general terms:

Standard	a set of information about outcomes of learning against which learners' performance can be judged in assessment – standards can also form the end-point of learning programmes
Unit	a coherent set of standards which form a short, unified programme of learning (sometimes called a "module", although the term "module" is often associated more with a package of teaching and learning materials, than with a package of standards for assessment)
Programme	a package of standards or units which may or may not lead to a formal qualification
Qualification	a package of standards or units judged to be worthy of formal recognition in a certificate
Learner	any individual engaged in learning, whether in a school, college, university, training organisation, home, workplace or through open, distance or technology-based approaches – the learner may be a student, a trainee, a professional undertaking development activities, a candidate for a qualification, etc
Assessment	the process of judging evidence produced by a learner against a standard and making a decision on whether or not the standard has been met by the learner
Centre	the organisation responsible for the assessment of the learner's achievements against the standards – centres can be schools, colleges, universities, training organisations, skills-testing services, workplaces and other appropriate organisations
Awarding body	the organisation which decides whether the learner is entitled to the award of a qualification – awarding bodies can be organisations such as examination boards, professional bodies or, individual universities
Accreditation	a quality check carried out by a regulatory body and usually associated with approving institutions or organisations to carry out a particular function, or with the approval of draft standards
Validation	a quality check carried out by an awarding body and usually associated with the approval of draft qualifications

Other technical terms are defined as and when they arise in the paper.

1. THE AIMS AND FEATURES OF A NATIONAL SYSTEM OF VOCATIONAL QUALIFICATIONS

In recent times, economies around the world have seen rapid changes. The role of technology has altered and grown, the scope and nature of available employment has altered, and international competition has increased. Many countries have also faced significant changes to their political circumstances. Scotland has experienced both kinds of change.

Over the past half century, Scotland has had to come to terms with the decline and collapse of traditional heavy industry such as coalmining, shipbuilding and steelmaking, the rise and fall of the oil industry, and the growth of new industries, notably those based on information technology and services of various kinds. There have also been significant changes in the way that some traditional industries, such as agriculture and whisky distilling, have been conducted, with increased mechanisation and new production practices.

At the same time, there have been significant political changes in the United Kingdom, where a devolved Scottish parliament was established in 1999 and, in a broader context, in Europe as the European Union has developed a stronger identity and role. These have also added to the challenges facing the education and training system and, in particular, the world of vocational qualifications. (Scotland has always had its own distinctive national system of education, training and qualifications – this is now directly governed by the Scottish parliament.)

When changes such as these take place in a country's economic and political circumstances, the national education and training system needs to be able to respond quickly and flexibly to emerging needs and to re-train and re-educate individuals to meet the new challenges. The system also needs to be able to recognise previous experience, so that re-training and re-education can build on the learning that this has given rise to.

In Scotland the system of vocational education, training and qualifications was seen as crucial in preparing individuals to meet the challenges of the future. In the 1980s and 1990s, a programme of radical change to the vocational qualifications system was carried through to ensure that the system could:

- Respond rapidly to changes in the economy and in employment practice
- Improve the quantity and quality of learning opportunities
- Make learning more relevant to employment needs
- Encourage the development of skills which equip individuals for the future as well as for the present
- Improve the competitiveness of the country's economy by raising skill levels and filling skills gaps.

This was achieved by moving to a unitised, standards-based system with the aim of creating a qualifications system which would be:

- Coherent – creating clear progression routes between qualifications in a national framework
- Comprehensible – making the choice of qualifications easier for learners and providing clearer information for those who use qualifications for selection purposes
- Current – making the outcomes of learning more relevant to local and national employment and to enable learners to develop skills which equip them for changes of employment in the future
- Credible – using forms of assessment which were valid and reliable and backed up by well-designed quality assurance.

The system was also designed to make it easy to respond to changes in requirements – the idea being that it would be easy to re-combine existing standards or to update existing standards or to create new standards where these were components of qualifications.

And finally, the system was expected to be flexible, allowing more learner-centred approaches to the delivery of qualifications to be used: greater tailoring of content, methodology and pace of learning to the needs of the individual learner; more distance learning; and more IT-based learning.

At the same time as these reforms were taking place in VET, changes were being brought about in school and university qualifications which made articulation between the new standards-based VET qualifications easier and allowed the development of a national qualifications framework, the SCQF, which could incorporate all the main qualifications in Scotland and make it easier for stakeholders to understand the whole field of education and training in Scotland. A detailed account of this framework is given in the final section of this paper.

2. VOCATIONAL QUALIFICATIONS

This part of the paper looks at the qualifications that make up the national system of vocational qualifications. It considers the purposes of qualifications, the nature of a standards-based approach to qualifications, and issues affecting their design.

The national qualifications framework in Scotland (the SCQF) is designed to cover all national qualifications and aims to reduce the importance of labels such as "vocational" and "academic". The aim is to apply the framework to all qualifications and to stress that the true test of value is whether the qualification is fit for its purpose. Although this paper focuses on vocational qualifications, much of the content could be applied to other qualifications.

2.1 The purpose of qualifications

Much learning does not lead to the achievement of formal qualifications. Such learning may take place in the workplace, in the community, and even in the home, and it may be planned or unplanned. Qualifications require the learner to be assessed in some way, but most qualifications in the kind of system being described here can be achieved through both formal and informal learning. Some may be wholly or partly achieved through non-formal learning.

Qualifications can add value to learning in a number of ways. They can:

- Give structure to learning
 - by providing targets in the form of nationally agreed outcomes
 - by providing clear routes through which learners can progress to higher and/or wider levels of knowledge, understanding and skills
- Give status and recognition to learning – for example, qualifications may be the basis on which wage rates are settled, membership of a professional body is secured, entry is allowed to further study, or credit is given towards further qualifications
- Act as a source of motivation and reward for learners, for example where an enterprise is retraining its workforce
- Provide a focus for labour market planning and for monitoring of the national skills base.

While it is difficult to apply labels to qualifications, distinctions of purpose can usefully be made. Three purposes are distinguished in this paper. These relate to underpinning knowledge and skills (general qualifications), work-readiness (vocational qualifications), and job competence (occupational qualifications).

2.2 Types of qualifications

A. General qualifications – delivering underpinning knowledge and skills

These qualifications are designed to recognise where learners have achieved standards that relate to general underpinning knowledge, understanding and skills. These might cover necessary personal, interpersonal and citizenship skills, and the development of a knowledge base which draws attention to the national cultural heritage and to important scientific, social and aesthetic developments. These standards, at a basic level, often form the basis of much of school-based learning, although they are not exclusive to schools. They lead to the achievement of general qualifications.

B. Vocational qualifications – delivering work-readiness

These qualifications are designed to recognise where learners have achieved standards that prepare them for immediate or later entry to the workplace. Such qualifications provide evidence of the learner's readiness to progress to further learning or to enter a job. These qualifications often build on the standards in general

qualifications by applying an employment focus. For example, general skills in numeracy and mathematics may be deepened and broadened so that they can be applied to a specific employment area, such as engineering. They may also draw on occupational standards, but they will not attempt to develop full job competence. These qualifications can be completed off-the-job, provided that there are learning opportunities to allow for the development of the required knowledge, understanding and skills. Qualifications of this type are important in raising knowledge and skills levels for individuals who are preparing to enter the workforce, or who are planning for a change of employment, or who are unemployed. (In some systems these might be thought of as pre-vocational qualifications.)

C. Occupational qualifications – delivering job competence

These qualifications are designed to recognise where learners have achieved standards that confirm that the learner is fully competent in employment. These job competence qualifications need to be completed in on-the-job workplace conditions or in conditions which realistically simulate those of the workplace. They may be used to prepare individuals for entry to employment, but are more likely to be used to train those who enter employment or to improve or upgrade the skills of those already in employment.

This paper goes on to describe an approach to the design of qualifications that is based on the specification of national standards. This approach can be used for all three types of qualification described above. Given the focus of the paper on vocational qualifications, however, it concentrates on the qualifications described above as vocational and occupational.

Generally, the relationship between these types of qualification is that a learner with a vocational qualification needs to add specific job experience in full workplace conditions before being able to achieve an occupational qualification.

