

# SQA's Vision and Strategy for E-Assessment

## 1 Introduction

This document sets out a proposed SQA vision and strategy for Computer Assisted Assessment (CAA) and, more specifically, for e-assessment of its qualifications. It also proposes ways in which SQA will communicate and build support for our vision and strategy.

'E-assessment' is used to describe those aspects of CAA that are experienced directly by the candidate. It includes use of e-portfolios to store assessment evidence.

SQA's primary concern is to develop and deliver high quality qualifications that meet the needs of its users and are underpinned by rigorous and effective quality assurance. The use of e-assessment must be seen to support these over-arching objectives.

E-assessment must demonstrably add value for learners and centres. It should support development of a range of qualifications and assessment regimes that are recognised as being fit for purpose, relevant to learners and employers and which provide the best possible foundation for progression to further study.

## 2 Our vision for e-assessment

Against this background, this is SQA's proposed vision for the development of e-assessment over the next 5 years and for the longer term:

During the next five years, SQA will:

- a. Develop its capability to provide high quality, fit for purpose and cost effective e-assessment for its qualifications where it is appropriate and there is demand for it.
- b. Ensure that its e-assessment provision meets the needs of learners, employers, parents and other stakeholders.
- c. Work with its own staff, including its professional support teams, and with staff in its centres to ensure they acquire the necessary skills and expertise to deliver e-assessment.
- d. Work with other agencies to ensure that e-assessment forms part of the vision for the wider use of technology to support learning in

schools, colleges and training providers and that it supports achievement of national policy objectives.

- e. Seek to become Scotland's leading authority on e-assessment and support wider Scottish e-learning initiatives.
- f. Seek to be recognised both in the UK and internationally as a developer of innovative, high quality e-assessment.

In the longer term it seems likely that:

- a. Assessment will increasingly be one part of an integrated process of teaching and learning with the distinction between learning and assessment becoming blurred.
- b. E-assessment of SQA's qualifications will be increasingly routine.
- c. Learners will expect to be able to undertake most assessment 'on demand' at a time and in a place of their choosing subject to appropriate authenticity checks.
- d. Learners will expect to store evidence of their achievements in a personal e-portfolio.

In this environment it will be important that:

- e. Scotland is seen as a centre of excellence in e-assessment, demonstrating innovative and successful use of emerging technologies.
- f. SQA's structure reflects this changing environment and the needs of its candidates and centres.

This vision has been designed to be:

- ◆ Clear enough to be communicated effectively to stakeholders and to the general public.
- ◆ Flexible enough not to put SQA into a straightjacket.
- ◆ Capable of mapping a path from where SQA is now in use of e-assessment, to where we could be in five or 10 years.
- ◆ Flexible enough not to assume that some form of e-assessment must be appropriate for every situation, but to allow stakeholders to make informed judgements on which assessment models to implement in a given set of circumstances.
- ◆ Owned by SQA as a whole, not just by parts of the organisation.
- ◆ Supported more widely by the Scottish education and training sector including policy makers, those who deliver qualifications and who accept qualifications for further study or for employment.

### 3 **Moving towards the vision — next stages of SQA’s e-assessment activity**

This section outlines the way in which SQA can build on its existing e-assessment activity to work towards achievement of its vision.

We now have a good understanding of the issues to be addressed in implementing e-assessment. In planning to implement our vision, we will need to take particular account of:

- ◆ Manageability — SQA’s and centres’ capacity to manage a range of assessment solutions and models.
- ◆ Cost-effectiveness – in the development and provision of e-assessment.
- ◆ Scalability — of technology solutions to ensure that they can expand to meet increasing demand for e-assessment.
- ◆ Future proofing — within the limitations of predicting future technological developments.

We propose, therefore, to concentrate our immediate activities on the following key areas:

**a      Development of online summative assessment for Units of HNC/Ds**

Work in this area, funded by the Scottish Further Education Funding Council (SFEFC) and the European Social Fund (ESF), is in its early stages.

**b      Development of e-NABs for National Qualifications**

Initially providing e-assessment for Units in a selection of subjects and levels, but leading to external e-assessment where appropriate. This work is currently under discussion between SQA and the Scottish Executive. It will absorb the progress achieved by the existing Pass-IT and Intermediate 1 Computing projects.

**c      Development of qualifications for which provision of e-assessment is a consideration at the design stage**

Evidence from our own activities and elsewhere indicates that such qualifications are particularly effective in motivating and engaging some types of candidate who have not been successful in conventional assessments.

