Progress Report: Literacy and Numeracy Curriculum Area

The next generation of National Qualifications

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The information in this report reflects previous work on developing separate portfolio-based Literacy and Numeracy qualifications. Following the Cabinet Secretary's announcement of 30 March, which was endorsed by the Curriculum for Excellence Management Board on 22 April, literacy and numeracy will be certificated through English and Mathematics Courses at SCQF levels 3 to 5. Freestanding Units will also be available. SQA is working with the Curriculum for Excellence Management Board to explore ways to do this. The Management Board will provide advice on this issue in due course and SQA will take forward the work through the appropriate channels.

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Contents

1 Executive summary

The Cabinet Secretary for Lifelong Learning and Education's announcement on 11 June 2009 set out the Government's policy for the development of the next generation of qualifications at SCQF levels 4 and 5 and for the development of new qualifications at SCQF levels 3, 4 and 5 in Literacy and Numeracy. This report summarises the key features of this announcement and sets out how SQA has begun work to develop the new qualifications in Literacy and Numeracy. This Report outlines research carried out by SQA. It sets out the findings of this research, provides an analysis and draws conclusions about the issues which have emerged. Furthermore, it sets out recommendations which might form the basis of future development work.

This report provided the Curriculum Area Review Group (CARG) for Literacy and Numeracy with information. On the basis of this, the group offered advice and guidance to SQA on the development of new qualifications in these areas. The group also provided feedback on the recommendations detailed below.

1.1 Findings and conclusions

A significant body of evidence exists showing that literacy and numeracy skills among young people and other learners in Scotland are not keeping pace with progress in other countries. Feedback from a variety of Scottish stakeholders, including employers and higher education, has been critical of skills in these areas. The experiences and outcomes for literacy and numeracy in the Curriculum for Excellence programme provide a sound basis from which qualifications can be developed, but additional work is required to develop a rationale for the qualifications in these two areas. Literacy and Numeracy are two of the essential skills identified in the skills profile published in *Building the Curriculum 4* (BtC4).

Progression pathways into, within, and leading from qualifications at SCQF levels 3, 4 and 5 are not yet clear for all learners who may use these qualifications. There is significant concern about how skills will be differentiated across these levels. Centres are looking for significant support in connection with this, both leading up to, and beyond the introduction of these qualifications.

There are divergent views about how the different components in the qualifications should be defined. This particular issue is being dealt with through a separate piece of work by SQA and it is important that this is concluded at an early date. The literacy and numeracy experiences and outcomes provide a basis for this but they do not define the separate skills at SCQF levels 3, 4 and 5. There is debate around the detailed interpretation of the skills, but a baseline set of skills would be welcomed.

The relationship between Literacy and Numeracy and other qualifications, specifically English and Mathematics, is not clear to stakeholders.

Evidence for the qualifications in Literacy and Numeracy is to be gathered in a portfolio. This will present challenges for centres. The scale and management of the gathering, storing and assessment of this evidence is the most frequently raised concern by centres.

The broad definition of 'text' used in the principles and practice document for literacy is not considered appropriate by all stakeholders. There are varying views about how this interpretation of 'text' might be translated into a Literacy qualification.

For the Numeracy qualification there are differing views about whether calculators should always be available to learners as they seek to provide evidence for this qualification. Although several views have been expressed, the one with the greatest backing to date is that their use should be restricted.

1.2 Recommendations

SQA carried out research to look at related qualifications currently available in Scotland. In addition, the research took into account provision for literacy and numeracy in a range of other countries both within the British Isles and overseas. There has also been targeted engagement with stakeholders to identify issues they consider important in relation to Literacy and Numeracy qualifications. The recommendations below are based on these two related pieces of work.

It is recommended that SQA should carry out the following actions in the following areas:

The scope of Literacy and Numeracy

- Carry out further work to develop a rationale for Literacy and Numeracy qualifications. This should include references to the vision, aims, scope and purpose of the qualifications. (See section 3.1a/b on pages 6–9 below.)

Progression within Literacy and Numeracy

- Ensure that the new Literacy and Numeracy qualifications articulate well with existing qualifications and education and training provision beyond school; and ensure that progression pathways in to and out of National Literacy and National Numeracy are coherent and unambiguous. (See section 3.2a/b on pages 9 and 10 below.)
- Continue with work to explore how progression within Literacy and Numeracy qualifications at SCQF levels 3, 4 and 5 can be shown. (See section 3.2a/b on pages 9 and 10 below.)

Components and skills

- Consider, as soon as possible, the types of skills which will be contained within each component and how these skills will relate to learning, life and work contexts at each level. (See section 3.3a/b on pages 11–14 below.)
- Take account of related qualifications in Scotland and other countries to help make decisions about skills and their assessment. (See section 3.3a/b on pages 11–14 below.)

Relationship with English, Mathematics and Core Skills

- Ensure that there is ongoing collaboration between colleagues in SQA and Qualifications Design Teams to clarify the purposes of Literacy and Numeracy and their relationships with other qualifications. There should be a particular focus on the relationship between Literacy and English, and Numeracy and Mathematics respectively. Differences between related qualifications should be made clear to stakeholders. (See section 3.4a/b on page 14 below.)

Portfolio structure and content

- Carry out further research to establish how portfolios should be used to show achievement and to consider further the format and nature of the portfolio (including e-portfolios). (See section 3.5a/b on pages 18 and 19 below.)
- Issue advice and guidance on the creation, management and assessment/moderation of evidence. SQA should also provide a range of exemplification to support centres. (See section 3.5a/b on pages 18 and 19 below.)

Text in Literacy

- Give further consideration to aspects of ‘text’ such as the relative importance of standard/non-standard English and heavily numbered and/or diagram-based materials. The definition of ‘text’ for the qualification should be aligned to the purpose of the qualification in Literacy. This work will be affected by the decisions taken about the definitions of components for Literacy. (See section 3.6a/b on pages 19 and 20 below.)

The use of a calculator in Numeracy

- Give further consideration to the potential impact of calculators on learner performance in assessment. Decisions about access to calculators should be aligned to the purpose of the qualification on Numeracy. This work will be affected by the decisions taken about the definitions of components for Numeracy. (See section 3.7a/b on pages 21–23 below.)

It is important to note that provision will also be available in Gàidhlig. SQA will investigate the operational implications of this.

2 Introduction

Curriculum for Excellence (CfE) qualifications development falls into the eight curriculum areas: expressive arts; health and wellbeing; languages; mathematics; religious and moral education; science; social studies, and technologies.

2.1 The purpose of the report

This report summarises the findings and conclusions of SQA's research and targeted engagement activities. The report provides advice and guidance for the development of qualifications in Literacy and Numeracy, and the recommendations in the report are a step in the process of developing qualifications in these areas.

The report also highlights the key issues for qualifications in the literacy and numeracy curriculum area. This will enable the Curriculum Area Review Group (CARG) to provide advice and guidance on development work being undertaken by SQA through Qualification Design Teams (QDTs) and their associated Subject Working Groups (SWGs).

2.2 Methodology

SQA has carried out the following activities to inform the development of this report:

- research into related policies and qualifications in Scotland, the United Kingdom and internationally
- targeted engagement with stakeholders involved in, or with a responsibility for Literacy and Numeracy. This included representatives from local authorities, schools, colleges and other key stakeholders
- discussion with the CARG to provide advice and guidance

2.3 Background to the development of qualifications

The development of the next generation of National Qualifications takes its direction from a Parliamentary statement on 11 June 2009. On that date, the Cabinet Secretary for Education and Lifelong Learning announced the parameters for the development of new National 4 and 5 qualifications and for new qualifications at SCQF levels 3, 4 and 5 in Literacy and Numeracy. Since June 2009, further work has been carried out to amplify the Cabinet Secretary's announcement and to develop design principles based on it for the new National 4 and 5 qualifications (to be called National 4 and National 5 Courses) and for Literacy and Numeracy qualifications. This work has been carried out by the

Curriculum for Excellence Management Board and a sub-group of the Management Board — the Qualifications Governing Group.

2.4 Equality and inclusion

SQA is committed to ensuring that all candidates have access to qualifications and equality of opportunity, while safeguarding the integrity of qualifications. New qualifications to support the Curriculum for Excellence programme will be designed to ensure that the greatest opportunities exist to achieve the qualifications. SQA has developed a process for embedding equality and for making decisions on any issues identified.

2.5 Disability equality

As a result of changes introduced into the Disability Discrimination Act 1995 (DDA) and clauses contained within the forthcoming Equality Act, SQA must ensure that its National Qualifications are as accessible as possible to disabled candidates. SQA will ensure that disability equality is fully considered in the development of these new qualifications. This will involve identifying and justifying those requirements within a qualification which may have an adverse impact on disabled candidates, and considering what reasonable adjustments can be made to mitigate that impact.

SQA has agreed processes and guidance to ensure that, at appropriate stages of the development, qualifications development teams will fully consider these issues and record their considerations.

3 Findings and conclusions

3.1a The scope of Literacy and Numeracy — findings

The development and implementation of both National Literacy and National Numeracy qualifications will build on two key documents:

- Literacy across learning: principles and practice[1]
- Numeracy across learning: principles and practice[2]

The principles and practice documents define the purpose of learning within literacy and numeracy, describe how the experiences and outcomes[3] are organised, and offer guidance on learning and teaching, assessment, progression and relationships with other curriculum areas. The experiences and outcomes for literacy and numeracy describe the expectations for learning and progression, and are integrated in the experiences and outcomes for English and Mathematics respectively. The experiences and outcomes describe learning from Early to the Fourth level. (The Fourth level is broadly equivalent to SCQF level 4.) National Literacy and National Numeracy will recognise the knowledge, skills and attributes of children and adult learners at SCQF levels 3, 4 and 5.

References to qualifications in Literacy and Numeracy can be found in the existing *Building the Curriculum* documents[4] which refer to the *Consultation on the Next Generation of National Qualifications in Scotland* (2008)[5] and the HMIe Report in 2006 *Improving Scottish Education*[6]. The consultation, which proposed separate awards to accredit the literacy and numeracy skills of children and young adults, was informed by the findings of the OECD *Reviews of National Policies for Education: Quality and Equity of Schooling in Scotland* (2007)[7]. The HMIe report[8] also found that: '…there is a need to be much more rigorous and explicit about the development and certification of essential skills, particularly in literacy and numeracy'.

A great deal of evidence can be found in government documents and research reports to support the need for increased emphasis on literacy and numeracy

[1] http://www.ltscotland.org.uk/curriculumforexcellence/responsibilityofall/literacy/index.asp Referred to througout this report as *principles and practice* document.

[2] http://www.ltscotland.org.uk/curriculumforexcellence/responsibilityofall/numeracy/index.asp. Referred to througout this report as *principles and practice* document

[3] http://www.ltscotland.org.uk/curriculumforexcellence/experiencesandoutcomes/index.asp

[4] Building the Curriculum 1; Building the Curriculum 3 and Building the Curriculum 4: http://www.ltscotland.org.uk/curriculumforexcellence/buildingthecurriculum/index.asp

[5] http://www.scotland.gov.uk/Publications/2008/06/09084232/0

[6] http://www.hmie.gov.uk/ImprovingScottishEducation.aspx

[7] http://www.oecd.org/document/18/0,3343,en_2649_39263231_39744402_1_1_1_37455,00.html

[8] http://www.hmie.gov.uk/ise/hmieise.html

teaching and learning. These documents include: the *Standards in Scotland's Schools etc Act 2000*[9]; the *Adult Literacy and Numeracy in Scotland* report (2001)[10]; the *National Priorities* (2002)[11]; and *Skills for Scotland: a Lifelong Skills Strategy* (2007)[12] and CBI's (2006) *Working on the Three Rs: Employers' Priorities for Functional Skills in Maths and English*[13]. Collectively, these documents strongly promote the benefits of focusing on literacy and numeracy in teaching and learning.