2.3 Standards-based qualifications

Standards-based qualifications may be general, vocational or occupational. They are specified in a way that requires the learner's level of knowledge, understanding and skills to be assessed against a defined set of pre-determined national standards. In Scotland, as in a number of other national systems, each national standard is defined by specifying:

- The outcome(s) that the learner has to be able to demonstrate
- The criteria that distinguish successful learners from unsuccessful learners (sometimes referred to as "performance criteria")
- The nature of the evidence that is required as the basis for assessment.

They may also specify the contexts in which the learner is required to demonstrate achievement – this is sometimes referred to as the "range".

Other terms used for the same sort of qualifications system are "competence-based" and "outcomes-based".

There are strong advantages to this kind of qualification:

- They focus on what the learner can do; they record positive achievement; and users can get a clear understanding of what they mean.
- They are based on pre-determined standards which can be determined by, or in conjunction with, industry bodies and can be made publicly available.
- They do not depend on fixed syllabuses, fixed location or fixed time. (Many standards-based qualifications have notional design lengths and suggested teaching and assessment approaches, but these are usually for guidance only.)
- They fit well with the development of a flexible and coherent qualifications framework.

Thus, for example, in an occupational qualification, the component standards might together cover all the work skills, knowledge and understanding required to be a fully-functioning employee in a particular job, with each individual national standard covering an aspect of that job.

In a vocational qualification, the component standards might together cover all the practice skills, knowledge and understanding required to begin as a probationer in an occupation, with each individual national standard covering an aspect of the knowledge or skills required for the occupational area.

For a specific job, the knowledge and understanding covered by the occupational and vocational qualifications may overlap strongly. Indeed, if a learner who has recently completed a vocational qualification moves into the occupation for which that qualification was designed to be a preparation, he or she would already meet some of the requirements (especially the knowledge and understanding parts) of the occupational qualification. The additional requirements for the occupational qualification would be to prove that the learner could apply the knowledge and understanding to the workplace and could produce work to full employment standards.

The sections which follow discuss ways in which the design rules for combining national standards into qualifications may be defined.

2.4 Combining national standards into qualifications

2.4.1 Standards or units?

The discussion in the paper so far has assumed that qualifications are composed of combinations of individual standards – combined according to a set of design rules as discussed in section 5.2.3. However, in some national systems, including that in Scotland, there is an intermediate step. A single standard, or a coherent set of standards may form a unit, and units, in turn, may be combined to form a qualification. Standards-based qualifications, as the name suggests, are defined by specifying which national standards or units, when achieved together, have a value and relevance related to the qualification's purpose.

In this system, a unit might consist of three or four standards, for example all related to a particular aspect of carpentry skills such as installing doors, and covering the knowledge, understanding and skills required for that aspect. The two models are:

Standards > Units > Qualifications (Units and Qualifications certificated)

Standards > Qualifications (Standards and Qualifications certificated)

In the first model, the unit is the smallest free-standing entity to appear on a national certificate. In the other model, the standards themselves might be recorded.

Both models have their advantages and disadvantages. Probably the key to the selection of a model is to decide the level of detail that is wanted on the national certificate, and the extent to which the fragmentation of learning and assessment is a problem. The first model leads to a less detailed certificate and encourages holistic approaches to learning and assessment.

2.4.2 Is there a need for integration?

There is a further issue to be considered when deciding on the design rules for qualifications, i.e. whether it is standards or units which are used. The issue arises from the criticism levelled at standards-based learning that it does not properly recognise the need to pull knowledge and skills together to apply them in real-life situations. The issue is whether a qualification is simply the sum of its component standards or units – or whether it is that sum plus proof of the learner's capacity to integrate the knowledge, understanding and skills in the standards or units and, perhaps, to apply them in unfamiliar contexts.

The choice is therefore

qualification = sum of selected standards/units

or

qualification = sum of selected standards/units + integrative component

There are strong arguments in favour of each approach. In the development of a new qualifications system, the decision on which system to adopt may depend more on pragmatic issues than on high principle. If the approach including the integrative component is used, the achievement required of the learner in that component should be defined in terms of standards, which might cover such aspects as:

- Sampling of knowledge, understanding and skills across the standards or units in the qualification (thus testing longer term retention)
- Assessing the learner's ability to integrate the knowledge, understanding and skills from separate units
- Assessing the learner's ability to apply the knowledge, understanding and skills to unfamiliar contexts.

The approach which does not include the integrative component has the advantage that learners can accumulate credit towards a qualification over time and in different centres. The disadvantage is that such accumulation may become "piecemeal", with little appreciation on the learner's part of how one standard or unit relates to any other. The approach which includes the integrative component is more likely to encourage the learner to appreciate the relationship between the units or standards which make up a qualification.

2.4.3 Defining characteristics for a vocational qualifications system

Pulling together the points covered in this section, a broad set of characteristics which should be present in any standards-based system of vocational and occupational qualifications emerges. These are:

- The range of vocational qualifications should be comprehensive across employment sectors and different job levels. This is to ensure that learners have opportunities for progression to further learning to broaden and deepen their knowledge, understanding and skills.
- The standards of achievement and the rules of combination involved in the award of each qualification should be defined, publicly-available and capable of valid and reliable assessment.
- The definition of the standards for the award of vocational qualifications should relate to the standards required in employment and should, wherever possible, also relate to future employment needs, wherever possible.
- The award of the qualification should be available to everyone who has been formally assessed and judged to have met the defined standards.
- The achievement of the standards and the award of the qualification should not be dependent on fixed syllabus, location, nature of learning or time.
- The certificate issued to the learner in recognition of the award of the qualification should provide as much positive information about the learner's achievements as users will find useful.

The remainder of the paper goes on to consider how a vocational qualifications system such as described above is operated.

3 OPERATING THE VOCATIONAL QUALIFICATIONS SYSTEM

This part of the paper looks at the way in which the system of vocational qualifications can be operated. It does this from the perspective of the functions which have to be operated. The next part of the paper then looks at implications for infrastructure.

The functions involved in the running of a system of vocational qualifications of the Scottish type are listed below. These are:

- Involving stakeholders
- Developing standards, units and qualifications
- Managing learning
- Assessment
- Quality assurance and control
- Data processing and certification
- National monitoring.

Each of these functions is explored in detail, after which the paper discusses ways in which responsibility for these functions can be allocated.

3.1 Involving stakeholders

It is difficult to be precise about the mechanism for involving stakeholders because it depends on the way an individual country encourages or obliges stakeholders to take a role in the vocational qualifications system. The purpose, however, is clear. Such involvement is important to enable stakeholders to influence all aspects of the vocational qualifications system, at strategy, policy and operational level, and ensure that the qualifications are meeting their needs.

This involvement should go beyond specific functions such as standard-setting or assessment. It can be achieved through stakeholder networks which bring in the full range of people and groups with a stake in the vocational qualifications system – not only from the employment sector but representatives of centres, community groups, and local and national government.

Where the network works across occupational sectors or education and training sectors, its role may be concerned with setting the strategy and policy directions of a national vocational qualifications body, such as an awarding body. Where the network is based on a specific occupational sector (e.g. agriculture, construction, or management), its role may be concerned with providing analysis to the national qualifications authority on sectoral needs, based on feedback from members and the people the members represent. Such a network could play a vital role as a means of ensuring two-way communication between the sector and the qualifications body to ensure that the qualifications available in that sector are comprehensive, coherent, progressive and fit for purpose. It should also ensure that the qualifications body has a plan of action in place (possibly an annual plan) for the review and development of the sector's qualifications.

3.2 Developing standards, units and qualifications

Stakeholders must also be involved in the process of standards development for their sector. The nature of the stakeholder group may be different, depending on the purpose of the standards. Thus, job competence standards are likely to be developed by groups of stakeholders representing employment since the purpose and use of these standards is employment-focused. By contrast, standards designed to be incorporated into a readiness qualification, whilst also involving employment representatives, may have to have wider

membership to ensure that representatives of centres which will use these qualifications are involved in their design. The paper describes these bodies as standard-setting bodies.

Standard-setting bodies may have an extended role which includes deciding how to combine standards into units (if units are used in the national system) and into qualifications. A further role might be to make recommendations on approaches to assessment and quality assurance. These recommendations might include requirements and advice on:

- Types of assessment instrument, and the extent to which approaches such as simulation may be used (particularly if the standards are of the job competence type)
- The competences which assessors should have – this might include requirements for specific qualifications and/or employment experience
- Qualifications and/or experience in assessing (in addition to qualifications and/or experience in a job role)
- The equipment or conditions needed to ensure valid assessment takes place
- The design of learning materials to assist learners to achieve the standards.