**d      Continuing to explore the suitability of e-portfolios to support its qualifications**

Pilot activity and providing guidance for centres on the quality assurance regime for e-portfolios and other systems (including managed learning

environments (MLEs) and virtual learning environments (VLEs)) will remain priorities.

A number of other awarding bodies have defined criteria for e-portfolios. These criteria are used to endorse commercially-available products as suitable to support the awarding body's qualifications. We may wish to follow this route rather than to provide an SQA e-portfolio for its centres.

Whichever approach we adopt, the key issue will be to ensure that SQA approves e-portfolios that allow:

- ◆ Learners to store similar types of material irrespective of the system chosen by the centre.
- ◆ Automatic collection of data to support SQA's certification processes
- ◆ Remote moderation.

Additionally, we will need to work with other agencies to support centres as they seek to implement new e-portfolio systems.

#### **e Review and evaluation**

We will ensure that all of our e-assessment development work includes a rigorous review and evaluation process, and that outcomes immediately inform the progress of each project.

#### **f Research and development**

We will continue to undertake research and development and proof of concept projects as new technologies, assessment models or other developments emerge. We will seek to build on our existing strong links with higher education institutions in this area. Each project will have clearly defined aims that support our objectives for the development of e-assessment.

#### **g Information sharing and collaboration**

As CAA and e-assessment develop, we will seek to learn from the experiences of other awarding bodies and agencies. Whilst commercial sensitivities should be protected, the costs and complexity of e-assessment development means that most other bodies involved in its development are keen to share learning and some are willing to engage in collaborative work.

## **4 Key issues for development of e-assessment**

This section addresses three of the key areas that will need to be addressed as SQA seeks to develop e-assessment to support increasing numbers of its qualifications. These areas are:

- ◆ selection of a suitable technology platform
- ◆ provision of staff development
- ◆ resourcing development of e-assessment

**a E-assessment technology platform**

To deliver large scale e-assessment securely and cost effectively to centres, we will need to secure access to a software delivery platform. We will seek to identify a single delivery platform (for external, high-stakes assessment) that can be used for key e-assessment projects. This platform should also, in time, absorb the e-assessment associated with existing qualifications including PC Passport, the SPA in Building Crafts.

The advantages of a single platform are that it:

- ◆ Offers simpler management and integration with SQA’s other IS systems — in particular those that support certification.
- ◆ Reduces complexity for centres to manage and for centre staff to use.
- ◆ Reduces complexity in quality assurance.
- ◆ Will be available to deliver each new e-assessment as SQA implements its vision over the next 5 – 10 years.
- ◆ Enables skills to be built up by assessment teams (including authors, markers and moderators) on one platform.
- ◆ Allows SQA to establish a strong development relationship with one technology partner.
- ◆ Reduces time and complexity in contracting for SQA.

These advantages need to be weighed against the disadvantages of a single platform. These are principally:

- ◆ The possible technological limitations of the single system selected.
- ◆ The risks associated with working with one technology partner.

Any platform used should be compliant, as far as is practicable, with the emerging technology standards for e-assessment and e-portfolios, and in particular with those being developed under the International Metadata Standard /Question and Test Interoperability (IMS/QTI) framework.

We will take account of, and where possible build on, related national developments. The establishment of the Scottish Schools Digital Network (SSDN) in particular should provide an infrastructure that SQA can benefit from to deliver e-assessment to schools.

Through a collaborative approach to the development of e-assessment, we can also use its roll-out to support and encourage enhancements in the

use of ICT to support teaching, learning and assessment more generally, and in the provision of the equipment necessary to facilitate this. Whilst SQA has no formal role in the provision of this equipment, clear communication of SQA's plans for development of e-assessment can help to inform planning amongst those that do.

## **b Staff development in e-assessment**

Supporting use of e-assessment in centres requires different skills from those required for conventional assessment. Experience to date indicates that training for centre staff is a key factor in determining the rate at which e-assessment is taken up.

It is therefore essential that we make provision for staff development. Staff should also be able to access training in good practice in the creation and use of e-assessment to support teaching and learning.

Training in the development and quality assurance of high-quality e-assessment will also be required for those members of SQA's staff who will support this activity, and for members of SQA's examining teams and moderators.

As with the provision of an appropriate technology platform, staff training to support e-assessment should also benefit from other nationally-led staff development activity in ICT. Training such as the National Grid for Learning (NGfL)'s Masterclass and Heads Together programmes offers a network of teachers who have already experienced some training in the effective use of ICT in schools. These teachers, with additional training, could be well placed to offer support for implementation of e-assessment in their schools.