Towards a rationale for Literacy

Literacy across learning: principles and practice defines literacy as 'the set of skills which allows an individual to engage fully in society and in learning through the different forms of language and the range of texts which society values and finds useful'.

Literacy is traditionally viewed as the ability to read and write. Since the 1980s, however, the term 'literacy' has been used increasingly widely, both nationally and internationally, to refer to reading, writing, listening and talking. Sociologically, 'literacy' is now used to describe a very wide range of skills including visual literacy, IT literacy and educational literacy.

In the context of literacy assessment, many countries assess learners through a variety of methods in reading, writing, listening and talking. England, Northern Ireland and Wales all now include listening and talking within literacy. For example, *AQA National Standards in England* cover the ability 'to speak, listen and respond; read and comprehend; write and communicate'[14]. In Wales, literacy is 'the ability to explain information clearly and succinctly in speech and writing'[15].

The United States has added 'visually representing' to the traditional list of competences. New Zealand includes 'reading, speaking, writing, listening and viewing'. The Canadian Council of Ministers of Education summarises this more recent approach to literacy: 'Literacy is more than words'[16].

Australia assesses young learners in reading and writing only.

In Scotland, the view of literacy has widened since the 1980s in line with other countries. At that time, listening and talking were introduced as assessable elements within Standard Grade English and were included within vocational courses such as SCOTVEC modules in Communication and Core Skills qualifications. Adult literacy approaches and assessments in Scotland all place

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[9] http://www.opsi.gov.uk/legislation/scotland/acts2000/pdf/asp_20000006_en.pdf
[10] http://www.scotland.gov.uk/Publications/2001/07/9471/File-1
[11] http://www.scotland.gov.uk/Publications/2002/04/14548/3163
[12] http://www.scotland.gov.uk/Publications/2007/09/06091114/0
[13] http://www.cbi.org.uk/pdf/functionalskills0906.pdf
[14] AQA Basic Skills: Adult Literacy specification document, www.aqa.org.uk/
[15] Functional Skills: English framework, www.wales.gov.uk
[16] Literacy overview, www.cmec.ca

importance on oral communication as well as written: 'Competence and confidence in the spoken word… to express ideas and opinions…'[17]. Subsequent developments such as 5–14 Assessment in Scotland for English Language also include assessment in Listening and Talking.

Towards a rationale for Numeracy

Numeracy across learning: principles and practice defines being numerate as having: 'the confidence and competence in using number which will allow individuals to solve problems, analyse information and make informed decisions based on calculations'.

Building the Curriculum 4 expands on this definition:

'Being numerate involves developing a confidence and competence in using number that allows individuals to solve problems, interpret and analyse information, make informed decisions, function responsibly in everyday life and contribute effectively to society. It gives increased opportunities within the world of work and sets down foundations which can be built upon through life-long learning'.

A preliminary review of international literature has identified divergent opinion on the content and organisation of numeracy but apparent agreement about its purpose for teaching and learning. For example, the UK National Numeracy Strategy (NNS) 1998 describes numeracy as knowing about numbers and number operations along with an ability to solve numerical problems, including those involving money or measure. It also demands some familiarity with the ways in which numerical information is gathered and presented.

The *Education for All Global Monitoring Report* (2006)[18] and the *Adult Literacy and Lifeskills Survey* (2005)[19] also describe numeracy as the development of the knowledge and skills to manage effectively, and respond to, demands posed by diverse situations involving objects, pictures, numbers, symbols, formulas, diagrams, maps, graphs, tables and texts. They also encompass the ability to order and sort, count, estimate, compute, measure and follow a model. They involve responding to information about ideas which may be represented in a range of ways.

[17] A Lifelong Learning Skills Strategy for Scotland 2007

[18] http://portal.unesco.org/education/en/ev.php-URL_ID=43283&URL_DO=DO_TOPIC&URL_SECTION=201.html

[19] Statistics Canada/OECD 2005 Learning a Living: First Results of the Adult Literacy and Lifeskills Survey

3.1b The scope of Literacy and Numeracy — conclusions

The experiences and outcomes provide a sound basis for the development of skills, knowledge and attributes in Literacy and Numeracy.

There is much evidence which supports the need to place greater emphasis on literacy and numeracy in learning and teaching. There is a need for SQA to build on the existing Curriculum for Excellence documentation to create a rationale including a definition, vision, aims, structure and assessment model for the qualifications in these areas.

3.2a Progression within Literacy and Numeracy — findings

This section focuses on potential progression pathways into, within and out of National Literacy and National Numeracy qualifications.

Building the Curriculum 3 (BtC 3) and the June 2009 ministerial announcement on the next generation of National Qualifications both describe the ways in which learners will progress from P7 through S1 to S3 and into qualifications in the senior phase.

Building the Curriculum 3 explains that learners in school will experience a broad general education from S1 to S3. Literacy and numeracy will be key aspects of this experience. Many children will progress from learning in primary school by moving on to Third level experiences and outcomes as they enter S1. Experiences and outcomes provide opportunities for progression within and between each level through the acquisition of knowledge and understanding and the development of skills and attributes. In other words, the experiences and outcomes provide a basis for both lateral (broadening and enriching) and vertical (becoming more challenging) progression. Most learners will progress to study at the Fourth level, broadly equivalent to SCQF level 4 by the end of S3. National Literacy and National Numeracy will be certificated at SCQF levels 3, 4 and 5 and will be available from S3 onwards.

Building the Curriculum 4 (BtC 4) describes progression within and across the Curriculum for Excellence levels as being influenced by the:

- level of demand of the concepts to be understood
- level of the cognitive skills which the learner has to employ to complete the learning task
- features and complexity of the context of learning
- degree of support for the task
- depth and form of the product of the learning

Research has shown that practitioners would welcome guidance on how evidence of progression can be shown within Literacy and Numeracy at SCQF levels 3, 4 and 5. Evidence of progression across the range of levels becomes particularly problematic at SCQF level 5 as literacy and numeracy experiences and outcomes identify the skills, knowledge and attributes only up to the Fourth level (approximating to SCQF level 4). Further details related to skills, knowledge and attributes can be found in section 3.3 of this report.

For adults, the National Literacy and National Numeracy qualifications will also need to be flexible enough to cater for their diverse contexts and progression needs (*Scottish Government FAQs*[20]). The principles and practice documents and *Building the Curriculum 3* have focused mainly on the school level progression routes described above. Guidance is therefore needed to illustrate how Literacy and Numeracy will articulate with existing qualifications in the SCQF and meet the needs of those who have not experienced the revised curriculum. The SCQF diagram below (Fig 1) identifies a number of possible progression routes into and out of Literacy and Numeracy.

Fig 1: The Scottish Credit and Qualifications Framework levels 1–6

<table>
<tr><th>SCQF</th><th>NQs</th><th colspan="2">Literacy and Numeracy</th><th colspan="6">Other qualifications</th></tr>
<tr><td>6</td><td>Higher</td><td colspan="2" rowspan="2"></td><td rowspan="5">Core Skills (2–6)</td><td rowspan="5">National Progression Awards (2–6)</td><td rowspan="5">National Certificates (2–6)</td><td>Professional Development Awards (6–12)</td><td>SVQ 3 (6–7)</td><td rowspan="4">Skills for Work (3–6)</td></tr>
<tr><td>5</td><td>National 5</td><td rowspan="3">National Literacy</td><td rowspan="3">National Numeracy</td><td></td><td>SVQ 2</td></tr>
<tr><td>4</td><td>National 4</td><td></td><td>SVQ 1</td></tr>
<tr><td>3</td><td>Access 3</td><td></td><td></td></tr>
<tr><td>2</td><td>Access 2</td><td colspan="2"></td><td></td><td></td><td></td></tr>
<tr><td>1</td><td>Access 1</td><td colspan="2"></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

3.2b Progression within Literacy and Numeracy — conclusions

Curriculum for Excellence has already provided guidance to describe relevant transition points in National Literacy and National Numeracy for children who will have experienced the revised curriculum, eg P7 to S1 and S1 to S3 and the senior phase. However, SQA will need to supplement this with guidance on wider progression pathways for learners who have not experienced the revised curriculum or who wish to access Literacy and Numeracy beyond school level.

[20] http://www.scotland.gov.uk/Topics/Education/Schools/curriculum/qualifications/faqs/faqsliteracy

Practitioners would welcome guidance on how to show evidence of progression within Literacy and Numeracy across SCQF levels 3 to 5.

Experiences and outcomes for literacy and numeracy are provided up to the Fourth level, broadly equivalent to SCQF level 4. However, Literacy and Numeracy will be available at SCQF level 5. Guidance will therefore be needed on how to evidence progression from level 4 to 5. This will be discussed in more detail in section 3.3.

3.3a Components and skills — findings

In the context of qualifications, the term 'component' is used to refer to the headings for assessment and reporting, and 'skill' refers to the specific skills which together contribute to each component.

In Literacy, the components are:

- Listening and Talking
- Reading
- Writing

In Numeracy the components are:

- Number Processes
- Money, Time and Measurement
- Information Handling

The definition of the components is the subject of a separate engagement activity in which the CARG will participate. The outcome of this will support the finalisation of the actual wording, which will aim to clarify these two essential skills for learning and teaching across curriculum areas and the contexts of learning, life and work. This wording will still require interpretation to help identify the skills to be assessed at each level within the qualifications.

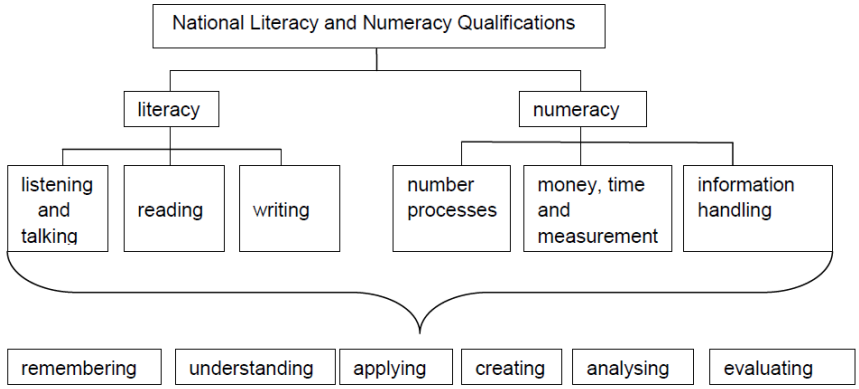
Building the Curriculum 4 creates three skill sets, appropriate for Curriculum for Excellence, which cut across curriculum areas:

- literacy, numeracy and their associated thinking skills
- skills for health and wellbeing including personal learning planning, career management skills, working with others, leadership and physical co-ordination and movement skills
- skills for enterprise and employability

The document also states that thinking skills relate closely to skills in literacy and numeracy and include remembering, understanding, applying, analysing, evaluating and creating. The experiences and outcomes documents for literacy

and numeracy apply many of these thinking skills. BtC 4 implies a relationship illustrated in the diagram below.

Fig 2



The importance of literacy and numeracy is recognised internationally and in Scotland where Core Skills and Community Learning[21] programmes, for instance, provide many examples of how skills within these areas are interpreted. Although there are differences across these examples, it is possible to identify a set of common skills.

International comparisons

Internationally, it is apparent that there is wide variation in the way in which qualification and curriculum authorities group, organise and label skills and components in numeracy qualifications.

There are common features, however, in the broad skills and components included in numeracy qualifications, and especially in their interconnectivity and application.

For example, New Zealand's Adult Numeracy qualification[22] is organised under a single broad heading of 'Use Mathematics to Solve Problems' whereas in England, the *National Standards for Adult Numeracy* comprise three components: 'Understanding and Using Mathematical information', 'Calculating and Manipulating Mathematical Information' and 'Interpreting Results and Communicating Mathematical Information'. The Welsh Skills Framework[23] for learners from 3 to 19 aims to develop numeracy skills under the umbrella of three components: Use Mathematical Information; Calculate; and Interpret and Present Findings, each with several strands dependent on each other.