The scale of the exercise in defining national standards is very large and it needs to be well planned and resourced. The ground rules for the process – for example, agreement on a template and terminology in which standards are expressed – need to be set in advance and fully applied on a national basis.

Considerable effort will be needed in the training of those who write standards on behalf of standard-setting bodies, and in the quality control of their output. Particular care will be needed to avoid huge proliferation of standards; every effort will be needed to encourage writers to define skills as generic, rather than as highly specialised.

The standard-setting process should:

- Provide standards which are meaningful, assessable, worthy of national certification and, above all, understandable to all stakeholders, assessors and learners
- Produce standards in clear, simple language. (Writers of standards must be forcibly reminded that learners and assessors in centres are the real users of the standards and as such they must be able to form an unambiguous understanding of the standard without having been part of the team involved in the development.)
- Avoid proliferation of standards (Writers of standards need to be encouraged to define skills as generic, rather than as highly specialised. For example, English language skills can be defined in a context-free way, rather than having standards in "English for business", "English for technologists", "English for tourist guides" and so on.)
- Take full account of core skills (such as communication and problem solving) and important generic employment skills (such as self-management, quality awareness, customer care and health and safety).

In the Scottish system, the work of the standard-setting bodies is regulated by the national qualifications authority. This regulation takes the form of an accreditation process which entails a quality check on the standards and their combination into qualifications, and on recommendations on assessment strategies. This quality check is a requirement before the standards and qualifications can be entered into the national catalogue and made available to awarding bodies and centres. The quality check is carried out against a set of criteria which ensure that the standards and qualifications are:

- Fit for purpose and have the support of stakeholders and user groups
- Expressed as standards which are able to be assessed

- Written in plain language and in a format which makes them understandable to users
- Free from discrimination.

When combining the standards into units and qualifications, standard-setting bodies need to take account of the purpose of the qualification and the range of learners who might wish to achieve it. Where appropriate, the structure of the qualification may include a core and options approach so that individual learners can follow particular specialisms relevant to the employment area concerned. Such options may be particularly important in "readiness" qualifications so that learners can gain experience of a range of specialisms to help them to choose a specific area of employment to enter.

The standard-setting body which is combining standards into units and qualifications does not itself have to set the standards for all components of a qualification. It can, instead, draw on standards developed by other standard-setting bodies and to use them where appropriate. For example, in a job competence qualification concerned with retail, the standards concerned with specialist retail skills will have been defined by the retail standard-setting body. If the qualification is being designed to cover a job in retail which also involves supervisory duties, the standards for supervision may be drawn from the work of the standard-setting body in management. Sharing of standards in this way avoids proliferation of standards (for example, almost every occupational area needs supervisory and management standards) and assists learners moving from one sector to another to get proper credit for their prior learning.

3.3 Managing learning

In Scotland, responsibility for the management of learning rests with the institutions which deliver the qualifications. These are known as "centres". Ideally, the process will combine different approaches so that delivery can be tailored to the individual learner's needs. Most centres use individualised learning including self-study methods such as open and distance learning, and computer-assisted learning, as well as classroom or workshop groups of different sizes and compositions. This allows learners to work at different speeds and different times, but also to gain from the social aspects of learning. In such a flexible system, it is very important that the learner has access to guidance to help with choice of learning and to prepare for assessment.

Centres can be schools, colleges, universities, training organisations, community organisations, voluntary organisations or workplaces. As far as qualifications are concerned, the centre takes responsibility for many of the learner's external requirements such as, for example, enrolling the learner with the awarding body.

The key stages in the role of a centre are to:

- Carry out an initial assessment of the learner's prior knowledge, understanding and skills against the standards for the qualification which the learner wishes to achieve and to identify those standards for which there is valid evidence that the learner already meets them. (These processes for the recognition of prior learning may require the learner to be formally assessed using the assessment instruments which the centre would normally use for those standards.)
- Agree a development plan with the learner, the aim of which is to develop the knowledge, understanding and skills which the learner still has to achieve. (The development plan will specify learning experiences and methodology which allow the learner to build the required knowledge, understanding and skills in a way which meets his or her needs and circumstances as described above. In general, more experienced and self-confident learners should be able to contribute to the drawing up of their own development plan and to take responsibility for managing their own learning.)
- Monitor the learner as the implementation of the development plan progresses and, with the learner, to decide when he or she is ready to be formally assessed against the remaining standards.
- Provide remediation and re-assessment in any instance where the learner fails to meet the standards.

As part of the quality assurance of assessment, the centre may have to be approved by the awarding body for the qualification concerned. This will normally involve assessment against a set of approval criteria – this is discussed later in this section of the paper under quality assurance. Such approval is particularly appropriate if the formal assessment of the learner against the standards is the responsibility of the centre's own staff, acting as internal assessors; it is less important if the responsibility for assessment decisions does not rest with the centre's staff and is carried out instead by external assessors.

3.4 Assessment

3.4.1 Key features

The key features of assessment for standards-based qualifications are:

- The assessment is not preceded by any fixed or required learning time or content – it is based only on evidence presented by the learner.
- The assessment is designed to match the nature of the standards – and in particular the nature of the outcome or outcomes being assessed (i.e. the assessment task reflects the verb in the outcome or outcomes).
- The learner takes the assessment under the appropriate conditions and his/her assessment evidence is assessed by the assessor, who makes a judgement on whether its quantity and quality provide proof that the standard has been achieved.

Such an assessment system really requires a flexible learning system to underpin it. Fixed learning times and routes need to be replaced by a more individualised approach that allows the learner to be assessed when ready (not when a whole class group is ready!) and, if successful, to progress to further learning. Such flexibility may be particularly unfamiliar to those in traditional educational settings such as schools and colleges, who have been used to fixed content and fixed timetables. Staff development will therefore be necessary if those involved are to have the necessary commitment needed to make it succeed.

3.4.2 Limitations of standards-based assessment

There are, of course, many purposes arising from education and training which lend themselves very well to a standards-based approach. The development of knowledge and understanding, skills of analysis and synthesis, practical and on-job skills, attitudes and important transferable skills can all be readily defined and assessed in this way. It is more challenging to define the ethical elements which are a feature of many professions in terms of achievement targets, although it should be possible to assess both knowledge and understanding of the professional ethics and to observe their application in practice.

Similar difficulties for the standards-based approach (and, it could be argued, for any other approach) lie in the creative and aesthetic areas. It is perfectly possible to define criteria for, and to assess, the technical competence of a painter, architect, author or music composer, but these do not distinguish the "technically-competent" from the "sublime". It could be argued that no system of definition, assessment or qualifications could cover such aspects of performance, particularly since history tells us that many of the works regarded today as truly great were judged to be failures by peers, critics and the public of their day. Caution needs to be applied, therefore, if standards deal with more than "technically competent"; in effect, it is likely that the best that can be achieved is standards containing criteria which, however presented, actually define achievement in terms of the collective views of a panel of "expert" assessors. The panel will provide a consensus judgement which will be reliable for the purposes of today's qualifications – although history might make a different judgement!

3.4.3 Grading

A further issue arising from the use of standards-based approaches in education and training is grading. Traditional school and college qualifications often grade candidates, usually deriving the grades from the numerical marks achieved in a written examination. Some would argue that grading is contrary to the principles of a standards-based approach and that the only assessor judgement required is whether the learner meets the standard or does not meet the standard.

In Scotland, however, grading has been a feature of at least some of the new-style qualifications, and has been built on the assumption that in many fields, criteria can be defined which exceed the minimum required. This grading – based on exceeding the minimum required to meet the standard – is therefore rooted in the standards approach. The criteria which must be met by learners to be awarded grades above the minimum are derived from the standards and the assessment evidence in the standard and are also publicly available.

3.4.4 Mastery

Another issue that needs to be considered in designing standards-based approaches is mastery. In a few cases, when determining the criteria to be associated with outcomes in the standards it may be necessary for the candidate to achieve perfect performance every time to be judged competent. This will, however, only occur rarely; in most instances, whether dealing with knowledge outcomes or with performance outcomes, some degree of tolerance will be appropriate. For perfect performance, a cut-off score in a test would be used. For simple competence, an acceptable rate of error would be defined. Examples might be:

- A cut-off score in a test assessing vocabulary skills in a foreign language
- An acceptable error of measurement in an assignment assessing laboratory analytical skills
- A tolerance limit for measurement and fitting of a piece of woodwork
- An error-rate in a word processing test.

