SOLAR

Innovating Assessment in Scotland

SOLAR White Paper
May 2008

SQA

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Europe and Scotland
Making it **work together**

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Introduction

The Scottish Online Assessment Resources (Solar)[1] project is being led by the Scottish Qualifications Authority (SQA)[2] with funding from the Scottish Funding Council (SFC)[3], the European Social Fund (ESF), and the HN Modernisation project[4].

The Solar Project developed from SFC's e-Learning Strategy and SQA's *Vision and Strategy for e-Assessment*[5]. These strategies sought to highlight the benefits of increased use of computer-assisted assessment and e-assessment, and set out some of the ways in which we planned to increase their use.

The objective of the Solar Project, begun in late 2004, was to develop online summative assessments for Units within Higher National (HN) qualifications and to provide continuing professional development (CPD) in the production and use of these assessments to participating subject specialists from colleges. The project is distinctive in that it has been undertaken in collaboration with Scotland's colleges from its outset.

Higher National qualifications provide the practical skills and theoretical knowledge needed for training towards employment at middle management and technician level. Delivered mainly in colleges, HNs are vocational qualifications available in a range of sectoral areas. They also provide a well-respected route to degree qualifications at Scotland's universities.

(The HN Modernisation project was launched in 2003 and began by reviewing the HN design principles. The main objective of the HN Modernisation project was to ensure that HN qualifications are fit for purpose, relevant for today's skills, contribute to economic development and growth, and have mechanisms to ensure that they are future-proofed.)

The Solar Project is ground breaking, not only for SQA, but for the further education sector in Scotland, and we expect that Solar will pave the way for significantly increased use of online assessment to support delivery of HNs in Scotland's colleges in the long term.

More generally, we believe that the project has the potential to transform the nature and type of assessment being delivered in Scotland. Therefore, an important aspect of the project is to help inform the production of a sustainable model for the development, delivery, and maintenance of e-assessment in the future. Solar is, then, an innovative product with, potentially, a wider application than solely HN qualifications.

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[1] http://www.sqasolar.org/
[2] http://www.sqa.org.uk
[3] http://www.sfc.ac.uk/
[4] For further information, see —
http://www.sqa.org.uk/sqa/controller?p_service=Content.show&p_applic=CCC&pContentID=13946
[5] http://www.sqa.org.uk/sqa/24890.html

Methodology and development model

Developing assessments

At the beginning of the project, subject specialist lecturers and verifiers from the FE sector were drawn together into small development teams for selected curriculum areas. They were then trained by SQA in the authoring, peer review, and verification of e-assessments — this included how to interpret Unit specifications to help in the identification of sections which may be suitable for e-assessments of the type being delivered under the project. Teams were also trained in the use of the authoring system itself.

The expected activity to be undertaken by members of the writing teams was mapped against two of SQA's suites of e-learning qualifications (*Diploma in e-Assessment* and *Diploma in e-Learning Production*) with the aim of ensuring that participants are able to gain as much credit as possible through their involvement in this project.

After training, the authors and verifiers worked in subject teams, each responsible for developing and quality assuring questions and assessments that were fit for purpose in their own particular curriculum areas.

The main output of the Solar Project at the time of writing has been the development of more than 800 e-assessments across a range of HN awards. Assessments have been piloted in Scotland's colleges, and a series of training programmes has been delivered to support colleges with administration, scheduling, and reporting.

Delivery in colleges

Colleges received training in the use of the administration system to support the delivery of the assessments from the project. Although SQA has provided advice and support to colleges on appropriate procedures to be used within centres, individual colleges are able to produce their own procedures on the scheduling and delivery of assessments.

Scotland's colleges have devolved responsibility to develop and maintain their own quality assurance procedures and therefore the responsibility for a centre in delivering these assessments is no different than if they were delivering a traditional, paper-based assessment. Both are subject to the college's own quality assurance procedures, which, in turn, have been approved by the education inspectorate, HMIE.

Evolution of a sustainable model

The development model being used has evolved since the beginning of the project — individual items, rather than whole assessments, are now produced and added to an item bank. This not only speeds up the peer review and verification stages, but also provides the opportunity for the questions to be used for formative and diagnostic purposes.