[21] Report on Scotland's Adult Literacy and Numeracy Strategy 2007–08
[22] Learning for Living (2005) New Zealand Ministry of Education
[23] Skills framework for 3 to 19-year-olds in Wales, Welsh Assembly Government

In the examples above, there is clear emphasis in each qualification on the development of broad skills in the use of number: calculating; measuring; gathering, recording and presenting data; and comparing, contrasting and communicating the results of findings to others. In all cases learners are expected to apply their numerical knowledge and skills in real life contexts.

As with numeracy, countries differ in their definitions, organisation and labelling of literacy components and skills. Countries which carry out assessments in literacy all assess reading and writing; some also assess aspects of listening and talking.

In reading, Australian learners must demonstrate skills in recognising information directly stated in the text, making connections between different parts of a text and inferring meaning[24]. Reading and Viewing assessments in New Zealand require learners to demonstrate the ability to understand (media) texts[25]. In England, Standard Assessment Tests (SATs) also assess skills in reading for understanding through questions and responses[26]. Canada uses a single text assessment — a 'reading comprehension' which learners understand and analyse before responding to the text in writing[27].

In writing, Australian learners are assessed in writing skills (writing in a specific genre) and language skills (the conventions of spelling, punctuation and grammar)[28]. In New Zealand, writing means being skilled in creating, constructing and communicating meaning for various purposes[29]. In England, learners write in a specific genre and are assessed in spelling and handwriting skills in SATs tests at Key Stages 1 and 2[30].

Northern Ireland refers to 'Language and Literacy' which encompasses reading, writing, talking and listening, developing skills in understanding and using language[31].

In listening and talking, New Zealand assesses learners' skills in creating, constructing and communicating meaning for various purposes including individual presentations and group discussion[32].

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[24] National Assessment Programme Literacy Year 9, Australian Government 2009, www.naplan.edu.au

[25] The New Zealand Curriculum Reading and Writing Standards 2009, New Zealand Ministry of Education, www.minedu.govt.nz

[26] The National Curriculum for England; English 1999, Qualifications and Curriculum Authority, http://curriculum.qcda.gov.uk/

[27] Literacy Overview 2009, The Council of Ministers of Education, Canada, www.cmec.ca

[28] National Assessment Programme Literacy Year 9, Australian Government 2009, www.naplan.edu.au

[29] The New Zealand Curriculum Reading and Writing Standards 2009, New Zealand Ministry of Education, www.minedu.govt.nz

[30] The National Curriculum for England; English 1999, Qualifications and Curriculum Authority, http://curriculum.qcda.gov.uk/

[31] Framework for Literacy Development 2009, Northern Ireland Curriculum, www.nicurriculum.org.uk

Feedback from targeted engagement

Initial discussion with practitioners tried to establish what practitioners considered to be the important skills required in Literacy and Numeracy qualifications. Based on an analysis of numeracy responses, there appears to be a lack of clarity as to what constitutes 'skills'. However, there was a willingness to see the application of number including addition, subtraction, multiplication and division; financial skills including money management; measurement skills including speed, time and distance and information handling skills, included in the qualification.

Practitioners were unclear about which specific skills should be developed for the Literacy qualification. Some specific skills were seen as key to learning, for example reading for information, writing to convey information and evaluating. The 'social' and collaborative skills embedded in Listening and Talking, such as being confident in individual talk and contributing to group discussion, were also viewed as important aspects of literacy.

3.3b Components and skills — conclusions

The numeracy experiences and outcomes provide a sound basis for the development of numerical skills but do not define the range of skills, associated thinking skills and knowledge required for assessment purposes for National Numeracy up to SCQF level 5. It is important that the range, depth and breadth of numeracy knowledge and skills to be demonstrated within the qualification are clarified for all learners and stakeholders.

The literacy experiences and outcomes provide a sound basis for the development of literacy skills but do not define the range of skills and associated thinking skills for assessment purposes for National Literacy up to SCQF level 5. It is important that the range, depth and breadth of literacy skills to be demonstrated within the qualification are clarified for all learners and stakeholders.

Targeted engagement and a review of international literacy and numeracy qualifications have shown that there is debate around the detailed interpretation of the skills, but feedback showed that the development of a baseline set of skills would be welcomed.

3.4a Relationship with Core Skills, English and Mathematics — findings

It is important for all learners and stakeholders that the distinction between Literacy, English, ESOL and Core Skills Communication and Numeracy, Mathematics and Core Skills Numeracy is understood.

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[32] Assessing Reading and Speaking 2008, New Zealand's Education Monitoring Report, http://nemp.otago.ac.nz/

The nature of Core Skills

Core Skills are used in several ways. They:

- may be embedded in SQA National Courses and Units, which means successful completion of a qualification automatically updates the Core Skills profile of a candidate
- contribute to National Certificates, apprenticeship schemes and SVQs
- are often taught in the context of further education and the world of work, often as part of vocational training

Core Skills Units can also be achieved as stand-alone Units.

Appendix 1 shows where these Core Skills are used in other qualifications.

The Numeracy Core Skill appears far more frequently as an embedded Core Skill than Communication. They both contribute to the framework for a small number of National Certificates.

In their current form, Core Skills Units are internally assessed and externally moderated. As part of SQA's ongoing commitment to refresh its qualifications, the Core Skills Units have recently been revised. The new Units require candidates to submit a portfolio of evidence which will be internally assessed and externally moderated.

Literacy, English, ESOL and Core Skills Communication

This section highlights the relationships that exist between the purpose, structure and assessment approaches for Literacy, English, ESOL and Core Skills Communication.

Literacy is an important skill for learning, life and work: a qualification recognises this importance. A qualification would credit learners at school level with achievement in this area for the first time and would promote cross-curricular literacy skills development. Employers are now more familiar with Core Skills Communication, especially in the context of Modern Apprenticeships and vocational qualifications. Raising awareness of the new qualification and its benefits for learners would be important in distinguishing appropriate contexts for the National Literacy award.

Literacy

The principles and practice document defines being literate as 'the set of skills which allows an individual to engage fully in society and in learning through the different forms of language and the range of texts which society values and finds useful'.

From S3 onwards, literacy will be assessed by a portfolio of work collected by learners '...across a range of contexts relevant to their learning, to everyday life and to work' (BtC 4).

English

Generally, English at SCQF levels 3, 4 and 5 is delivered in schools. The literacy and English principles and practice document states that the study of English will build on literacy skills through:

- greater levels of analysis
- the study of literature
- 'deeper understanding' of the impact of language
- developing an appreciation of Scotland's literary and linguistic heritage
- providing opportunities for learners to explore and discuss word patterns and text structures

At present, a folio approach including an exam is used in Standard Grade English where candidates produce a portfolio of five pieces of writing — two expressive pieces and three pieces of writing in response to text. Learners also sit Standard Grade examinations in Reading and Writing at the appropriate levels.

In English, at Intermediate 1 and 2, candidates develop skills in oral or written communication. Specifically, they develop and extend a range of skills in reading, writing, listening and talking. For Intermediate 1, the award is based on a combination of internal and external assessment. The external assessment is made up of a Close Reading paper (one unseen passage of prose with questions) and a Critical Essay paper. Intermediate 2 has a similar Course assessment. However, candidates are expected to complete two critical essays, each on a different genre.

Core Skills Communication

Communication includes the components:

- Oral Communication
- Written Communication

Candidates are assessed by means of two tasks within each component, ie one individual presentation or one group discussion, one piece of Listening, one piece of Reading and one piece of Writing. Core Skills Communication can also be achieved as stand-alone Units.

ESOL

SQA ESOL qualifications are for learners whose first language is not English, and they assess the four skills of Speaking, Writing, Listening and Reading. The topics and tasks covered are relevant to learners and are related to everyday work, study, community and social situations.

The qualifications are available from SCQF levels 2 to 6. For example, at Access 3, learners are assessed by tasks completed under controlled conditions, for example a piece of writing and a paired interaction.

Numeracy, Mathematics and Core Skills Numeracy

This section highlights the relationships that exist between the purpose, structure and assessment approaches for Numeracy, Mathematics and Core Skills Numeracy.

Numeracy is an important skill for learning, life and work: a qualification will recognise this importance. A qualification would credit learners at school level with achievement in this area for the first time and would promote cross-curricular numeracy skills development. There is a high level of awareness about the benefits of numeracy for learners. However, raising awareness of the new qualification among all stakeholders, especially the potential target group and employers, will be important for the National Numeracy qualification.

Numeracy

The principles and practice document defines being numerate as having: 'the confidence and competence in using number which will allow individuals to solve problems, analyse information and make informed decisions based on calculations'. The document goes on to state that numeracy develops skills for life, learning and work, thereby helping individuals to function responsibly in life and contribute effectively to society, increasing opportunities within the world of work and establishing a foundation for lifelong learning.

From S3 onwards, Numeracy will be assessed by a portfolio of work collected '…across a range of contexts relevant to their learning, to everyday life and to work' (BtC 4).

Mathematics

Mathematics also helps learners to understand, live in and shape the world around them through encounters with number, measure, algebraic symbolism and geometric relationships. However, by building on numeracy, Mathematics places emphasis on the development and application of mathematical skills and concepts which give access to the wider curriculum and the opportunity to pursue further studies by promoting logical reasoning, analysis, creativity, abstract and algebraic thinking.

Mathematics has three main organisers, each with a number of subdivisions. Within the mathematics framework, some statements of experiences and outcomes for mathematics are also identified as statements of experiences and outcomes in numeracy. The numeracy experiences and outcomes form an important part of the mathematics education for all learners. Numeracy is therefore described in the principles and practice documents as a subset of mathematics.

There is uncertainty about the relationship between Numeracy and Mathematics, especially in relation to delivery and assessment.

Core Skills Numeracy

Similarities are also evident between Core Skills Numeracy and National Numeracy in that both have the potential of enabling learners to put their knowledge, skills and understanding into action flexibly: adapting them to new situations; underpinning and promoting learning and study skills; providing a foundation for lifelong learning and personal development. Core Skills are also applied in a wide range of contexts including education, training, life, and work.

Core Skills Numeracy is available at SCQF levels 2 to 6 and includes:

- Using Graphical Information
- Using Number

3.4b Relationship with English, Mathematics and Core Skills — conclusions

There are a number of SQA qualifications in the areas of English and Communication. Although all focus on skills in oral and written communication, these can be differentiated by target group, type of qualification, content, approach and assessment.

There are a number of SQA qualifications in the areas of Mathematics and Core Skills Numeracy. Although all focus on skills in using number and data, these can be differentiated by target group, type of qualification, content, approach and assessment.

3.5a Portfolio structure and content — findings

Literacy and Numeracy portfolios

Assessment evidence for the National Literacy and Numeracy qualifications at SCQF levels 3, 4 and 5 will be based on a portfolio of work. Portfolio evidence can originate in a wide variety of contexts; for adult learners, this might draw on work done in college, employment or through social/cultural activities. This encourages a 'social practice' model[33] which supports the literacy and numeracy needs arising from the learner's individual context. This approach to learning is also promoted by the adult literacies strategy in Scotland. For young learners, portfolio evidence might originate in school, for example from within teaching, or the curriculum in its widest sense. Evidence can also be generated beyond the place of learning, for example from social or cultural contexts, but the circumstances in which it is gathered would be the responsibility of the centre.

[33] 'Literacy as a social practice' is an approach which embeds the learning of literacy in the learner's social and cultural practice as espoused by, for example, UNESCO (Literacy, education and social development, 1997)

Portfolio evidence

Portfolio evidence should demonstrate a learner's achievement at a particular level. Evidence requirements at different levels should show both vertical and lateral progression.