The number of occasions when perfect performance or zero errors is required to meet a standard will be rare and will most likely be associated with aspects of occupations which involve major hazards, such as those involving flammable and toxic substances, and those where human life is at risk, such as paramedical services or those involved with passenger air transport.

3.4.5 Types of assessment

The choice of assessment instrument to be applied to a particular standard depends on the nature of the standard. The way the assessment instrument is applied will depend on its nature, and on the extent to which external quality control (i.e. external to the centre) is required.

The choice of assessment instruments will range from written or oral tests of knowledge and understanding to observation of performance at work. Although it is perhaps easiest, from a design point of view, to create individual assessment instruments which each cover the specific requirements of a particular standard, the disadvantage of such an approach is that the learner may experience fragmentation and disaggregation of learning. This is because a standard-by-standard assessment system could concentrate on short-term targets without giving consideration to how standards relate to each other, for example in the conduct of a piece of work which requires integration of knowledge, understanding and skills drawn from different standards.

One solution is to encourage holistic assessment involving integration of the assessment of individual standards into a single, meaningful task such as an assignment, project or case study.

Whatever choice of assessment instrument is made, the tests to be applied to it are that it should be valid, reliable, practicable and cost-effective.

The choice of assessor – whether internal or external to the centre – may depend on the culture and tradition of the country as well as on purely assessment considerations.

Internal assessment, by assessors who are familiar with the learner, has the advantage of building on the assessor's day-to-day knowledge of the learner and can provide maximum flexibility to match the timing of the assessment to the learner's readiness. The disadvantages of internal assessment relate to the dangers of subjectivity, precisely because the assessor knows the learner well – and to the large numbers of assessors who would be involved in a national system if all learners were assessed in this way. The more assessors there are, the more difficult it is to ensure that they are well-trained and competent in assessment and that their assessment judgements provide for consistency between assessors and centres and across time.

External assessment, by assessors who are unfamiliar with the learner, has the advantage of complete objectivity and of closer management of the assessment process (since the assessors will usually be employed by the awarding body rather than the centre). External assessment is less flexible than internal assessment, and less able to be tailored to individual learners' needs – such flexibility and tailoring would be very expensive to apply, particularly if the external assessor has to travel to the learner's centre. External assessment is particularly cost-effective when it can be applied to evidence that can be posted to a central place for marking, and when all candidates can take the assessment simultaneously (such as in a national, timed examination). It is therefore most likely to be useful in the assessment of knowledge and understanding in qualifications where learning is still timetabled – such as in schools. In future, greater flexibility and responsiveness – and less dependence on fixed times for examinations – may arise when IT-based assessment becomes more widespread.

3.4.6 Internal assessment

Where internal assessment is used, it is not wise to assume that all staff in centres are competent assessors. Assessment needs to be regarded as a professional practice, for which training and qualifications should be available. Proven competence as an assessor should be a required part of any system for approving centres. National standards defined for assessors and those involved in quality assurance of qualifications should be defined as the basis for judgement of competence. Another method of encouraging greater consistency in internal assessment is to set up a national bank of assessment exemplars for as many of the national standards as possible. Such a bank can provide models on which internal assessors base their assessment design, and it can exemplify good practice such as the use of holistic approaches to assessment. Such a bank might also be backed up by a service where assessors send their assessment instrument to an external expert before it is used with learners. The awarding body, or perhaps another centre, might provide such a vetting service.

In a system which has a lot of emphasis on internal assessment, there has to be encouragement to centres to set up their own internal quality management systems. No external policing system alone can maintain standards. Criteria covering internal quality systems should be part of the approval system for centres.

It is dangerous to link the achievement of standards or qualifications to external (e.g. local or national government) funding of the centre in a "payment by results" system if the assessment of the standards is done by staff in the centre. Although most centres will carry out assessment responsibly, some will be tempted to cut corners (for example, by being over-generous in applying judgement of the assessment evidence against the standards) and some might even be tempted to dishonesty (for example, by declaring candidates to have met the standards when the assessment evidence suggests the opposite).

Internal assessors may find themselves under pressure where the qualification is of very great importance – for example, where it is necessary to gain access to university or employment. Assessors might find themselves pressurised by learners or, in the case of school pupils, by their parents to apply "the benefit of the doubt" to the assessment judgements.

All these factors require the centre to have a good internal quality assurance system in place to ensure that the work of each internal assessor is checked by others. That checking may, however, be difficult in small or remote centres or in highly-specialised subjects.

3.5 Quality assurance and control

The purpose of a quality assurance and control system is to ensure that the judgement of assessment evidence is accurate against the standards and is consistent between assessors and centres and across time. There are a number of possible aspects to a quality assurance and control system. For example, it might include procedures for:

- Approving centres to offer assessment leading to the achievement of standards and qualifications
- Vetting the learning material provided by centres for learners
- Vetting assessment instruments whether these are devised by centres for internal assessment or by national officers for external assessment
- Verifying assessment judgements of assessors in centres for internal assessment and standardising judgements of national assessors for external assessment
- Carrying out statistical comparisons of the outcome of internal assessment and external assessment, where both are involved in the assessment of the same standard or qualification.

The approach to quality assurance, and the balance between the procedures described in this paper, will depend on the traditions of the country concerned, on the nature of the assessment processes involved in standards and qualifications, and on the cost of the various models of quality assurance. The more that assessment is the responsibility of centres, the greater will be the need to apply procedures which ensure consistency between centres in the application of standards. The more that assessment is external (i.e. the responsibility of an agency external to the centre, such as an awarding body), the less need there is for heavy quality checks on centres themselves.

The decision on which approaches to use should be based on the choice of assessment methods and on analysis of risk. The approach to quality assurance should follow from the choice of the most valid, reliable, practicable and cost-effective assessment methods – rather than have the choice of assessment methods follow the choice of a quality assurance model.

3.5.1 Centre approval

The approval of centres before they can use standards and qualifications which lead to national certification would involve the development of a set of criteria as the basis for the decision. The decision could be taken by the centre itself, perhaps through the setting up of a panel of senior managers to consider cases made by individual members of staff. More commonly, perhaps, the decision could be taken by an external agency such as the awarding body which will issue the certificate or the standard-setting body for the standards and qualifications which the centre wishes to offer or the agency which provides the centre with funding. For large and multi-purpose centres, approval by standard-setting bodies has the disadvantage that it might involve dealing with many such bodies, leading to much time being spent on bureaucracy.

The criteria for approval might be on two levels – general and standard-specific. The general criteria would require to be met before the centre could use any standards or qualifications with learners and would only be required to be met once. These criteria would focus on the capability of the centre's management systems, including quality management and services such as learner support.

The standard-specific criteria would allow judgement on the centre's capability to assess in specific subjects or sectors and would therefore require to be met for each standard or qualification which the centre wished to use with learners. These criteria would focus on the resources supporting assessment, the quality of

assessment instruments and the competence of the internal assessors (competence in assessment and in the area of the standard being assessed) and centre staff involved in checking that assessment. (In some national systems, the internal assessors are required to be registered on a national database.)

Approval, if carried out by an external agency such as the awarding body, could be done by a visit of an approval team made up of experienced individuals drawn from other centres and led by a member of the external agency's staff. Such a team might carry out the initial approval of the centre against the general criteria and the approval against the specific criteria for any new qualifications. When the centre becomes more experienced, approval against the specific criteria could be done by a lighter touch, through, for example, applications being dealt with by the external agency on a paper basis rather than by visits.

The external agency will also want to have a means of checking that the centre continues to comply with the approval criteria after the approval process is complete. This might be done by sample visits to the centre from time to time, perhaps coupled with a requirement that the external agency be notified of any significant change which could affect compliance with the approval criteria (such as the deployment of new internal assessors).

3.5.2 Vetting learning material

In some countries, the learning material which a centre wishes to use with learners to lead to the achievement of national standards and qualifications must either be drawn from nationally-developed materials or be subject to vetting by an external agency. Such systems are usually associated with countries which do not carry out checks on the work of assessors. By contrast, a quality assurance system which does approve centres and does check the quality of assessment judgements against the national standards may have enough safeguards to mean that vetting of learning material by an external agency adds little value.