It was identified early on that using e-assessment could provide an opportunity to facilitate a change in assessment practice within teaching and learning in Scotland's colleges. It was recognised that using technology-based assessment approaches to provide more flexible assessment delivery — in partnership with automatic marking — could enable significant change to take place. The concepts of 'assessment on demand' and 'assessment when ready' could come closer to being a reality. The project has also increased its focus on demonstrating and evaluating the impact of these e-assessments to ensure that value for money has been delivered.

Activity is now moving from being mainly assessment-development focused to include areas identified as being crucial to informing future direction:

♦ Supporting centres in delivering the assessments, with an emphasis on evaluation of staff and student experiences.

♦ Working closely with other e-learning and e-assessment projects to engage in dissemination, evaluation, training, and promotion, while at the same time providing a co-ordinated approach to supporting the blended learning agenda.

♦ Making the case for continued development of e-assessment on the grounds of sound pedagogy, while evaluating its ability to provide a reliable and robust method of assessment of knowledge and skills at different learning levels.

♦ Continued development of e-assessment across new subject areas. The approach taken will continue to reflect the evaluation and feedback from existing development teams.

Although the project is currently limited to a selected range of curriculum areas, it has the potential to make a significant impact in SQA and beyond.

Benefits and drivers

Supporting effective learning

We believe that e-assessment of the type delivered by the project can support effective learning and, therefore, help contribute to agendas important to Scotland's colleges, such as improved learner attainment and student retention.

As stated in SQA's *Vision and Strategy for e-Assessment*, we also believe that, increasingly, assessment will be part of an integrated process of teaching and learning with the distinction between learning and assessment becoming blurred. Already, e-assessment is playing an increasingly important role in supporting delivery of qualifications — Solar offers a more flexible and personalised model of assessment than has previously been available.

SQA's vision is that, increasingly, learners will expect personalised assessment opportunities: being able to undertake assessment at a time and place of their choosing when they are ready to be assessed.

Involvement of the FE sector

Another important aspect of the project has been the involvement of the FE sector itself. College colleagues have been responsible for the authoring, peer review, and verification of assessments; and, in many of the subjects, have been responsible for choosing suitable topic areas for e-assessment.

From the beginning, the FE sector has been involved in the project at a strategic level both as members of the initial Project Steering Group and the current Solar Project Reference Group. These groups have brought together representatives of Scotland's colleges and support agencies to help ensure that the Solar outputs are in line with sector priorities and help support existing work and developments. The Steering Group was chaired by Peter Malcolm, Depute Principal of Jewel and Esk Valley College, and the Reference Group is currently chaired by Iain Lowson, HMIE, with particular responsibility for advising on the use of ICT. Partnership working has been, and will continue to be, a key factor in the success of Solar.

Two evaluations of Solar have taken place so far, and the feedback from these has been instrumental in shaping the current and future direction. The iterative process used in the development of items will increase and feedback garnered from users, including learners, will influence the revision and update of question items. A shift in focus from 'evaluation of the process' to 'evaluation of the impact on learners and their experience of learning' will mean that Solar continues to respond to the needs of users.

Barriers and challenges

Although presenting opportunities, Solar has, of course, brought certain challenges. The evaluations of the project found that many of the participants in the project came with preconceptions about the place and benefit of e-assessment and objective testing within their subject area. These preconceptions centred on: the suitability of the subject; the college culture; the nature of students undertaking the qualification; and the limitations of the way in which curriculum and assessment arrangements are defined.

However, in many cases participants' experiences and involvement in Solar have given them the opportunity to challenge these long-held beliefs. While e-assessment lends itself more easily to some subject areas than others, the authors and verifiers involved appreciated being able to explore issues they may not otherwise have been able to. Indeed, while Solar is currently focused on the creation of items, a key achievement has been enabling colleagues to work together in a way that they would not normally.

In some areas, however, even when teams identified areas where e-assessment would have advantages for the subject, learners, and lecturers, they were held back by a combination of curriculum design, college culture, and the authoring technology.

Curriculum design

HN Unit specifications set out the requirements of the Unit. They recommend, for example, the context for delivery, methods of assessment, and specify evidence requirements. The specifications, however, can have limitations and, therefore, can be restrictive — if the methods of assessment set out are too prescriptive, it can be difficult to create alternative forms of assessment, including e-assessment.