Centres are confident in being able to draw evidence from a wide range of contexts. However, respondents had reservations about co-ordination and management of portfolios.

Format and nature of evidence

There are practical implications for centres in the collation of evidence for potentially large cohorts of learners at different stages in their learning. Portfolio evidence itself may take many different forms, including e-assessment, and consideration should be given to what forms of evidence will be acceptable.

There are anxieties around the considerable practical implications of portfolio collation and presentation at centre level, including the difficulty of authenticating portfolios originating in a wide variety of contexts. Roles and responsibilities; resourcing; the amount of evidence required to demonstrate achievement and the management and process of internal moderation of portfolios are also areas of concern and uncertainty.[34]

3.5b Portfolio structure and content — conclusions

The compilation and management of portfolios of evidence will be challenging. The nature of this challenge may be different for Literacy and Numeracy.

Levels of confidence in managing portfolios vary.

3.6a Text in Literacy — findings

Definition of 'text'

Literate individuals communicate ideas, experiences, opinions and information effectively, both face-to-face and in writing, through an increasing range of media. Learners use the 'active' modes (talking and writing) to create texts and the 'receptive' modes (reading and listening) to access texts. They do so across a broad spectrum of texts, using a variety of styles and technologies.

In the literacy principles and practice document, a 'text' is defined as 'the medium through which ideas, experiences, opinions and information can be communicated'. The document supports a very wide interpretation of 'text'

[34] SQA is currently involved in wider work to look at models of quality assurance.

including, for example, continuous prose, maps, graphs, moving images and electronic communication.

Perceptions vary in terms of this definition for the purposes of assessment. A text used for learning and teaching could contain non-standard English, numbers and visual representations, but 'texts' for literacy assessment should contain a sufficient amount of the 'written word'. Another view is that a narrower definition would be helpful, for example a minimum length and a requirement to write in continuous prose.

Style, purpose and audience

Texts vary in style, purpose and audience. The ability to understand notions of appropriacy and audience is crucial. Furthermore, learners use different reading skills when accessing different types of texts. Similarly, the ability to create appropriate texts — that is, adopting the appropriate style, recognising purpose and identifying audience — is key to effective communication. While learners will use different media and text types in their everyday lives, thought should be given to which texts might be included in portfolio evidence or as the stimulus for reading/listening evidence.

Formal Standard English prose of a particular length is valued by some stakeholders (as long as this is appropriate to the task and context) and it is felt that this should be demonstrated within the portfolio. Another view is that this style of writing may not be relevant for some learners and will cause difficulties for those who regularly communicate using non-standard styles and technologies. Advice to centres will stipulate which, how many and what style of texts can be presented as evidence.

Inclusion

A wide definition of 'text' would support integration of literacy across the greatest range of contexts and would support disabled learners. There is support for an approach which allows disabled learners to achieve a Literacy qualification using alternative methods of accessing and creating texts in different ways, for example by using assistive technologies. Some stakeholders, however, feel that the ability to read and write texts 'unaided' is a key skill and learners who cannot demonstrate this ability without support might not be able to achieve a Literacy qualification.

3.6b Text in Literacy — conclusions

There are varying opinions regarding how the definition of 'text' used in the principles and practice document might translate into a qualification in Literacy.

3.7a The use of a calculator in Numeracy — findings

A preliminary review of literature indicates that internationally there is wide policy variation guiding the use of calculators for assessment and teaching and learning purposes. Divergent opinion on the use of calculators in teaching, learning and assessment has emerged.

The development of the definitions for each of the Numeracy components, and the subsequent rationale for Numeracy, will impact on the use of calculators for assessment purposes.

This section briefly outlines the findings of the 2007 *Trends in International Mathematics and Science Study* (TIMSS) complemented by comments received to date from targeted engagement.

In the absence of a large scale international survey on the use of calculators in numeracy, this paper refers to the results of the TIMSS study, which briefly discussed the use of calculators in the teaching, learning and assessment of mathematics at the fourth and eighth grades[35].

The TIMSS study found that most countries surveyed do not permit calculators in mathematics classes at the fourth grade. At the eighth grade, almost all countries permit calculator use during teaching and learning. On average, 31% of teachers allowed the use of calculators to solve complex problems, 26% for checking answers, and 25% for doing routine computations. Only 16% of teachers allowed exploration of number concepts using calculators.

TIMSS does not restrict the use of calculators during the test but makes it clear that every effort was made to ensure that the test questions do not advantage or disadvantage students either way.

Internationally, there is general consensus on the permitted use of calculators for qualifications in Mathematics, Numeracy and other subjects with a strong numeracy bias.

Typically, many countries appear to regulate use and type[36] of calculators in mathematical examinations. For example, in Australia, New Zealand, Taiwan, Japan and the Republic of Ireland, the use of calculators is allowed but limited to only part of the overall external assessment.

The partial restriction on the use of calculators is also evident in Northern Ireland's Essential Skills[37] and the Adult Numeracy and Key Skills Application of

[35] Fourth grade includes children aged 9–12 and eighth grade includes children aged 13–15.

[36] Programmable calculators and those which perform functions that solve equations or draw graphs are generally prohibited.

[37] http://www.cityandguilds.com/1826.html

Number qualifications in England. This suite of qualifications is assessed through a portfolio and an external test. Calculators are allowed during the compilation of the candidate's portfolio; however, a calculator is not allowed in the external test.

This blended approach is also evident in the new Functional Skills for Mathematics in England, which uses both a 'themed assessment' and a 'written assessment'[38]. The themed assessment allows the use of calculators; however, the written assessment restricts their use.

It is interesting to note, however, that vocational qualifications with a numeracy context, eg City and Guilds Commercial Numeracy, Business and Finance, Plumbing, and Construction, permit the use of calculators in their examinations.

There does not appear to be recent evidence to indicate a complete ban on the use of calculators for assessment in Numeracy and Mathematics qualifications at this level in recent years.

Use of calculators in other SQA qualifications

In Core Skills Numeracy there is no restriction on the use of calculators.

Standard Grade and National Courses in Mathematics include two examination papers, one of which restricts the use of a calculator. Calculators are, however, allowed in the non-calculator paper for learners who have additional support needs.

There are three points of view in relation to the use of calculators. Firstly, those who believe the use of calculators should be restricted during assessment; secondly, those who consider the use of a calculator part of everyday life which should therefore be allowed during assessment; thirdly, those who believe that the use of calculators has its place during assessment in numeracy and that restrictions depend on the context in which numeracy is being applied.

Those who believe the use of calculators should be restricted during assessment argue that calculators are often used by children who have not yet mastered traditional 'pen and paper' techniques. Learners who depend on calculators may not acquire fluency in computation or confidence in recalling basic number facts. Some of those consulted also explained that the ability to carry out mental calculations is an essential life skill demanded by employers. They felt, therefore, that it was important that calculators be restricted for assessment purposes to ensure that the qualification has credibility.

In contrast, those who believe that the use of calculators should not be restricted argue that a calculator is simply a common everyday tool which can speed up the process of computation. Learners still need to understand what they are doing to use the calculator in the first place. Furthermore, a calculator allows children to

[38] http://www.qcda.gov.uk/6062.aspx

deal more readily with ‘real-life ‘situations, which often require computation of larger numbers.

The third type of response indicated that the use of calculators should be dependent on the context in which numeracy is being applied. Arguments to support this view were based on the opinion that, if problem solving is being assessed, then it is not important to restrict the use of calculators. The use of a calculator becomes more important at the higher levels when learners need to be able to understand when to use a particular skill, rather than to be able to do complicated calculations with large numbers.

3.7b The use of a calculator in Numeracy — conclusions

The preliminary findings above indicate that the use of calculators in the assessment and teaching and learning of numeracy and mathematics is a contentious issue.

Consideration will need to be given to the definition of the Numeracy components and how they impact on the purpose of Numeracy and the use of calculators for assessment purposes. Furthermore, CARG advice will need to take into account the practicalities of restricting the use of a calculator in the context of portfolio assessment.

4 Recommendations

It is recommended that SQA should carry out the following actions for the following areas:

4.1 The scope of Literacy and Numeracy

Carry out further work to develop a rationale for Literacy and Numeracy qualifications. This should include references to the vision, aims, scope and purpose of the qualifications.

4.2 Progression within Literacy and Numeracy

Ensure that the new Literacy and Numeracy qualifications articulate well with existing qualifications and education and training provision beyond school; and ensure that progression pathways in to and out of National Literacy and National Numeracy are coherent and unambiguous.

Continue with work to explore how evidence of progression within Literacy and Numeracy qualifications at SCQF levels 3, 4 and 5 can be shown.

4.3 Components and skills

Consider, as soon as possible, the types of skills which will be contained within each component and how these skills will relate to learning, life and work contexts at each level.

Take account of related qualifications in Scotland and other countries to help make decisions about skills and their assessment.

4.4 Relationship with English, Mathematics and Core Skills

Ensure that there is ongoing collaboration between colleagues in SQA and Qualifications Design Teams to clarify the purposes of Literacy and Numeracy and their relationships with other qualifications. There should be a particular focus on the relationship between Literacy and English, and Numeracy and Mathematics respectively. Differences between related qualifications should be made clear to stakeholders.

4.5 Portfolio structure and content

Carry out further research to establish how portfolios should be used to show evidence of achievement, and to consider further the format and nature of the portfolio (including e-portfolios).

Issue advice and guidance on the creation, management and assessment/moderation of evidence. SQA should also provide a range of exemplification to support centres.

4.6 Text in Literacy

Give further consideration to aspects of ‘text’ such as the relative importance of standard/non-standard English and heavily numbered and/or diagram-based materials. The definition of ‘text’ for the qualification should be aligned to the purpose of the qualification in Literacy. This work will be affected by the decisions taken about the definitions of components for Literacy.

4.7 The use of a calculator in Numeracy

Give further consideration to the potential impact of calculators on learner performance in assessment. Decisions about access to calculators should be aligned to the purpose of the qualification on Numeracy. This work will be affected by the decisions taken about the definitions of components for Numeracy.