If such vetting does take place, the criteria applied would deal with issues such as:

- The match between the learning materials and the standards to which they are intended to lead
- The quality and clarity of the materials and their freedom from discriminatory wording
- Illustration and practice
- The involvement of stakeholders in the development and refinement of the materials.

3.5.3 Vetting assessment instruments

As indicated above, there are two possibilities here – vetting the assessment instruments designed and developed by centres for internal assessment and those designed and developed by national officers for external assessment.

The vetting process is similar in both cases and involves scrutiny of the assessment instruments against a set of criteria designed to test:

- The likely validity and reliability of the assessment instrument (this might be supported by pre-test data, if any is available)
- The practicality and cost-effectiveness of the instrument proposed
- Availability of any support material such as checklists, tapes, videos
- Other aspects such as freedom from bias or discriminatory material
- The quality of the marking scheme proposed.

Where a good quality internal assessment instrument is successfully vetted, the awarding body conducting the vetting may wish to ask the centre for permission to include the assessment instrument in a national exemplar bank, if there is such a resource. Where an internal assessment instrument fails to meet the

vetting criteria, the centre would be asked to redevelop and resubmit, based on feedback provided by the individual(s) carrying out the vetting.

3.5.4 Ensuring consistent assessment judgements

In the case of internal assessment, where the responsibility for the assessment judgement rests with the centre, the centre will have applied procedures to ensure that judgements are consistent. This might involve having assessments marked by more than one assessor or by having an internal verification system where assessment judgements are scrutinised and confirmed to be in accord with the required standards.

The awarding body might in addition set up an external verification (or external moderation) system. This will involve the collection of the outcome of the internal assessment process – a sample of the learners' marked assessment evidence and the assessment instruments and marking schemes – and its scrutiny by a verifier appointed and trained by the awarding body. The scrutiny could take place in the centre, particularly if the assessment evidence is delicate or very bulky – or the assessment evidence could be posted to the awarding body for scrutiny in a single place or in the verifiers' homes. The advantages of verification in the centre are that the moderator can talk directly to learners and assessors and can provide immediate feedback on the scrutiny. The advantages of verification of posted evidence are:

- Lower cost (particularly where distances between centres are large)
- More efficient (more evidence can be scrutinised per day because no travel time is required)
- If carried out in a single place, it allows interaction and support between verifiers.

In the case of external assessment, where the responsibility for assessment judgements rests with the awarding body, it will have procedures to ensure that the marking process is anonymous, accurate, thorough and standardised. Methods are applied to ensure that the members of the marking team receive statistically similar samples of learner evidence (for example, by computer-based random allocation of work to markers). The team may then work through a process of trial marking under the supervision of an experienced marker, full marking of the allocation of learners' work, and careful checking by the team leader and adjustment or re-marking of any inaccurate marker work. The awarding body may also have a system of clerical checks to ensure that no learner work has been missed in the marking process and that markers' arithmetical work, such as totalling and transfer of marks, has been accurate.

3.5.5 Statistical quality assurance

There is a range of statistical techniques which can be applied to underpin a quality assurance system. These would often form a back-up to more direct approaches such as approval of centres or verification of assessment. Examples of such techniques are:

- Monitoring of learner data by the centre to ensure that its processes of recruitment, support and assessment of learners is free from discrimination.
- Statistical comparisons of the outcome of internal assessment and external assessment, where both are involved in the assessment of the same standard or qualification, as a means of identifying centres where there are unexplained and gross differences. (These may form the basis for future targeting of quality activity rather than immediate action. Where only internal assessment is involved, the use of an external reference test can provide similar data; the difference here is that a reference test does not contribute directly to the learners' assessment – its purpose is to provide data on which to base statistical checks on the centres' internal assessment.)
- Collection of estimates of performance in an external assessment system and use of this data to provide evidence on which to base an appeal for candidates who did not perform to their capacity in the external assessment.
- Statistical comparison of the outcome of assessment between subjects or qualifications. (This approach is particularly useful when there are externally-assessed qualifications which have a large

number of candidates; statistical techniques can be applied to allow conclusions to be drawn on the level of difficulty of individual subjects.)

3.6 Data processing and certification

Data processing could involve a range of functions, such as:

- Processing the names and details of learners who are enrolling to achieve standards and qualifications, and handling any financial transactions associated with enrolment
- Processing the achievements of these learners and deciding whether those achievements match the requirements for achievement of standards and/or qualifications
- Producing certificates recognising learners' achievements
- Providing statistical feedback on candidate achievements as a means of monitoring the quality of the learning experience, support material and assessment instruments used and the clarity and relevance of the standards and qualifications
- Managing a national database of learner achievement.

The way these processes are carried out will depend on the infrastructure set up to manage standards and qualifications and their assessment and quality assurance. The key responsibility is for the decision-making on eligibility for certification. That responsibility must involve checking all of the learner's achievements (not just those recently completed) and deciding whether the mix of achievements meets the specification for achievement of a qualification. The process is much more likely to be accurate if it is based on a national database of achievement, although there are resource implications in the setting up of such a database. Other strong advantages of such a database is that it can allow cumulative certification (providing learners with a record of their lifelong learning achievement which grows as they record further achievements); it can allow for detailed statistical monitoring of centre performance and between-subject comparability; and it can be used as a powerful tool to assist national labour-market and economic planning.

The body which takes responsibility for issuing certificates should:

- Ensure that learners receive their certificates promptly (it is demotivating to wait for a long time to receive credit for standards or qualifications achieved).
- Ensure that the design and contents of the certificate are as informative as possible – the certificate should contain details of the learner's name and any identification number used, the standards and qualifications achieved, and date of certification of these.
- Ensure that the contents of the certificate are accurate and are based on authenticated information.
- Ensure that certification is not carried out until all quality assurance procedures have been completed – for example, a centre whose assessment is scheduled for external verification should not have its assessment outcomes certificated until verification has been completed.
- Have information audit trails in place to ensure that no mistaken or fraudulent claims for a certificate are passed.
- Have long-term records of learner achievement and certificates issued so that future requests for replacement of lost certificates or for confirmation of qualifications (for example, by universities or by employers) can be dealt with.
- Be able to provide analysis of learner achievement to relevant bodies for feedback and evaluation purposes (for example to centres, standard-setting bodies and government).
- Comply with any legal requirements on protection of confidentiality of data.

3.7 National monitoring

The final process involved in the national qualifications system involves the monitoring of the whole qualifications machinery to ensure that it is meeting the national needs in an efficient and effective way.

Such monitoring may form part of the means by which organisations involved in the qualifications system are accountable to a national qualifications authority or to government. The means by which the monitoring is carried out could include:

- Statistical analysis of learner achievements, for example as a crude measure of the performance of organisations involved. (Such measures are more valid if they can analyse the difference in learner performance rather than only learner achievement)
- Collection of feedback from all stakeholders (for example, employment representatives, centres, learners)
- Audit visits to the organisations involved to check the operational effectiveness of procedures and practices against the relevant criteria
- A requirement that the organisations involved become registered against national or international quality standards such as the ISO 9000 series.

A further useful form of monitoring would be the regular sampling of stakeholder views on key issues related to the qualifications framework. Such sampling might seek views on:

- The extent to which the portfolio of qualifications meets the needs of those who use the system
- Changes needed in the range of qualifications available
- The credibility of the assessment and quality assurance systems
- The credibility of the certificate.

4 IMPLEMENTATION ISSUES

4.1 Infrastructure

When setting up a new national system of qualifications, decisions have to be taken on how the various functions involved are carried out and what forms of accountability apply.

There is a range of models for the management of a system of national vocational qualifications, varying in complexity and depending on the traditions of the country concerned. Differences in approach include: the extent to which the system should have a basis in law, whether the system should be the responsibility of a ministry or an existing stakeholder organisation, or an independent authority; if a ministry, which ministry (education or labour?); if an independent authority or a stakeholder organisation, which functions should be centralised and which devolved?

This paper looks at one model broadly based on Scotland and two variants based on that model. These variants relate to the way in which awarding body functions are carried out.

4.1.1 The Scottish model

In this paper, eight key functions which the infrastructure has to be able to manage have been identified. In Scotland, all of the following functions are the responsibility of the Scottish Qualifications Authority (SQA). This is a statutory body, which is self-governing and not part of any ministry, but is responsible in the first instance to the ministry of education.