## **c Developing a business model for e-assessment**

Development of a sustainable business model for e-assessment is one of the key challenges facing SQA in this area. Although there may be potential for cost savings in the longer term, the immediate impact of increasing the scale of e-assessment development will be to require significant additional resources for development and implementation. The key costs will be associated with:

- ◆ Licensing or purchasing and implementing a software delivery system(s) and its integration into SQA's existing systems.
- ◆ Developing e-assessment instruments and associated author training and development.
- ◆ Supporting SQA's wider professional staff (moderators, assessment authors, reviewers) in the use of e-assessment.
- ◆ Training and supporting centre staff in the use of e-assessment.
- ◆ Ensuring centres have appropriate hardware and connectivity.

The investment will require a coherent approach from all stakeholders to ensure that maximum benefit is derived from national ICT investment to date in schools and colleges.

SQA's initial development of e-assessment has been funded by a number of different bodies depending on the nature of the e-assessment and the candidate group it is designed for. This is not sustainable in the long term. A more considered and strategic approach is required to ensure that the benefits of e-assessment are available to learners on a planned basis.

There are a number of possible models for resourcing development of e-assessment. Decisions on which is the most appropriate will be taken after careful consideration and with reference to the wider development of SQA's commercial strategy. The models include:

- ◆ Development funding for specific projects drawn from a range of sources (eg SFEFC for HN, Scottish Executive for e-NABs).
- ◆ Costs of e-assessment built into charges made by SQA for entry for any qualification, regardless of whether e-assessment is available to support it.
- ◆ Costs of e-assessment built into those qualifications for which it is available and charged, whether or not centre chooses to use e-assessment.
- ◆ Specific charges made to centres using e-assessment on a per-candidate fee.

It is likely, in the early stages at least, that more than one of these models will be adopted. For SQA's 'core' qualifications, the most appropriate model may be one that:

- a. Combines specific purpose development funding from other national agencies such as the SFEFC or Scottish Executive with that provided by SQA from a proportion of entry charges and other sources of revenue.
- b. Based on these funding sources provides for a defined amount to be available for development of e-assessment for specific qualifications blocks over a given time period, ideally no less than three years.
- c. Allows SQA to publish a development schedule based on this funding. This schedule would set out a timetable of development of e-assessment to support HN and NQ.
- d. Recognises that the funding available for development of e-assessment grows or declines over time depending on:
  - ◆ the rate at which centres take it up based on the development timetable proposed above.

- ◆ the willingness of national bodies to provide funding for its development based on the contribution of e-assessment to the achievement of national policy goals for education and training, and
- ◆ the level of charges set by SQA and the proportion of these charges allocated to the development of e-assessment.

## 5 Communicating our vision

SQA needs to communicate our vision and strategy for e-assessment to our own staff, stakeholders, the wider public and other interested parties (such as the media).

This communication needs to be developed to ensure that all parties appreciate the main issues and have confidence that they are being effectively managed. These issues are that:

- ◆ E-assessment is about providing learners with fit-for-purpose, flexible assessment that enhances their experience of teaching and learning.
- ◆ E-assessment is not just about multiple choice objective testing, but that it is about using technology to provide assessment opportunities to learners that cannot be provided with pencil and paper.
- ◆ E-assessment will become an increasingly common part of the assessment landscape in future. Whilst a mixed economy of conventional and e-assessment will exist for some considerable time and speed of adoption may differ across different candidate groups, e-assessment is ultimately not an optional resource.
- ◆ E-assessment provides an opportunity to provide learners with a more flexible assessment model but that also has implications for teaching and learning.
- ◆ SQA will proactively manage the risks associated with e-assessment, real or perceived, and will work proactively with its centres and other national bodies to ensure that centres are supported in meeting the challenges presented by e-assessment.
- ◆ E-assessment brings costs and benefits to SQA, centres and learners. In the initial stages of its development, e-assessment is about enhancing the quality of assessment and not about saving money.

SQA will be proactive in communicating the vision and strategy, and four broad strands of activity are proposed to help achieve this. These are that SQA will:

- a. Ensure that all of its staff, through briefings, intranet and other communication channels, are made aware of the vision and understand why SQA is pursuing it.

- c. Ensure that all part-time and field staff (e.g. moderators) are fully briefed and able to act as e-assessment ambassadors for SQA in the centres they visit.
- d. Prepare a short video/DVD showing some of the outcomes of SQA's e-assessment activity to date and setting out its plans, ensuring that the message reflects the key strands of the vision. The DVD will be available for use with stakeholders, centres and others to promote the benefits of e-assessment.
- e. Invite the media to try e-assessment for themselves so as to counteract the negative stories that can easily counter positive communication work.