Appendix 1a: SQA provision relating to new Literacy and Numeracy qualifications

SQA Access 1 and 2 Courses and Units

Access 1 (Units)

- Basic Communication in a Familiar Setting
- English and Communication: Language Study — Conveying Information in Writing
- English and Communication: Language Study — Understanding Text
- English and Communication: Literary Study — Expressing a Point of View
- English and Communication: Literary Study — Responding to an Imaginative Text
- English and Communication: Delivering
- English and Communication: Responding
- Everyday Communication in a Cultural Setting
- Everyday Communication in a Work-Related Setting
- Everyday Communication: Recognising Signs in the Community
- Handling Money
- Interacting in a Community Setting
- Interacting in a Familiar Setting
- Investigating Length in Familiar Situations
- Investigating Measurement
- Investigating Volume in Familiar Situations
- Investigating Weight in Familiar Situations
- Listening and Responding to Simple Scottish Texts
- Listening and Responding to Simple Texts
- Problem Solving in Mathematics
- Recognising Number
- Recognising Time
- Using Mathematics in Everyday Situations 1 — Money
- Using Mathematics in Everyday Situations 1 — Time
- Using Mathematics in Everyday Situations 1 — Weight and Measurement
- Using Mathematics to Handle Information

Access 2 (Courses)

- English
  - Language Study (Unit)
  - Literary Study (Unit)
  - Oral Communication (Unit)
- English and Communication
  - Language Study (Unit)
  - Literary Study (Unit)
  - Oral Communication (Unit)
- Mathematics
  - Using Mathematics in Everyday Situations 1 (Unit)
  - Using Mathematics in Everyday Situations 2 (Unit)
  - Using Mathematics in Everyday Situations 3 (Unit)

Core Skills

- Core Skills Communications (SCQF levels 2–6)
- Core Skills Numeracy (SCQF levels 2–6)

Appendix 1b: Embedding of Core Skills in qualifications

Use of Core Skills Communication Units (F3GB 09, 10, 11)

Core Skill embedded in Unit leading to automatic certification

Code	SCQF level	Title	Element embedded		Entries Mar 10
			Written communication	Oral communication	
F3GB	9	Communication	X	X	130
F3GB	10	Communication	X	X	1,056
F3GB	11	Communication	X	X	2,321
EE3T	10	Communication	x	X	81
EE3T	11	Communication	X	X	343
F3GM	9	Communication: Listening		X	60
F3GN	9	Communication: Reading		X	83
EE3R	9	Communication 1: Spoken Communication		X	0
EE3S	9	Communication 1: Written Communication	X		12
DO4H	11	Customer Service		X	141
F1KY	9	Digital Communication Methods	X	X	144
D8VL	9	English: Personal Study (spoken response)		X	506
D8VL	10	English: Personal Study (spoken response)		X	934
D8VL	11	English: Personal Study (spoken response)		X	2,893
DF5X	9	English: Individual Presentation		X	5
DF5X	10	English: Individual Presentation		X	8
DF5X	11	English: Individual Presentation		X	77
D8VH	9	English: Language Study	X		1,335
D8VH	10	English: Language Study	X		5,371
D8VH	11	English: Language Study	X		18,183
F3JO	11	Hospitality: Developing Skills for Working in Hospitality		X	102
D672	12	Managing Customer Care		X	0
F425	Unlevelled	Communication (Accredited Workplace Unit)	X	X	122

Core Skill embedded in National Courses leading to automatic certification

Code	SCQF level	Title	Element embedded	
			Written communication	Oral communication
C115	10	English	X	
C115	11	English	X	
C229	9	Gaidhlig		X
C229	10	Gaidhlig	X	X
C229	11	Gaidhlig	X	X

Use of Core Skills Communication Units (F3GB 09, 10, 11)

Unit within specification of Group Award

Code	SCQF level	Title	Mandatory /Optional	Type of Award
F3GB	*9*	*Communications*		
G8JK 45	11	Digital Media Computing	M	Nat Cert
G8K1 46	12	Early Education and Childcare	O	Nat Cert
G8XP 45	10	Child, Health and Social Care	O	Nat Cert
G8YT 45	11	Travel and Tourism	O	Nat Cert
G970 44	10	Army Preparation	M	Nat Cert
G973 44	10	Business	M	Nat Cert
G9A0	10	Prince's Trust Personal Development Award	M	Customised
F3GB	*10*	*Communications*		
G8JK 45	11	Digital Media Computing	M	Nat Cert
G8KI 46	12	Early Education and Childcare	O	Nat Cert
G8XP 45	10	Child, Health and Social Care	O	Nat Cert
G8YT 45	11	Travel and Tourism	O	Nat Cert
G970 44	10	Army Preparation	M	Nat Cert
G973 44	10	Business	M	Nat Cert
G9AO 04	10	Prince's Trust Personal Development Award	M	Customised
G9D7 45	11	Animal Care	O	Nat Cert
F3GB	*11*	*Communications*		
G8K3 46	12	Health and Social Care	O	Nat Cert
G8WT 45	11	Business	M	Nat Cert
G8XP 45	11	Child, Health and Social Care	O	Nat Cert
G8YV 46	12	Travel and Tourism	O	Nat Cert
G90M 45	11	Applied Sciences	O	Nat Cert
G911 04	Unlevelled	Newbattle Abbey College Certificate in Arts and Humanities	M	Customised
G92G 45	11	Sport and Fitness	M	Nat Cert
G975 46	12	Media	O	Nat Cert
G981 45	11	Fabrication and Welding Engineering	M	Nat Cert
G982 45	11	Manufacturing Engineering	M	Nat Cert
G983 45	11	Mechanical Maintenance Engineering	M	Nat Cert
G988 45	11	Electrical Engineering	M	Nat Cert
G98D 45	11	Electronic Engineering	M	Nat Cert
G99P 45	11	Administration	M	Nat Cert
G9D6 45	11	Greenkeeping	O	Nat Cert
G9GK 46	12	Digital Media Computing	M	Nat Cert

Use of Core Skills Numeracy Units (F3GF 09, 10, 11)

Core Skill embedded in Unit leading to automatic certification

Code	SCQF level	Title	Element embedded		Entries Mar 10
			Written communication	Oral communication	
D324	11	Applications of Mathematics	X	X	4,327
D186	11	Applied Electronics	X	X	233
DV3V	12	Architectural Technology: Building Design		X	43
DV3X	12	Architectural Technology: Manual and Computer-Aided Construction Drawing	X		27
DV3W	12	Architectural Technology: Site Surveying	X	X	34
D024	10	Biotechnological Industries		X	5,603
DF5G	11	Biotechnology Processes		X	92
DO66	11	Building Blocks		X	2,278
DV3N	12	Building Construction: Site Establishment and Substructure		X	7
DV3R	12	Building Construction: Superstructure		X	8
D22T	12	Building Contracts and Tendering	X		0
D911	12	Building Estimating	X		0
D124	12	Building Services Design — Electrical Installations	X		0
D123	12	Building Services Design — Heating and Ventilation	X		0
D063	10	Chemistry in Action		X	2,264
D225	12	Gaelic (Learners): Listening and Talking Focus	X		0
F1L1	9	Digital Numeracy	X	X	138
D247	11	Earth Physics and Earth Movements		X	22
D252	12	Economic Geology		X	55
D310	10	Ecosystems		X	58
D311	11	Land Use		X	
D132	11	Electrical Fundamentals	X		702
D380	11	Electricity and Electronics	X	X	3,164
D378	10	Electronics		X	2,798
D027	11	Environmental Biology and Genetics		X	5,558

Code	SCQF level	Title	Element embedded		Entries Mar 10
			Written communication	Oral communication	
D309	10	Environmental Issues		X	61
D934	12	Experimental Procedures — Biology	X	X	109
D935	12	Experimental Procedures — Chemistry	X	X	107
D936	12	Experimental Procedures — Physics	X	X	1
F394	12	Financial Accounting: An Introduction	X		34
D251	12	Fossils and Stratigraphy		X	59
D104	11	Fundamentals of Technology — Structures	X		135
DF44	10	Geography: Environmental Interactions		X	610
DF44	11	Geography: Environmental Interactions		X	2,426
DF43	10	Geography: Human Environments		X	663
DF43	11	Geography: Human Environments		X	2,850
DF3C	10	Geography: Human Environments		X	565
DF3C	11	Geography: Human Environments		X	1,978
D244	9	Geology and Scenery		X	2
D244	10	Geology and Scenery		X	60
D245	9	Geology, People and Environment		X	0
D245	10	Geology, People and Environment		X	72
F1AM	12	Graphical Detailing		X	15
D025	10	Growing Plants		X	4,373
D023	10	Health and Technology		X	3,545
D8XL	11	History of the Earth		X	22
D670	11	Hospitality Costing	X		101
F3GC	9	Information and Communication Technology	X		297
F3GC	10	Information and Communication Technology	X		1,055
F3GC	11	Information and Communication Technology	X		2,822
D159	12	Inspection — Non-Destructive Testing Skills		X	11
D311	10	Land Use		X	67
D026	11	Living Cells		X	3,623
D314	11	Local Environment		X	100

Code	SCQF level	Title	Element embedded		Entries Mar 10
			Written communication	Oral communication	
F395	12	Management Accounting: An Introduction		X	26
D321	10	Mathematics 1	X		6,931
D321	11	Mathematics 1	X		10,106
D322	10	Mathematics 2		X	8,473
D322	11	Mathematics 2	X	X	14,195
D323	10	Mathematics 3	X		10,677
F3HV	11	Mathematics: Craft 1	X		40
F3HW	11	Mathematics: Craft 2	X		35
D188	11	Mechanical Systems	X	X	187
D379	11	Mechanics and Heat	X	X	2,996
D8XK	11	Minerals and Rocks		X	18
D377	10	Movement		X	2,260
D312	11	Natural Resource Use		X	107
D374	10	Practical Electricity		X	1,951
F6TY	11	Preparing Final Accounts	X		0
D382	11	Radioactivity	X	X	3,365
D940	11	Science in Context 2	X	X	62
D942	10	Science Practical Skills	X	X	42
D140	12	Signal Processing and Noise	X		2
D108	12	Site Surveying 1	X		6
D376	10	Sound and Music		X	2,290
D106	11	Statics — Equilibrium in Frameworks and Simple Stress	X		38
D22W	12	Structural Drawing and Detailing	X		0
D119	12	Structural Mechanics and Design 1	X		0
D925	12	Structural Mechanics and Design 2	X		2
D187	11	Systems and Control		X	170
D171	10	Technical Graphics 1		X	354
D172	11	Technical Graphics 2		X	0
DF5F	11	The Biology of Micro-organisms		X	81
D243	9	The Study of the Earth		X	4

Code	SCQF level	Title	Element embedded		Entries Mar 10
			Written communication	Oral communication	
D243	10	The Study of the Earth		X	51
D560	9	Using Mathematics 2	X		4,059
D561	9	Using Mathematics 3	X		4,409
D381	11	Waves and Optics	X	X	3,069

Core Skill embedded in National Courses leading to automatic certification

Code	SCQF level	Title	Element embedded		Entries Mar 10
			Using Number	Using Graphical Information	
C209	10	Accounting			97
C209	11	Accounting	X		384
C209	12	Accounting	X		1,432
C119	10	Applied Practical Electronics		X	211
C007	9	Biology		X	884
C012	12	Chemistry	X		10,876
C06C	11	Electrical Installation Fundamentals	X	X	38
C056	9	Mathematics	X	X	5,885
C100	10	Mathematics: Maths 1, 2 and 3	X	X	12,579
C100	11	Mathematics: Maths 1, 2 and 3	X	X	20,556
C100	12	Mathematics: Maths 1, 2 and 3	X	X	23,207
C101	10	Mathematics: Maths 1, 2 and Applications	X	X	1,477
C101	11	Mathematics: Maths 1, 2 and Applications	X	X	4,055
C069	9	Physics		X	412
C069	10	Physics			3,088
C069	13	Physics		X	1,924

Use of Core Skills Numeracy Units (F3GF 09,10,11)

Unit within specification of Group Award

Code	SCQF level	Title	Mandatory /Optional	Type of Award
F3GF	10	Numeracy		
G8JK 45	11	Digital Media Computing	M	Nat Cert
G8K1 46	12	Early Education and Childcare	O	Nat Cert
G8XP 45	10	Child, Health and Social Care	O	Nat Cert
G8YT 45	11	Travel and Tourism	O	Nat Cert
G970 44	10	Army Preparation	M	Nat Cert
G973 44	10	Business	O	Nat Cert
G9DM 45	11	Applied Sciences	M	Nat Cert
G9D7 45	11	Animal Care	O	
F3GF	11	Numeracy		
G9D7 45	11	Animal Care	O	Nat Cert
G8K3 46	12	Health and Social Care	O	Nat Cert
G8WT 45	11	Business	O	Nat Cert
G8XP 45	10	Child, Health and Social Care	O	Nat Cert
G8YV 46	12	Travel and Tourism	O	Nat Cert
G99P 45	11	Administration	O	Nat Cert
G9D6 45	11	Greenkeeping	O	Nat Cert
G9GK 46	12	Digital Media Computing		Nat Cert
F3GB	11	Communications		
G8K3 46	12	Health and Social Care	O	Nat Cert
G8WT 45	11	Business	M	Nat Cert
G8XP 45	11	Child, Health and Social Care	O	Nat Cert
G8YV 46	12	Travel and Tourism	O	Nat Cert
G90M 45	11	Applied Sciences	O	Nat Cert
G911 04	Unlevelled	Newbattle Abbey College Certificate in Arts and Humanities	M	Customised
G92G 45	11	Sport and Fitness	M	Nat Cert
G975 46	12	Media	O	Nat Cert
G981 45	11	Fabrication and Welding Engineering	M	Nat Cert
G982 45	11	Manufacturing Engineering	M	Nat Cert
G983 45	11	Mechanical Maintenance Engineering	M	Nat Cert
G988 45	11	Electrical Engineering	M	Nat Cert
G98D 45	11	Electronic Engineering	M	Nat Cert
G99P 45	11	Administration	M	Nat Cert
G9D6 45	11	Greenkeeping	O	Nat Cert
G9GK 46	12	Digital Media Computing	M	Nat Cert

Appendix 2: Summary of feedback from engagement

Three phases of engagement events have taken place:

- Education authority events (September 2009): to seek ideas about breadth and depth of evidence for qualifications in Literacy and Numeracy.
- Targeted engagement events and interviews (November 2009–January 2010): to identify current practice associated with literacy and numeracy and to allow stakeholders to raise concerns and issues about new qualifications in Literacy and Numeracy.
- Employer engagement (February 2010): to seek employers' views about the level of literacy and numeracy skills they expect of entrants to their workplace. This limited engagement was carried out by the Sector Skills Alliance on behalf of SQA.