The eight functions are:

- Management of the qualifications framework – ministry approval may have to be secured for some decisions
- Regulation of the bodies involved in the qualifications processes
- Development of the national standards and qualifications – stakeholder organisations may lead or be heavily involved
- Management of learning – centres approved by SQA
- Development and conduct of assessment – mainly centres, but in some occupational sectors, VET awarding bodies also have a role
- Quality assurance and control – in some occupational sectors, VET awarding bodies also have a role
- Data processing and certification – in some occupational sectors, VET awarding bodies also have a role
- National monitoring.

4.1.2 Variant 1 of the management model

In the first variant, which is strongly national and uniform, there is a single national qualifications authority directly accountable to the government. The qualifications authority acts both as the manager of the framework and as the awarding body for all national standards and qualifications in the framework.

There are a number of advantages to this variant. For example:

- The qualifications infrastructure is relatively simple and concentrated and no resources are required to set up and run a separate regulatory body
- There is strong control of national standards from centre to centre and from year to year

- The strong national role of the qualifications authority allows resources to be concentrated and the qualifications system to be marketed using consistent, national messages
- All learner achievement can be held on a single, national database, providing a powerful tool to assist national labour market analysis and planning
- Centres, learners and stakeholders have the advantage of dealing with a single body for all qualifications, thus avoiding proliferation of administrative systems.

However, this variant also has disadvantages, such as:

- Such a strong national body will need to be relatively large and therefore may become remote and resistant to a demand-led system of qualifications
- There is no diversity in awarding arrangements
- There is only limited autonomy for centres.

4.1.3 Variant 2 of the management model

In the second variant, there is still a single national qualifications authority accountable to the government, but there is also a range of awarding bodies. The qualifications authority regulates the work of the awarding bodies.

The second option also has strengths and weaknesses.

This variant has advantages such as:

- The qualifications framework can be seen as national, but with diversity allowed in the way in which that framework is implemented
- Awarding bodies can develop specialisms to suit particular sectors, allowing them to develop close relationships with stakeholders and centres
- Competition between awarding bodies provides a market-driven environment which should encourage best practice and reduce costs
- Awarding arrangements can reflect traditions, for example by allowing individual universities and professional bodies to be awarding bodies.

It also has disadvantages. For example:

- The infrastructure is more complex than in the first option and therefore will be more difficult to explain to users
- Resources are required to set up and run a regulatory body; the greater the number of awarding bodies, the more resources will be required to regulate them
- Although there may be good control of standards within each awarding body, a regulatory system is needed to ensure that standards for the same qualification are consistent between awarding bodies
- Explaining the national qualifications system to the public is more complex, especially if individual awarding bodies have their own corporate marketing and identity
- Competition between awarding bodies and the need to reduce costs may compromise quality and lead to increased levels of scrutiny by the regulatory body
- Centres, particularly large ones, may find themselves dealing with many awarding bodies, leading to increased administrative complexity and cost.

The options are not mutually exclusive. Indeed the situation in Scotland at present combines the two variants.

4.1.4 Discussion

The choice of option made by an individual country will depend on the traditions which already exist in the country, on the balance of advantage perceived by the government between a market-driven approach and close central control – and, very importantly, on the size of the country. It is likely that the smaller the country, the greater will be the proportion of resources required to conduct a regulatory function if there are competing awarding bodies. This is because the cost of the regulatory function depends strongly on the number of qualifications and awarding bodies to be regulated – it is much less related to the number of learners. In a small country, therefore, the additional cost required to set up and run the regulatory body and its functions has to be spread over relatively few learners or taxpayers.

Whichever option is adopted, the main functions in the qualifications system need to be defined and documented so that accountability can be ensured.

4.2 Putting a new system in place

Whichever options are adopted and infrastructure developed, there are certain over-arching issues which need to be kept in mind, particularly at a time of introduction or restructuring of a national qualifications system.

4.2.1 Stakeholder commitment

It is essential that there is support for, and commitment to, the new system from all stakeholders. This requires that the new system has a form of democracy (such as, perhaps, some form of geographic or subject/sectoral advisory group system) to involve as many categories of stakeholder as possible. Such advisory groups would ensure a more local voice in the system than is possible through the operation of a high-level board of management. National stakeholder conferences and regular newsletters (preferably targeted to the needs of individual stakeholder groups) are further ways of encouraging involvement and ownership of all stakeholders. This form of democracy might be in addition to the means by which standard-setting discussions take place and could form part of the process of monitoring the qualifications framework.

A particular effort will be needed to ensure that small and medium sized businesses feel involved in the system – especially the standard-setting process – and that they do not feel that the whole system is dominated by large employers. Another reason for getting as wide involvement as possible, and as many employers using the qualifications system as possible, is to avoid the problem of those who do invest in training having their workers "poached" by those who don't make such an investment.

4.2.2 Resourcing

It is essential that there is a strong commitment to the resourcing of the new system's development. It is important that a means is found to fund the process for the development of standards by standard-setting bodies. This could be done directly by government, since the standards will form the essential underpinning to the energising of the national education and training effort. Alternatively, or perhaps to fund the review and maintenance of the standards after their initial development, work could be funded by a levy on employers or by royalties paid for the use of the standards.

But the need for resourcing does not end at the development of the standards. The introduction of a standards-based system of qualifications must be backed up by national guidance on assessment, by high-quality support material which is preferably qualification specific and by extensive staff development.

4.2.3 Promotion

It is essential that there is a national promotions campaign to ensure that all employers and their employees, teachers and trainers, young people, parents – indeed, virtually the whole population – is aware of the

qualifications system and its benefits. A campaign which uses role models may be particularly effective as encouragement to participate in education and training; a different campaign, which stresses financial benefits, may be effective in persuading employers to support the new system.

4.2.4 Staff development

Any programme which introduces a new system or radical change must be underpinned by a very thorough staff development system if it is to succeed quickly. The staff development must obviously include those at the sharp end of the implementation of the new system – teachers, lecturers, trainers – but it must also include:

- Managers of institutions (head teachers, principals)
- Administrators such as in local, provincial and national government
- Users such as employers and higher education admissions staff
- Learners.

As well as developing the new skills required to implement a new system, good staff development also leads to practitioners committed to the principles of the new system and therefore able to communicate and cascade its key features to other audiences. Thus, for example, teachers can communicate to parents and college staff to local employers.

Failure to provide staff development at the right time and in the right way may lead to alienation of key practitioners, because they feel unsupported, and to lack of confidence in implementing the reforms. Such alienation and lack of confidence is then all too readily communicated to other users, leading to lack of credibility for the reform process.

Just as in any other activity staff development in education and training, needs to be seen as an investment, not a cost, and financed accordingly.

4.2.5 Scale and speed of development

When embarking on a national reform programme, all of the features discussed in section 5.2 will contribute to a decision, and to the scale and speed of the development. There is no simple guide which can assist in making this decision – the discussion on it will need to take account of the scale of financial and human resources which can be devoted to the reform, the extent to which legislative change is required, the extent of the problems with the current system and the degree of political urgency to effect reform.

Implementation by small-scale piloting or by a phased programme:

- Spreads the cost of implementation over the longer period, both in financial terms and in terms of human resources
- Allows adjustments to be made during implementation
- Avoids over-stretching staff development support and allows early implementers to disseminate experience and good practice.

Implementation by a "big bang" programme:

- Avoids the need for old and new systems to run in parallel
- Is a "clean break" and is therefore easier to explain to stakeholders
- Avoids any stakeholders or candidates feeling that they were treated as the subjects of research ("guinea pigs")

- Avoids difficult decisions on criteria against which to decide how phasing is handled.

Whichever approach is chosen, meticulous planning and building of stakeholder awareness and support are crucial.

5 NATIONAL QUALIFICATIONS FRAMEWORKS (NQFs)

This part of the paper considers the reason for the creation of a national qualifications framework (NQF) and looks at the characteristics and management of such a framework. In Scotland, the NQF is called the Scottish Credit and Qualifications Framework and it includes general, vocational and workplace qualifications at levels from very basic skills to the highest academic awards. Scotland was able to develop this framework by bringing together four well-developed systems of qualifications:

- The system of vocational qualifications with which this paper is concerned
- Workplace qualifications which were part of a UK-wide system
- Qualifications offered in senior secondary schools
- Qualifications offered by Scottish universities.