These strands of activity will form part of a comprehensive communications strategy. This strategy will aim to ensure that the key messages relating to e-assessment for each stakeholder group are identified and appropriately communicated.

The Appendix to this document provides further context for SQA's plans to develop e-assessment and background on its work to date.

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# Appendix: Background

## 1 History of SQA's work in CAA, and SQA's CAA policy

SQA has been developing its CAA expertise over recent years and has had a dedicated CAA team since May 2003. This team manages a range of initiatives, projects, feasibility studies and other activities.

SQA is seeking to bring these developments together around a vision and strategy that has clear coherence for users of its qualifications. A number of existing projects are about to 'shift up a gear' and others are about to start. This raises issues of scalability and sustainability. An increasingly important issue for SQA is how best to communicate with centres and stakeholders its plans for rolling out e-assessment.

The following section provides context for SQA's development of e-assessment from related activity elsewhere in the UK and in Scotland, and from developments in technology and assessment more widely.

## 2 Context

### a E-assessment in the rest of the UK

The development of e-assessment in Scotland needs to be set in the context of related developments elsewhere in the UK. Significant progress has been achieved in the past two years in the use of e-assessment to deliver high stakes examinations. On average, some 5,000 on-screen tests are now being taken each week. Much of this activity has been motivated by the need to deliver more flexibly the tests associated with Basic and Key Skills. All the major Basic and Key Skills awarding bodies now offer on-demand testing or are planning to do so in the immediate future. In addition, City and Guilds has embarked on a major expansion of on-screen testing for its vocational programmes, offering on-demand e-assessment for some 90 modules. There are also plans in place to rapidly increase the use of e-assessment in the next five years.

The Qualifications and Curriculum Authority (QCA) has, by publishing and promoting its 'e-Assessment Blueprint' in April 2004, added impetus to these developments and provided an incentive for further progress. Proposed objectives include:

- ◆ Planned use of e-assessment by all the major awarding bodies for elements of a number of GCSE, 'AS' or 'A' level qualifications.
- ◆ The development of qualifications, 'academic' and 'vocational', specifically designed to use e-assessment.
- ◆ The formation of partnerships between awarding bodies and technology providers to support these developments.

As a result of this work it is likely that within 5 years a significant range of qualifications across the UK will have at least one element being

assessed using e-assessment. Several will probably be awarded totally on the basis of some form of electronic assessment.

Use of e-portfolios is now increasingly common. As a result most of the major vocational awarding bodies have also been working with their centres to establish criteria by which they will allow the use of e-portfolios to capture, verify and ultimately certificate evidence towards qualifications such as NVQs. Work is being undertaken by a number of awarding bodies to develop the use of e-portfolios beyond vocational programmes to other qualifications where coursework is common.

## **b Related developments in Scotland**

In Scotland wider developments in education and training provide important context for SQA's work. The Scottish Executive has just announced the outcomes of a wide ranging review of the 3 – 18 curriculum and of school-based education more generally. In seeking to achieve their aims of helping children to develop their capacities as 'successful learners, confident individuals, effective contributors and responsible citizens' these reviews will result in changes in what is learned, how it is taught and what is assessed. ICT generally and e-assessment specifically can make a significant contribution to these goals. In recognition of this 'Ambitious, Excellent Schools', the document that details the Scottish Executive's plans, includes a commitment to 'work with the SQA to develop the potential of ICT to support assessment.'

This work, and SQA's own review of its qualifications portfolio, will provide opportunities for SQA to review and evaluate its current assessment regimes and to develop new qualifications that are supported by e-assessment in new and different ways.

Another key context is Scottish Enterprise's strategy for developing Scotland as a global centre of excellence for e-learning. SQA could provide a valuable assessment input to this work. Significantly, Scottish Enterprise report that the education and training environment in Scotland is now significantly more receptive to e-learning and e-assessment than was the case two years ago.

## **c. Developments in technology and assessment**

The place of e-assessment in the overall assessment landscape is changing rapidly. At the same time, technology continues to develop at a rapid pace. There is a tension between the traditional long lead-times in developing qualifications and their associated assessment and the ability of these assessments to take advantage of the most up-to-date technology. However, some technology developments can probably be predicted. These will affect the capabilities of hardware and its relative cost, the type of software the new hardware will be able to run and the increased ability of centres and learners themselves to connect into a variety of networks. Likely developments will include:

- ◆ 100% broadband connectivity into learning centres (including schools, FE and other providers).
- ◆ Improved levels of connectivity both in terms of speed and penetration into learners' homes.
- ◆ More mobile devices and smaller devices with greater computing power.
- ◆ Use of video, audio and other multimedia requiring less computing power for a given use.
- ◆ Capture of images and handwriting (eg through tablet PCs) and speech recognition technology rendering keyboard use less significant and allowing the more difficult inputs to be captured (eg mathematical equations).