Literacy and Numeracy engagement events held in September 2009

Statements discussed at engagement events

Literacy

The definition of 'text' will be narrower for the Literacy qualification than for a qualification in English.

Reading with understanding is a key competence and all learners should be able to demonstrate this. Any additional assistance should avoid situations where understanding could be enhanced, eg by voice tone.

Writing is intended to convey information in a form appropriate to the audience, and evidence should show learners are able to convey information in a variety of ways.

The evidence for Writing need not include information provided in continuous prose.

Listening may take place in one-to-one situations, in groups or by receiving information through other media forms. Evidence should cover a range of these skills.

Listening is best assessed by observation, and in conjunction with talking.

Talking can be carried out in many contexts, eg one-to-one, discussion, telephone. Evidence should cover a range of these skills and should specify particular ones as being compulsory.

Numeracy

There should be no restriction on the use of calculators in the Numeracy qualification.

Competence in the four basic number skills (+-/x) should be shown in a range of different contexts.

Numeracy qualifications should require evidence in Time and Money and Measurement.

Numeracy qualifications must include evidence of contextualised problem solving.

General

Reading a graph or timetable is both a literacy and a numeracy skill and it is possible to identify the different skills involved.

Literacy

Strong/consistent messages

- ‘Text’ should cover a broad spectrum.
- Reading for understanding is a key competence.
- Tension exists between learners with social needs and the credibility of the qualification.
- Writing evidence should cover a variety of contexts, audiences and purposes.
- Continuous prose is an important, but not the only, type of skill that should be demonstrated.
- Listening skills should include one-to-one, group, various media forms.
- Skills in each of above contexts are very different and may form the basis for differentiation.
- Talking in a wide range of contexts and for different purposes should be a key skill.

Other viewpoints

- For this qualification the definition of ‘text’ should be narrowed.
- Use of readers might enhance learners’ understanding.
- Technical accuracy of writing is important.

Numeracy

Strong/consistent messages

- Use of calculators should be restricted.
- Four basic number processes should be shown across a range of contexts.
- Money, time and measurement are all equally valid and important and should be shown across contexts.
- Evidence of problem solving should be shown.
- Learners should not be restricted by their literacy skills.

Other viewpoints

- Access to calculators should be unrestricted.
- By using calculators learners could demonstrate deeper skills.
- Contextualised problem solving could be a differentiator.

General issues

Strong/consistent messages

- Reading tables, graphs, etc is both a literacy and numeracy skill.
- Credibility of qualifications is a concern if portfolios are used for assessment.
- There are Continuing Professional Development (CPD) issues.
- Exemplification is critical to help understanding of standards and contexts.
- Management of portfolios in centres is an issue.

Targeted engagement events and interviews November 2009–January 2010

Questions discussed at engagement events and interviews

What do you consider to be the main strengths of literacy and numeracy teaching and learning in your centre?

What do you see the purpose of the Literacy and Numeracy qualifications to be?

What skills should be developed in Literacy and Numeracy in the areas of:

- Reading, Writing, Talking and Listening?
- Number Processing, Money, Time and Measurement, and Information Handling?

Which components of the new Literacy qualification may potentially present barriers for disabled candidates? What reasonable adjustments can be made to alleviate these barriers?

Which components of the new Numeracy qualification may potentially present barriers for disabled candidates? What reasonable adjustments can be made to alleviate these barriers?

How can skills progression be shown in Literacy and Numeracy qualifications?

What opportunities and issues are there for your centre, given that there is a requirement to provide evidence 'across a range of contexts relevant to life, learning and work'?

Additional notes or discussion points.

Literacy

Strong/consistent messages

- Literacy steering groups have been set up in centres.
- Mapping of literacy experiences and outcomes against current practice has been carried out.
- A lot of literacy evidence is often generated outwith the place of learning.
- Literacy is seen as an essential skill for learning, life and work.
- A qualification would promote cross-curricular learning.
- Literacy is seen as an essential skill for learning, life and work.
- Reading, writing, talking and listening are key skills.
- These skills should be given equal weighting.
- Showing evidence of each skill could present problems for learners with disabilities.
- Support to learners with special needs should be acceptable in the context of learning.
- Tensions exist between making reasonable adjustments and the credibility of the qualification.
- Advice on how skills should be demonstrated is required.
- There is general support for a portfolio approach.
- There are significant CPD implications.

Other viewpoints

- Provide a route for all learners.
- Make learners aware of their own skills/areas for development.
- Improve attainment levels/raise standards.
- Ensure progression through SCQF levels.
- E-portfolios are a suitable way to gather evidence.
- Make learners aware of their own skills/areas for development.
- Improve attainment levels/raise standards.

Numeracy

Strong/consistent messages

- Numeracy steering groups have been set up in centres.
- Learners lack confidence when required to transfer numeracy skills into other areas.
- Mapping of numeracy experiences and outcomes against current practice has been carried out.
- Numeracy is seen as an essential skill for learning, life and work.
- Numeracy is a very important and relevant skill for learners who find maths challenging.
- Number processes, money, time and measurement, and information handling are key skills.
- There are consistent views about skills which might underpin progression.
- There is concern about a portfolio approach.
- It is difficult and unrealistic to separate skills for learning, life and work for assessment purposes.
- It is realistic to allow reasonable adjustment where appropriate.
- Unless certificates were annotated where adjustments were made, there may be issues around credibility.
- Use of calculators should be restricted, if not prohibited, in gathering evidence.

Other viewpoints

- There are a range of cross-cutting skills which can be found in all components in numeracy.
- These broader skills improve transferability of component skills.
- Reasonable adjustments for learners with special needs are acceptable.
- Tensions exist between making reasonable adjustments and the credibility of the qualifications.
- There is concern about the authentication of evidence produced outside the centre.
- There are significant CPD implications.
- Access to calculators should not be restricted in any way, as they are available when learning/working in most contexts.

Employer engagement — February 2010

Engagement questions for employers

Literacy

Which tasks involving literacy skills, eg letter writing, form filling, reading tables, reading instructions, giving and following instructions, would you expect any employee to have when they commence employment? Your answer need not refer specifically to these examples.

Which single aspect of literacy would you most like to see improved amongst non-graduate employees?

Some disabled learners may not be able to obtain a Literacy qualification without support and this support may not be annotated on their certificate. What implications might this have for your organisation?

Literacy skills can be demonstrated and assessed using a variety of resources and types of work, eg extended writing, maps, graphs, moving images and electronic communication. What are your expectations of how the education system would assess competence in literacy skills?

Numeracy

Which tasks involving numeracy skills, eg mental arithmetic, measurement, calculating time, reading graphs, timetables and other data would you expect any employee to have when they commence employment? Your answer need not refer specifically to these examples.

Which single aspect of numeracy would you most like to see improved amongst non-graduate employees?

Some disabled learners may not be able to obtain a Numeracy qualification without support and this support may not be annotated on their certificate. What implications may this have for your organisation?

Calculators may be allowed to be used in all or part of a Numeracy qualification. To what extent would you expect school leavers to be able to demonstrate numeracy skills without access to a calculator?

Literacy

Strong/consistent messages

- Need to be able to understand, implement and give instructions.
- Filling in forms and note taking are key skills.
- Grammar, punctuation and spelling in writing are important.
- Appropriate forms of communication are not always appreciated.
- Employees with special needs need to alert employers to those needs.
- Concern about employees being placed at risk — health and safety issue.
- Evidence should be gathered in contexts appropriate to the work situation.

Other viewpoints

- Legible writing is important.
- Many employees need to fill in timetables, time sheets, etc.
- A literacy qualification should assess basic IT skills.
- Exams are the only way to properly assess school students.

Numeracy

Strong/consistent messages

- Confidence in carrying out simple number processing is paramount.
- Employees need to be able to read and understand charts, tables, etc.
- Basic arithmetic calculation is very important.
- Employees should be able to carry out simple calculations without access to a calculator.

Other viewpoints

- Form filling is important.
- The use of complex calculator functions is important.
- The ability to estimate and spot errors is important.
- It does not matter whether a calculator is available or not — it is more important to know if the answer is likely to be correct.

Number of engagees

	Number of engagees				
Engagement event	**Teachers**	**FE**	**Education authorities**	**Community education**	**Employers**
September engagement event — Edinburgh	14		3		
September engagement event — Aberdeen	7				
September engagement event — Glasgow	21		9		
Targeted engagement events (Nov–Jan)	39	21	9	6	
Employer engagement					15

Appendix 3: Background research

This appendix is a summary of a larger research report carried out by SQA which is available by contacting Lindsay Russell (lindsay.russell@sqa.org.uk).

Background to literacy and numeracy

Literacy and numeracy are expected to permeate the curriculum in most centres, but they may exist as stand-alone qualifications for those whose learning takes place outwith schools.

Curriculum for Excellence makes it clear that the responsibility for delivery of the skills in these areas lies with all teachers, lecturers or learning providers. The information contained in this report describes the position of literacy and numeracy in Scotland and in a variety of international settings. It is based on research.

Scotland

The Curriculum for Excellence principles and practice define literacy as 'the set of skills which allow an individual to engage fully in society and in learning, through the different forms of language, and the range of texts, which society values and finds useful'. The corresponding principles and practice document defines numeracy as 'the confidence and competence in using number which will allow individuals to solve problems, analyse information and make informed decisions based on calculations'. As the cornerstones of all learning, it is crucial that young people develop these skills.

For the first time, these literacy and numeracy skills will be made explicit across the curriculum. The focus will be on developing, maintaining and extending these skills throughout learning, with young people and adult learners working towards a formal qualification to recognise their learning.

Recent results from international surveys such as the Program for International Student Assessment (PISA), Progress in International Reading Literacy Study (PIRLS) and Trends in International Mathematics and Science Study (TIMSS) indicate a decline in Scotland's performance in these key areas, as well as a widening gap between the lowest and highest performers. The new National Literacy and Numeracy qualifications aim to redress this balance and provide a positive incentive for young people and adult learners to improve their literacy and numeracy skills.

Overview of subjects related to literacy and numeracy

While the availability of existing qualifications in Literacy and Numeracy in Scotland is limited to adult literacy and numeracy initiatives, there are a number of related qualifications which can be considered in relation to this curricular area. These include: Core Skills (Communication and Numeracy); English for Speakers

of Other Languages (ESOL) and English and Mathematics (at Standard Grade, Intermediate 1 and 2). Development of the new Literacy and Numeracy qualifications must consider the relationship with other qualifications, particularly English and Mathematics.