The SCQF was developed by a partnership of authorities responsible for these different systems, strongly endorsed by the policy and executive arms of government, particularly to support the Scottish Executive's strategy for life long learning.

5.1 The general aims of NQFs

The range and diversity of needs which have to be met by a system of qualifications is very great. For individuals trying to use qualifications and for others such as employers who need to understand the qualifications which prospective employees might have, this range and diversity can be daunting. The concept of a national framework is a means of bringing order into the complex world of qualifications.

Examples of the aims for which NQFs have been developed include:

- Promoting lifelong learning for economic or social reasons
- Regulating qualifications and qualifications bodies to improve the quality and comprehensiveness of their provision and/or to reduce duplication
- Increasing the recognition of qualifications within the national systems or internationally
- Improving the quality assurance of the qualifications system(s) which it incorporates
- Improving communication and understanding of qualifications by stakeholders.

An NQF may contribute to these aims by providing a guide – for individuals, employers, centres and all other stakeholders – that explains the relationship between qualifications. However, in order to ensure that users can have confidence in the information provided by the NQF, the framework is also likely to introduce some rules to ensure the quality of its contents.

The main purpose of the SCQF was to create a common language for qualifications in Scotland which would consolidate, and support, learner achievement and progression. It was felt that a stage had been reached when a single way of representing the whole system of qualifications was needed, and that this would encourage and enable stakeholders to collaborate further on developing and improving articulation and progression, and increasing lifelong learning.

In the *Introduction to the SCQF*, this is stated as follows:

The general aims of the SCQF are to:

- Help people of all ages and circumstances to access appropriate education and training over their lifetime to fulfill their personal, social and economic potential

- Enable employers, learners and the public in general to understand the full range of Scottish qualifications, how the qualifications relate to each other, and how different types of qualifications can contribute to improving the skills of the workforce.

These SCQF aims relate to the accessibility and simplicity of the qualifications systems in the framework. The assumption is that more people will become engaged in learning if they can see the possibilities for progression routes from one qualification to another and can use the framework as the basis for planning personal development. In addition, colleges and organisations which offer training will be able to use it to plan their provision, and employers will be able to use it for selection and recruitment and as the basis for planning to raise employees' skills levels. In Scotland, government has strengthened this approach by establishing agencies which can give advice on learning opportunities and ways in which learners can gain financial or other support.

Many NQFs also establish nationally-agreed and consistently-applied rules which govern the specification of national standards and the design of national qualifications. Such rules can ensure consistency across the framework, for example to ensure that qualifications with a common name (such as National Diploma) have a common structure, irrespective of the subject involved. This is usually intended to help learners, centres and employers to understand the qualifications system and to increase trust in the system. In the case of the SCQF, these rules already existed in the qualifications systems which were brought together, and there was enough commonality for the SCQF to work. For example, all qualifications in the SCQF are based on outcomes. There remain some differences of approach and design between, for example, university qualifications and workplace qualifications, but these are seen as appropriate to the nature of the qualifications and are not a hindrance to the operation of the framework.

Finally, NQFs are often designed to play a specific role in the education and training process. Governments and national agencies often see education and training as a means of bringing about national change – for example to lower unemployment rates or to improve economic performance through re-training – and NQFs seem to offer a simple way of making the agencies responsible for education and training more accountable, and of making change and the management of change easier. It is not yet clear whether NQFs are effective in this respect, but it is already becoming clear from experience around the world that NQFs are unlikely to be truly effective unless they are linked to strong national and local policy initiatives.

5.2 The characteristics of NQFs

NQFs are essentially social constructs, which is to say that the form of an NQF will reflect the context in which it operates and the purposes for which it is designed. However, there are some common features around the world:

- There appears to be only one essential feature of an NQF; that is each NQF must have a system of levels with associated criteria – level descriptors – for determining the level at which standards, programmes and qualifications should be placed.
- Most NQFs are constructed to accommodate outcome-based qualifications or standards-based qualifications. Level descriptors are usually set out as typical outcomes of learning at a level, and qualifications are usually made up of units or modules which are made up of standards set out as outcomes of learning.
- NQFs commonly have a means of measuring the volume of learning required to achieve these national standards. In many cases this takes the form of a credit accumulation system and may also facilitate transfer.
- NQFs will vary in scope. The longest-established NQFs are intended to cover all qualifications which are regarded as "national" – for example, those achieved in school education, vocational education and training, higher education, adult or community-based education and the workplace. However, there are also national frameworks which relate only to VET qualifications or higher education qualifications.

- NQFs may also distinguish between types of qualification and may have design rules or rule of combination which govern the structure of qualifications.
- NQFs are likely to have some rules to quality-assure their contents and operation. These will vary considerably between frameworks, depending on the nature and maturity of the system(s) of qualifications which it incorporates, but they might apply to any or all of the following:
 - the standards on which qualifications are to be based and how these standards are devised
 - the qualifications themselves (qualifications might have to meet certain technical specifications to get into the framework – e.g. a clear link to occupational standards)
 - the assessment arrangements for the qualification, including the role of centralised and local bodies in carrying out and standardising assessment
 - providers – e.g. they must have certain resources and processes in place if they are to be allowed to offer the qualification, etc.

Whilst the qualifications within the SCQF are subject to external quality assurance, the SCQF itself is not regulated. The main aim of the SCQF is to support lifelong learning and is therefore an enabling framework and is not designed to be regulatory.

5.2.1 Levels

There is no fixed answer to the question "How many levels should there be in a framework?" The number of levels should be great enough to be able to locate knowledge, understanding and skills of different degrees of complexity, but should not be so great as to create difficulties in defining criteria which distinguish one level from another. It will also depend on the range of education and training sectors the NQF is covering, i.e. secondary school, vocational, further education and higher education. A survey of existing and proposed comprehensive frameworks around the world (Australia, England, Ireland, New Zealand, Scotland, South Africa, Wales) suggests a figure of around ten levels is required to achieve this.

In terms of employment skills, the standards will require to cover a range which stretches from those where the learner requires to understand very basic instructions and to have basic levels of life skills to those where the learner is operating at professional or senior managerial level and requires to apply complex skills and knowledge in a highly autonomous and ethical environment. Frameworks which deal solely with vocational qualifications will require fewer levels, such as the eight levels identified for the European Qualifications Framework by the European Commission.

For each level of the framework, a set of criteria (level descriptors) should be defined. These will normally take the form of typical outcomes of learning to be expected at the level and will include outcomes related to knowledge, skills and other competences. The levels will be differentiated in terms of characteristics such as:

- How extensive and complex are the knowledge and understanding which the learner has gained
- The complexity of the skills acquired and the capacity of the learner to apply these skills in situations which are not routine and predictable
- The degree of autonomy which the learner is capable of exercising safely and productively
- The extent to which the learner is able to take responsibility for the work of others.

The criteria for levels are very challenging to define. There is a danger, in defining criteria for levels, that the differences between levels become defined in very complex and subtle language. Given the range of purposes for which frameworks are developed and the range of stakeholders involved, it is important that those defining the levels should bear in mind that the criteria should be able to be used by those who are not specialists in the language of qualifications frameworks.

5.2.2 Volume

Most frameworks require qualifications to be modular/unitised and have a means of measuring the volume of a unit or module. This measurement can be related to the concept of notional learning time, i.e. the amount of time it would normally take an individual to achieve the national standard, assuming that he or she has the appropriate prior experience and learning support. The idea of notional learning time normally includes all forms of learning, wherever it takes place (classroom, laboratory, workplace, community centre) and whatever method has been used (self-study, computer-based, traditional face-to-face instruction). Sometimes this is used to ensure that units or the qualifications they make up are of a standard size. An element of standardisation can be useful in making the system understandable and in allowing comparisons to be made between qualifications.

To avoid complexity, a broad approach is usually taken, rather than trying to calculate a measure for every standard. For example, in a number of national systems, the "currency" used is that every 10 hours of notional learning carries one credit point – and standards may be developed with this in mind, ensuring that all standards have volumes of 10, 20, 30, 40, etc hours. In the SCQF, the concept of a notional full-time year of learning of 1200 hours is used as a basis for some of these calculations – e.g. what is a reasonable programme for someone to achieve in a year and what proportion of this time would be spent on this standards or this unit?