Assessment practice will also continue to evolve so that it offers some or all of the following:

- ◆ Greater flexibility in when and where assessment takes place.
- ◆ Less use of 'one time', 'one place' assessments.
- ◆ Assessment more closely and seamlessly linked to learning.
- ◆ Increased blurring of the distinction between formative and summative assessment.
- ◆ Greater use of diagnostic assessment to establish learning needs and priorities.
- ◆ Greater use of personalised learning programmes requiring personalised assessment.
- ◆ Greater use of personal e-portfolios to capture appropriate evidence of achievement from a wide range of settings.
- ◆ Use of adaptive assessment in which the level of demand adjusts automatically based on the learners' responses.
- ◆ Use of technology to capture more information about learners' actions during assessment, for example capturing time taken for specific tasks, keyboard strokes and steps taken to reach final outcome.
- ◆ Immediate results following an assessment.
- ◆ Information-rich feedback to both the learner and the teacher.

The pace at which these developments take place will vary. Their effect will be to challenge SQA's existing model of end-of-unit/course fixed point assessment. There is likely to be an increasing move towards other models where assessment is increasingly integrated into teaching and learning and where assessment evidence emerges as a natural by-product of the teaching and learning process. E-assessment can play a significant part in enabling some of these developments although they will not necessarily require the use of e-assessment.

In the medium term (by around 5 years time), awarding bodies will need to consider the impact of personalised learning on the assessment system and the associated use of personal e-portfolios. By this time a blended learning and assessment model could allow learners to work through an agreed programme, undertaking assessment at appropriate points. These assessments could provide the learner with both feedback and, if they are successful, a recognised certificated, outcome.

At this point an awarding body would be playing an integrated part in the learning and assessment process. Whilst it might also wish to provide a summative assessment at the end of the process, the main assessment activity is an integral part of a seamless learning process for the learner. The assessment 'module' could be internally or externally marked and could consist of a high stakes assessment delivered by an awarding body through its e-assessment system or of evidence collected by the learner to be placed in their e portfolio. The choice would depend on the fitness for purpose.

Developments after five years are more difficult to predict. However, ever greater flexibility and learner responsibility for progression mean that awarding bodies will need to ensure that they continue to use innovative e-assessment to explore more sophisticated assessment designs as they become available, cost effective and sought by candidates and centres.

Against this background, the major ongoing challenge for SQA is to create models of assessment that are flexible, capable of being adapted to meet changes in technology and assessment needs, cost effective and that offer a 'fit for purpose' assessment regime.

The following section provides a brief summary of SQA's e-assessment work to date and sets out proposals for a vision around which it can plan and build support for future e-assessment activity.

### **3 SQA's e-assessment work to date**

SQA's current e-assessment developments to date fall into two broad categories:

- a Projects where the use of e-assessment has been incorporated with a view to providing centres with a continuing service and where, over time, the number of centres offering e-assessment is expected to increase. Examples include the Scottish Progression Award (SPA) in Building Crafts and PC Passport, both of which have been designed to be supported by e-assessment.
- b Projects where the use of e-assessment has been developed on a 'proof of concept' basis. These include the Pass-IT and Intermediate 1 Computing projects, both of which have successfully piloted the use of e-assessment for unit assessment of National Qualifications.

SQA has also been involved in CAA-related projects led and co-ordinated by other agencies in Scotland. These include the development of the 5 – 14 Assessment Bank and the COLEG On-line Assessment (COLA) project in which formative on-line assessments have been developed to support delivery of HNC/D units. Such projects have offered significant learning to SQA's CAA team.

In parallel with these developments, SQA has been exploring the use of e-portfolios to support delivery of its qualifications. This has involved research into the effective use of e-portfolios and the range of products currently available, and piloting a small number of selected e-portfolios with some centres.

Each of these projects has, to a large extent, been developed and undertaken independently of one another. This is for two main reasons:

- ◆ Funding has been available from a range of sources on a project-by-project basis.
- ◆ The aims and objectives of each project have been different and, in some cases, they have been based around different qualifications and therefore candidate groups and types of centre.

SQA's next set of planned e-assessment projects will generate products that are intended for large scale adoption by its centres and will require use of increasingly sophisticated assessment technologies. It is therefore important that they are, and are seen by stakeholders to be, steps towards a longer term vision for assessment and in particular for use of e-assessment to support SQA's qualifications.

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