The Core Skills of Communication and Numeracy are awarded at SCQF levels 2 to 6 and are each split into two components (Oral Communication and Written Communication, and Graphical Information and Using Number respectively), where the specific skill required within each component indicates progression through the levels.

In ESOL the focus is on the skills of reading, writing, listening and speaking. These skills are also evident in the English Standard Grade, Intermediate 1 and 2 Courses, though they are less explicit than in ESOL where these specific modes of language are assessed.

Mathematics qualifications focus on the idea of problem solving as an essential skill; applying mathematical knowledge and techniques in a range of contexts with an emphasis on real life situations. Standard Grade, in particular, focuses on two Elements: Knowledge and Understanding, and Reasoning and Enquiry. Knowledge and Understanding covers the facts, concepts and skills needed to solve mathematical problems, including the use of appropriate mathematical notation and symbols. Reasoning and Enquiry looks at candidates' ability to make decisions about how to start the problem and what skills to apply to it.

The topics of whole numbers, decimals, fractions, percentages and integers are singled out as non-calculator numerical skills. According to the Standard Grade Arrangements documents, it is only the topics of Number and Money which are concerned with the fundamental aspects of numeracy. Most of the content in these topics is contained in SCQF levels 3 and 4.

Following the Adult Literacy and Numeracy in Scotland report (ALNIS) published by the Scottish Government in 2001, the Learning Connections team was set up, tasked with the promotion of adult literacy and numeracy. As a result, the Adult Literacy and Numeracy Curriculum Framework was launched, which provides a broad national framework within which local literacy providers can offer a curriculum to meet particular, rather than general needs. (NB: A review of Learning Connections, currently part of the Lifelong Learning Directorate of Scottish Government, has been carried out, and the practice development functions will be transferred to Learning and Teaching Scotland in April 2010.)

Feedback from employers and other stakeholders on competence in literacy and numeracy

Research into the skills that employers want found that literacy and numeracy (alongside punctuality and enthusiasm) are key requirements of any young person seeking their first job (The Guardian, April 2008). Of the employers surveyed, 55% said that a lack of literacy skills would be a 'deal-breaker' in

disqualifying a young person for work. The percentage dropped to 47% when discussing numeracy skills.

However, reports from employers and stakeholders show that literacy and numeracy skills among young people are below the standard required and/or expected for employment and higher education respectively.

A survey carried out by the Confederation of British Industry (CBI) in 2008 found that one fifth of the adult workforce lacked either the literacy or numeracy skills expected of 11-year-olds. Employers who participated in the survey expressed serious concerns about employees' inability to write in sentences, spell correctly or use accurate grammar, or spot simple numerical errors.

The 2006 Nuffield Review HE Focus Groups Preliminary Report found that universities were 'dismayed by the poor levels of literacy and numeracy among school leavers' (The Guardian, 2006). Tutors at a number of the universities complained that many of the school leavers 'lacked a good grip of grammar and had a fear of numbers' which meant that an increasing amount of time was being lost to remedial work at the beginning of degree courses.

According to the tutors interviewed, the attitude among students that 'if it's not assessed then it's not important' had created a situation where students couldn't write in sentences, didn't know how to use an apostrophe and 'were scared stiff of numbers'.

Assessment approaches

There are a number of assessment approaches used across the various English and Maths-related qualifications in Scotland.

Core Skills are embedded within current qualifications, which means successful completion of a qualification automatically updates the Core Skills Profile of a candidate.

Qualifications in ESOL and English at Intermediate 1 and 2 follow a Unit and Course assessment approach. In Unit assessments for ESOL, the skills of speaking and writing are assessed through a practical language assignment for each Unit. Listening and reading are assessed through a test for each Unit conducted under controlled, supervised conditions. The Course assessment has two components: a question paper and a speaking assessment. The question paper is divided into two parts: a listening skills assessment and a reading and writing paper. The speaking assessment involves two different short spoken interactions in a personal and social context.

The external Course assessment in English Intermediate 1 and 2 Courses is made up of a Close Reading paper and a Critical Essay paper. The Close Reading paper requires candidates to demonstrate their ability to understand, analyse and evaluate a passage of unseen prose. In the Intermediate 1 Critical Essay paper the candidate must write one critical essay demonstrating their

ability to understand, analyse and evaluate previously studied poetry, prose, drama, mass media or language text(s). Intermediate 2 candidates must write two critical essays, each from a different genre.

Standard Grade English assesses the modes of Talking, Reading and Writing using three different types of assessment. Talking is internally assessed; Reading and Writing are externally assessed by external exam and a folio of coursework in Reading and Writing.

Qualifications in Mathematics are assessed in an external assessment examination (though Intermediate 1 and 2 candidates must also successfully achieve all component Units, as well as the external assessment, to achieve the Course award). In each of the qualifications, the exam consists of two papers, only one of which allows the use of a calculator.

Assessment arrangements — reasonable adjustments

SQA's policy on assessment arrangements for disabled candidates and/or those candidates identified as having additional support needs allows for adjustments to the published assessment arrangements to be made when candidates are placed at a substantial disadvantage.

SQA must ensure that the necessary robust processes are in place so that decisions taken on reasonable adjustments in the National Numeracy and National Literacy qualifications are made in a transparent way, which balances meeting the needs of the disabled candidate and maintains the integrity of the new qualification.

Detailed information about specific arrangements can be found on SQA's Assessment Arrangements web pages.

United Kingdom and other international approaches to monitoring literacy and numeracy

What is monitored? What are the strategies for monitoring?

Australia

The National Assessment Program — Literacy and Numeracy (NAPLAN) was introduced in Australia in 2008 to assess students in all Australian schools at Years 3, 5, 7 and 9. Tests take place in May each year and are developed using nationally agreed Statements of Learning that describe essential skills, knowledge, understanding and capacities.

Students have their skills assessed in Reading, Writing, Language Conventions (spelling, punctuation and grammar) and Numeracy. The tests provide information on how students are progressing (against a 10-band achievement scale) and support improvements in teaching and learning.

The Reading paper requires students to read a range of texts (appropriate to the Year they are in at school) and answer questions of varying difficulty to show their understanding of the material.

In the Writing paper students are directed to write in response to stimulus material. Students are required to generate and organise ideas and demonstrate their skills in vocabulary use, sentence structure, spelling and punctuation.

The Language Conventions paper requires students to identify and correct spelling errors and answer multiple choice questions on aspects of grammar and punctuation.

The Numeracy assessment task measures achievement across number; function and pattern; measurement; chance and data; and space. The questions require students to apply mathematical knowledge, skills and understanding in a variety of contexts.

These same broad-based skills are assessed across Years 3, 5, 7 and 9 though the sophistication of response is expected to be higher at Year 9 than at previous years.

Canada

The Pan-Canadian Assessment Program (PCAP) refers to cyclical tests (every three years) which assess the national achievement of 13-year-old students in reading, mathematics and science. During each test one subject is the focus of assessment and the majority of students write the test on this subject. The other two subjects are tested with a smaller number of students.

Approximately 30,000 students wrote the assessment in 2007. They were a random sample of schools and students with a random assignment of booklets. The focus was on reading, with two thirds writing this paper.

The results for PCAP reading are described over three levels representing a continuum of knowledge and skills acquired by students over their entire elementary and secondary school experience. Level 2 is the acceptable level of performance for 13-year-olds while Level 1 represents the performance of students achieving at a level below that expected of students in their age group. Level 3, then, represents a higher achievement than that expected of students within their age group.

The assessment items focus on three sub-domains of reading — Comprehension, Interpretation, and Response to text (where ‘text’ is the written word, ie short narrative, personal narrative, information text, short story, editorial or website).

In 2007 the Mathematics domain was divided into four sub-domains and three processes:

The four sub-domains were:

- Numbers and Operations
- Geometry and Measurement
- Patterns and Relationships
- Data Management and Probability

The three processes were as follows and are used in the application of all sub-domains:

- Problem solving
- Communication/Representation
- Reasoning/Connections

England

Literacy in primary schools is taught using the Primary National Strategy, which was originally implemented in 1998 as the National Literacy Strategy; this and the related Numeracy Strategy became part of the Primary National Strategy (Excellence and Enjoyment) in 2003.

A renewed Primary Framework for teaching literacy and mathematics was launched in October 2006. Teachers still had to teach English and Maths every day, but the step-by-step literacy hour was dropped.

Standards in Mathematics, English and Science are monitored by National Curriculum tests (known colloquially as SATs) which comprise a mixture of teacher-led and test-based assessment depending on the age of the learners. These tests happen at the end of Key Stage 1 (age 7), Key Stage 2 (age 11) and Key Stage 3 (age 14). As of July 2009 Key Stage 3 tests have been abolished. Instead an expert group will develop a system of assessment by teachers.

Until 2008, in May during the final year of Key Stage 3, all students were required to undertake National Curriculum Tests in the three core subjects of English, Mathematics and Science. These provided records of attainment in the subjects, including separate levels for reading and writing as part of the overall English grade. The English assessments also included the study of a Shakespeare play.

Functional Skills (which are also available in Wales) are practical skills in English, ICT and Mathematics that allow individuals to work confidently, effectively and independently in life. Assessments support problem solving, skills-based approaches and primarily take the form of task-based scenario questions with a limited duration, delivered in a controlled environment. The level of a functional skills qualification is determined by the complexity of situations and activities; the technical demand associated with these activities; a learner's level of familiarity with the task or activity, and the level of independence with which a learner can complete the activity.

Adult literacy and numeracy qualifications also exist. Literacy covers the skills of reading, comprehension, understanding writing techniques and spelling, punctuation and grammar. Numeracy tests the skills of interpreting and calculating mathematical information. National Standards in Adult Literacy and Numeracy qualifications are set out by Ofqual.

Assessment in adult literacy and numeracy qualifications varies across the different examinations boards; a mixture of internal and external assessment is used to assess the different components and ensure that the National Standards have been met.

New Zealand

There is no national (whole cohort) testing in New Zealand. The new government is introducing a policy of National Standards in Literacy and Numeracy but schools will still be free to choose when they assess these and choose from a range of approved assessment tools.

Learning Progressions for adult Reading, Writing, Speaking, Listening and Numeracy have been developed as a national resource. These progressions are not awards but a guide to help identify the next learning steps adult students need to take to strengthen their expertise in numeracy, literacy and language.

Currently New Zealand is developing an Adult Literacy and Numeracy Assessment Tool based on the Learning Progressions to help educators develop programmes for learners that match their needs and strengthen their literacy and numeracy skills. The assessment tool will allow learners to track their progress over time and enable educators and organisations to report on the progress made by groups or cohorts of learners.

The National Education Monitoring Project (NEMP) conducts national surveys of educational achievement on an annual basis. The surveys are conducted on four yearly cycles of learning areas and skills and focus on students at Year 4 (age 8–9) and Year 8 (age 12–13). The learning areas surveyed include:

- Language: reading and speaking
- Language: writing, listening and viewing
- Mathematics: numeracy skills

For NEMP assessments, students work on tasks with the support of a trained teacher-administrator in four different ways:

- One-to-one — one student working with a teacher-administrator
- Group Four — students working co-operatively
- Pencil and paper — four students working on their own on the same pencil and paper tasks
- Stations — four students working independently around a series of hands-on activities

Language: Listening and Viewing (2006)

For listening tasks, students were asked to listen to information presented orally or both orally and visually, and to repeat information, answer questions using the information or follow oral instructions. Students were expected to listen to factual presentations, assertions, arguments or instructions and to recall, interpret or follow them correctly.

For viewing tasks students were asked to view visual resources and to demonstrate understanding of the messages conveyed, their purposes, the contexts in which they were appropriate or the particular techniques used.

Language: Writing (2006)

In Expressive Writing tasks students were given the freedom to write inventively within the task guidelines. Characteristics sought included the ability to write coherently, to communicate personal feeling, to communicate stories or ideas clearly and to follow conventions associated with a particular form of writing.