This kind of measurement is very useful where it is valuable to make comparisons between outcomes of learning – for example, to give recognition to prior learning. It also seems to be essential for the operation of credit accumulation and transfer and the kind of approach to qualifications design which can make credit accumulation and transfer work.

There is a danger, however, that too much standardisation (standardisation at a too detailed level) will make the system rigid and unable to respond to changing needs and may even distort standards where these are concerned with workplace competence.

5.2.3 Design rules (rules of combination)

Design rules, or rules of combination, provide a template for the combination of individual national standards into units, programmes and full qualifications. These are likely to involve curricular or content requirements, including areas to be covered, the balance of mandatory and optional components, and more technical rules using the levels and credit points assigned to the components standards or units. The degree of prescription of the design rules will depend on the purpose of the qualification.

For example, the design rules for a qualification attesting to full competence in a job might simply relate to the need for the qualification to contain a complete set of the knowledge, understanding and skills required for the full performance of the job.

By contrast, qualifications which are designed to be the output of off-job training courses may require to be more standardised because of organisational or funding constraints. So, for example, a National Diploma might traditionally represent the outcome of a year's full-time learning, whatever the subject. It might consist of a fixed number of credit points at certain levels. An example of the design rules for a National Diploma therefore might be a total of 120 credit points concentrated at level 3, with a maximum of 20 credit points at level 2; a minimum of 80 credit points at level 3; a maximum of 20 credit points at level 4.

The option of gaining credit for some learning at level 2 and/or at level 4 does not change the overall concentration on level 3 achievements. It does, however, allow for the inclusion of some introductory learning and/or some extension work, if that is appropriate to the purpose of the qualification.

The national standards from which the levels and credit points arise for the National Diploma would be chosen to correspond to the purpose of the qualification. For example, a National Diploma in Carpentry would be composed of national standards providing knowledge, understanding and practical skills designed

to prepare the learner to enter a job as a carpenter. It might also include elements designed to provide the learner with wider awareness of the work environment, with more general skill such as communication and problem solving.

5.3 The management of NQFs

NQFs can play an important part in a country's strategy for the development of a skilled and educated workforce and for well-informed, healthy members of the community. This means that the framework needs to be supported by a wide range of key national stakeholders, such as national and local government, education and training providers, employer and employee organisations and community organisations. NQFs around the world vary considerably in the way they are managed to ensure the necessary support and co-operation.

The Scottish framework was developed by a partnership of bodies responsible for qualifications of different kinds. It is not a legal entity, and all involvement in the framework is on a voluntary basis. This is unusual in world terms, since most NQFs have a basis in law and are managed by a ministry or an independent authority set up for the purpose.

Although the SCQF is managed on a voluntary basis, it receives government funding for aspects of its development and is formally supported at ministerial level. It also has a National Implementation Plan developed and reviewed by a high-level committee of stakeholders (users, providers and funders), and this publicly commits these stakeholder organisations to aspects of the implementation. As the implementation period drew to a close in March 2006, new arrangements were under discussion to establish the continued management and maintenance of the SCQF for the future.

5.4 The Scottish Credit and Qualifications Framework (SCQF)

By 2006, most of the qualifications offered by SQA and Scottish higher education institutions had been brought into an over-arching unified framework that describes qualifications and learning in terms of levels and credits points:

- This framework will help raise knowledge and understanding of the range of Scottish qualifications, the levels of the qualifications, and how they relate to one another.
- All learner achievement can be described in terms of the SCQF including the number and level of credits and it is this common language that allows comparison between different qualifications.
- The SCQF will allow learning to be recognised for credit that has quality assured assessment of learning outcomes. This means not just learning offered in a formal context by schools, further education colleges, training providers or higher education institutions, plus work-based learning and learning as part of Continuing Professional Development; but also learning that individuals have achieved through experience, or perhaps through voluntary work and community-based learning.
- The Framework will support the development of clear routes for progression and transfer of credit from one programme/qualification to another.
- Where appropriate, and at the discretion of the receiving institution, credit may be transferred from one programme/qualification to another. Where learners have already achieved a defined set of outcomes required within a future programme or qualification, there should be no need for them to repeat this learning.
- The Framework will further support providers of qualifications and programmes in working together to create better links between their respective programmes and qualifications.

Projects have already been undertaken to develop guidelines for the credit-rating of qualifications, for the recognition of prior learning, to map progression routes and to identify where bridging courses are needed. Work to establish systems which will allow students to be tracked along the progression routes which lead into higher education is also being undertaken. This tracking would make clear whether students following

different routes are successful or not and this can prompt reviews to see whether students on these routes need more support or whether the routes themselves can be improved.

The potential benefits of the Framework are therefore considerable. The introduction of this new education and training framework is an important development for Scotland. Although very few other countries have made such comprehensive progress, the SCQF has much in common with similar national initiatives in Europe and across the world. Most importantly, Scotland's development of a qualifications framework is closely linked to national policies and strategies to widen participation in lifelong learning, in order to enhance the individual's quality of life and social well-being.

Further information on the SCQF can be found at www.scqf.org.uk

6 CONCLUSION

The introduction of, or major change to, a national qualifications system has a huge impact on the life and work of many individuals – as learners, employees (including centre staff) and employers. This paper provides information on one approach to the design of qualifications – a standards-based approach – and draws on lessons learned from the extensive reform of qualifications which has taken place in Scotland.

The approaches to implementation discussed in the later parts of this paper will ensure that the introduction of, or major review of, the national qualifications framework has:

- The national will, and the national resources, behind it
- The capability to develop standards and qualifications which are fit for purpose
- The means to locally deliver the new system through well-resourced, well-supported centres with well-trained staff
- An assessment and quality system which guarantees consistency and stability in the award of certificates
- High levels of awareness among the general population and high levels of motivation for learners and employers to want to be involved.

This paper argues for major advantages in a standards-based approach to vocational qualifications as part of a national qualifications framework. Such an approach:

- Allows learners and stakeholders to plan progression routes from one successfully achieved qualification to the next. The standards-based approach also fits well with both traditional forms of assessment, such as written testing, projects and observation of performance, and with more flexible forms of assessment, such as IT-based assessment and assessment of prior experience.
- Provides increased flexibility in the design of qualifications and in the choice and use of qualifications by learners. It encourages a learner-centred approach to learning and fits well with traditional approaches to learning, such as classroom teaching and workplace training, and to more flexible forms, such as open and distance learning and IT-based learning.
- Is well matched to the needs of students in education and employees in the workplace. It can also meet the needs of those in informal learning settings and those who have not had positive experiences in the traditional education system. It provides the basis for lifelong learning.

Thus a standards-based approach to vocational qualifications as part of a national qualifications framework should provide the kind of system described in section 1 of this paper and enable all members of society to gain credit and recognition for successfully completed and assessed learning, whether it is a single standard, a unit or a full qualification in a college or workplace.

Individuals will meet their ambitions for personal development, employers will meet their needs for a more highly-skilled workforce and the nation will meet its needs for a more responsive and competitive economy.



This discussion paper examines various aspects of the development of national qualifications and provides guidance for countries aiming to set up or reform their qualifications systems. It also informs about the development of a national framework that allows comparisons between qualifications. Prepared in the context of vocational education, the contents of this paper are generally applicable to any qualifications that are based on standards of performance.

This paper appears as the second volume in the Discussion Paper Series, which is part of the UNEVOC International Library of TVET – an extensive publications programme prepared by the UNESCO-UNEVOC International Centre.

The **UNESCO-UNEVOC International Centre** is UNESCO's specialised centre for technical and vocational education and training (TVET).

From its location in Bonn, Germany, it serves UNESCO Member States worldwide to develop and strengthen TVET.

The Centre focuses on:

- >> TVET systems development,
- >> Improving access to TVET, and
- >> Assuring quality of TVET

It uses tools such as:

- >> Networking
- >> Knowledge sharing and publications
- >> Inter-agency collaboration and partnerships, and
- >> Human resource development

The UNEVOC Network is the most prominent of the Centre's networks. It consists of more than 250 specialised TVET institutions in over 150 countries worldwide.

UNESCO-UNEVOC International Centre

Hermann-Ehlers-Str. 10
53113 Bonn
Germany

Phone: [+49] (228) 2 43 37-0

Fax: [+49] (228) 2 43 37 77

Internet: www.unevoc.unesco.org