Functional writing tasks involved students presenting information clearly and accurately in written form. They acted as reporters, gave instructions, prepared advertisements, filled in forms and wrote letters, descriptions, messages and formal reports.

Writing conventions tasks focused on students' performance in spelling, punctuation and grammar, using tasks specifically designed for this purpose.

Language: Reading and Speaking (2004)

Oral Reading tasks tested students' ability to recognise or decode written words together with an ability to understand and interpret what is said or intended by the writer.

Reading Comprehension tasks involved students in silent reading to obtain information, answer questions and make decisions.

Oral Description tasks were speaking tasks where students were asked to give descriptions, while Oral Presentations involved students making presentations for various purposes: telling stories; developing and presenting puppet plays, presenting poems, talking on allocated topics and developing and asking questions.

Mathematics (2005)

The framework includes tasks in Number and Algebra; Measurement; Geometry and Statistics. In addition to tasks there was also an interview questionnaire that investigated students' interest, attitudes and involvement in Mathematics.

Northern Ireland

The Education (Northern Ireland) Order 2006 gave effect to the framework for the revised curriculum, which has been phased in since the 2007–08 school year.

The new framework has a greater emphasis on developing young people's essential skills — skills to equip them to use new technologies, to communicate well, to work as part of a team, as well as continuing to develop their levels of literacy and numeracy. Key Stage 3 tests in English and Mathematics are no longer statutory.

Children are assessed by their class or subject teacher using different forms of assessment. In the key areas of Language and Literacy, and Mathematics and Numeracy, teachers currently assess the progress made against certain levels which they are expected to achieve at the end of each Key Stage. This is set to change once the revised curriculum is in place fully. Assessments will then be against levels relating to skills.

Republic of Ireland

The Further Education and Training Awards Council (the national awarding body for further education and training in Ireland) has recently introduced three new certificates ('major awards'):

- Level 1 Certificate in Communications
- Level 1 Certificate in General Learning
- Level 2 Certificate in General Learning

A major award will prepare learners for employment, participation in society and community, and access to higher levels of education and training. Each major award is modularised and made up of a combination of 'minor awards' that can be certificated separately. There are 51 different minor awards available, but only the following relate to numeracy and literacy: data handling; pattern and relationships; quantitative problem solving; quantities and number; shape and space; listening and speaking; non-verbal communication; reading and writing.

The assessment technique for all minor awards at Level 1 and 2 is a collection of work in a portfolio whereby evidence is pulled together from a range of pieces of coursework or may build on previous coursework. It is the responsibility of the tutor to design valid, reliable and authentic assessments that provide an opportunity for the learners to generate evidence against all of the Learning Outcomes. Internal verification of assessment instruments and evidence is used.

Wales

A revised curriculum for 3–19 year-olds was implemented in Wales in September 2008. It aims to:

- focus on the learner
- ensure that appropriate skills development is woven throughout the curriculum
- offer reduced subject content with an increased focus on skills
- focus on continuity and progression 3–19, by building on the Foundation Phase and linking effectively with the 14–19 Learning Pathways programme
- be flexible
- support Government policy, including: bilingualism, Curriculum Cymreig/Wales, Europe and the World, equal opportunities, food and fitness, sustainable development and global citizenship, and the world of work and entrepreneurship
- continue to deliver a distinctive curriculum that is appropriate for Wales

A focus on skills development underpins the whole curriculum. The skills framework document provides guidance about continuity and progression in thinking, communication and number for learners from 3–19.

Under the revised curriculum there is a clear distinction between the assessment of learning (summative assessment, at the end of each key stage with grading and reporting) and assessment for learning (which is formative and focuses on ways in which learners can move forward).

International Baccalaureate

The Middle Years Programme of the International Baccalaureate is designed to meet the educational requirements of students aged 11 to 16. Curriculum for Excellence shares a similar philosophy to the International Baccalaureate, as it aims to prepare young people for purposeful engagement in modern society by promoting independence, creativity and problem solving, as well as an understanding of the relationships between school, daily life and the world of work. Eight subject groups provide a broad foundation which includes language and mathematics.

The mathematics programme provides a framework of concepts and skills including:

1 Knowledge and understanding
2 Investigating patterns
3 Communication in mathematics
4 Reflection in mathematics

Each of the skills above is incorporated into the following five mathematics components:

- Number
- Algebra
- Geometry and trigonometry
- Statistics and probability
- Discrete mathematics

The language component is made up of Language A (defined as the student's best language, and often the language of instruction in the school) and Language B (which is a language other than the mother tongue).Language A courses include the study of:

- the instrumental function of a language where listening, viewing, speaking, reading and writing skills are emphasised
- literature, which encompasses a variety of periods and genres

Within the International Baccalaureate there is no formal examination structure and all work is internally assessed. Schools are responsible for organising relevant, realistic assessment related to real-life situations to assess what a learner understands and can do. At intervals during the students' final year, teachers adapt given assessment tasks to judge students' performance against assessment criteria. For the purposes of final assessment, teachers must ensure that, for each student, they make several judgements against each criterion using different instruments to assess the criterion more than once.

Assessment arrangements

While assessment arrangements exist across the various countries and international surveys, there is no uniformity about what is, and is not, allowed. Information about what is permitted in England, Wales and Northern Ireland can be found in the Ofqual Assessment Arrangements Report. Information about assessment arrangements in Scotland is available on page 49 above.

In random sample surveys such as NEMP and PCAP, exemption is allowed if it is felt that sitting the test may adversely affect the student.

International surveys — approaches to monitoring literacy and numeracy

What is monitored? What are the strategies for monitoring?

PIRLS

Carried out every five years, PIRLS (Progress in International Reading Literacy Study) is an international survey comparing the reading attainment and attitudes to reading of over 200,000 9- and 10-year-olds in 41 countries. It's designed to measure trends in children's reading literacy achievements and it collects

information about policies and practices related to learning to read and reading instruction.

It focuses on learners' understanding of the text, not their ability to write well. The framework calls for students to be able to demonstrate their understanding of a wide variety of texts classified under two major purposes for reading — to acquire and use information and for literary experience.

PIRLS focuses on three aspects of students' reading literacy:

- processes of comprehension
- purposes for reading
- reading behaviours and attitudes (addressed by a questionnaire)

Processes of comprehension and purposes for reading are the foundation for the PIRLS written assessment of reading comprehension.

Processes of comprehension

Four types of comprehension processes are used in the PIRLS assessment to develop the comprehension questions for the passages presented to students. Across the assessment, a combination of questions, each dealing with one of the processes, enables students to demonstrate a range of abilities and skills in constructing meaning from written texts.

Purposes for reading

The PIRLS assessment focuses on two purposes for reading:

- reading for literary experience (mainly narrative fiction in PIRLS assessment)
- reading to acquire and use information

PISA

Every three years the Programme for International Student Assessment (PISA) tests 400,000 15-year-olds from 54 countries in reading, mathematics and science. The tests are not related to specific curricula but are based on the knowledge and skills young people need in the modern world.

Reading literacy is defined as 'understanding, using and reflecting on written texts in order to achieve one's goal to develop one's knowledge and potential to participate in society.'

Mathematical literacy is defined as 'an individual's capacity to identify and understand the role that mathematics plays in the world, to make well-founded judgements and to use and engage with mathematics in ways that meet the needs of that individual's life as a constructive, concerned and reflective citizen.'

The PISA reading assessment measures the following five processes associated with achieving a full understanding of a text:

- retrieving information
- forming a broad general understanding
- developing an interpretation
- reflecting and evaluating the content of a text
- reflecting and evaluating the form of the text

The mathematical content captured by PISA assessment falls into four categories:

- Space and shape
- Change and relationships
- Quantity
- Uncertainty

TIMSS

Carried out every four years at primary and secondary school level, TIMSS (Trends in International Mathematics and Science Study) is an international assessment of pupil attainment in mathematics and science.

TIMSS intends to investigate three levels: the intended curriculum; the implemented curriculum and the achieved curriculum.

The intended curriculum refers to the mathematics and science that societies intend for students to learn and how education systems are organised to meet this demand. Implemented curriculum is what is actually taught, who teaches it and how it is taught, while achieved curriculum looks at what the students have actually learnt.

The mathematics assessment framework for TIMSS is organised around two dimensions, a content dimension specifying the domains or subject matter to be assessed within mathematics (for example, number, algebra, geometry, and data and chance at the eighth grade) and a cognitive dimension specifying the domains or thinking processes to be assessed (that is, knowing, applying, and reasoning). The cognitive domains describe the sets of behaviours expected of students as they engage with the mathematics content.

The content domains differ for the fourth and eighth grades, reflecting the nature and difficulty of the mathematics widely taught at each grade. There is more emphasis on number at the fourth grade than at the eighth grade.

The cognitive domains are the same for both grades, encompassing a range of cognitive processes involved in working mathematically and solving problems right through the primary and middle school years.

Analysis of Curriculum for Excellence areas — research findings

Background and methodology

In June 2009, SQA carried out an audit about current teaching practice and Course content at SCQF levels 3, 4 and 5 (Access 3, Standard Grade, Intermediate 1 and Intermediate 2). The aim was to find out how current teaching practice relates to the experiences and outcomes for literacy and numeracy at Curriculum for Excellence levels 3 and 4.

The purpose of carrying out the audit was to provide background information for SQA officers, Curriculum Area Review Group (CARG) and Qualifications Design Teams (QDTs). The information gathered would:

- illustrate the relationship which currently exists between different subject areas and the Curriculum for Excellence literacy and numeracy experiences and outcomes
- provide examples of the range of both evidence and its sources which may relate to the proposed qualifications in these areas

A selection of 14 subject specialists from across Scotland was made (chosen randomly from the nominations given by education authorities). SQA asked each of these specialists to audit current practice in their subject area (at SCQF levels 3, 4 and 5) against the literacy and numeracy experiences and outcomes at Curriculum for Excellence levels 3 and 4. Those carrying out the audit against the numeracy experiences and outcomes were also asked to carry out an audit of current practice at SCQF levels 3, 4 and 5 against the mathematics experiences and outcomes at Curriculum for Excellence level 3. It was felt this would be useful in investigating the overlap in the Curriculum for Excellence experiences and outcomes in numeracy and mathematics.

Subject specialists were given grids containing Curriculum for Excellence experiences and outcomes at levels 3 and 4 for literacy or numeracy. (A mathematics level 3 experiences and outcomes grid was also sent to those subject specialists who were completing the Numeracy mapping.) Participants were asked to fill in these grids with actual examples of work being carried out in their subject area at SCQF levels 3, 4 and 5. Subject specialists were advised that while it was not necessary to provide information about the specific SCQF level at which the work was being carried out, it would be helpful if more than one example could be provided for each outcome, where applicable.

While the subjects chosen for this audit were not exhaustive, there was an attempt for each of the curricular areas to be represented. The pairings between subject area and either Literacy or Numeracy were not always obvious — this was intentional.

Conclusions

The findings indicated that Curriculum for Excellence experiences and outcomes at levels 3 and 4 for both literacy and numeracy were being covered in current teaching practice across the curriculum. Given that the subject pairings were deliberately mismatched, ie English was mapped against Numeracy, while Mathematics was mapped against Literacy, the expectation was that a similar audit conducted independently by schools which mapped all subjects against Literacy and Numeracy would come back without many (if any) gaps.

The evidence of a greater number of gaps in the Curriculum for Excellence mathematics level 3 experiences and outcomes grid was a positive indication of the different focus between numeracy and mathematics and numeracy. While there was evidence that a number of these Curriculum for Excellence mathematics experiences and outcomes were being covered in current practice, the occasions were fewer than with the Curriculum for Excellence numeracy level 3 and 4 experiences and outcomes grids.