However, this issue is beginning to be explored with assessments being designed based on themes rather than on individual Units. With the new Solar development model, it is possible that assessments will be designed based on topics running across different Units allowing a more holistic approach to assessment to be taken.

College culture

Colleges are autonomous institutions with their own internal policies and processes. They have different approaches to assessment, different cultures, and different rates of development in their e-learning and e-assessment strategies. Consequently, issues of readiness, capacity, and staff training are more prevalent in some colleges than in others.

The Solar Reference Group is working with three of Scotland's colleges in developing case studies on their experiences of implementing e-learning and

e-assessment in their institutions. The case studies will set out the experiences and lessons learned in order to benefit practitioners in Scotland's colleges in future developments. It is hoped that Solar can exemplify how e-assessment and e-learning can be part of a wider learning strategy and wider college vision of teaching and learning, rather than something separate or stand-alone.

We recognise that a culture change is required — both for learners and colleges — and believe that the work of Solar can help to enhance and embed e-activity across Scotland's colleges.

Authoring and delivering technology

While the available technology placed certain limitations on development, it also helped drive the approach and the evolving model.

The evaluations of Solar highlighted issues with training, hardware, and software. As these evaluations were formative, the comments were fed back to improve the process.

It seemed that without prior knowledge of graphic software packages, some authors had problems getting to grips with the authoring software, CP3. However, as already mentioned, this may be more to do with the suitability of the subject area for objective testing and the skill sets of authors rather than the limitations of CP3.

In terms of hardware, many of the participants mentioned in the evaluations that the project had made assumptions regarding the technology available to authors. They thought that a list of minimum hardware, software, and connection requirements should be made available to those involved in developing assessments before they begin.

The second evaluation of Solar found that the level of communication and support from BTL, the software provider, was good and had continued to improve throughout the project development.

Future steps

Solar will continue to develop items for use in Higher National qualifications, and SQA will continue to promote the use of the item bank for all types of assessment — both formative and summative. We believe that there are significant benefits in this model for practitioners — while the resources are developed by lecturers, they are a national resource validated by SQA. Solar is a model that is both sustainable and transferable to other types of qualification and assessment.

SQA is committed to working in partnership with other agencies to realise the benefits of e-assessment. While, to date, Solar has been about supporting HN delivery, we are actively exploring how we can build on the work to develop similar resources to support learners taking other SQA qualifications.

Wider applications

SQA believes that e-assessment and e-learning offer a number of significant benefits, including:

♦ enhanced flexibility in delivery, helping to contribute to further personalisation of learning and assessment
♦ improved engagement and motivation, especially for those who are disengaged with conventional approaches
♦ greater cost-effectiveness of process for SQA and schools and colleges
♦ enhanced quality assurance of assessment and higher quality feedback on the results of assessment
♦ improved access, in particular for those learners who have difficulty accessing our conventional assessments

These benefits mean that the Solar model we have developed will be able to link with and contribute to initiatives and policies such as:

♦ Curriculum for Excellence[6]
♦ The Scottish Government's skills strategy, Skills for Scotland[7]
♦ More Choices, More Chances[8]
♦ Efficient Government[9]

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[6] http://www.curriculumforexcellencescotland.gov.uk/
Curriculum for Excellence calls for more engaging and personalised support and approaches to learning, through a flexible curriculum that provides opportunities for learners to self-reflect and -motivate.
[7] http://www.scotland.gov.uk/Publications/2007/09/06091114/0
In SQA's response to the skills strategy, we remarked that we would 'do more to promote flexible delivery and the use of online and other forms of flexible assessment.'
[8] http://www.scotland.gov.uk/Publications/2006/06/13100205/0
The Government's strategy to tackle those 16-19 year olds who are not in education, employment, or training.

Possible future models

Moving into the future, qualifications and assessment will continue to develop. Work stemming from *Curriculum for Excellence* and *Skills for Scotland*, for example, will mean changes — and challenges — to SQA's portfolio and processes.

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

In implementing our vision for e-assessment, we need to take 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 they can expand to meet increasing demand for e-assessment

♦ Future proofing — within the limitations of predicting future technological developments

We also need to take account of the way that assessment may develop and evolve in the future, as e-activity and e-learning become embedded in everyday life. A recent SQA paper, *Assessment 2.0: Assessment in the age of Web 2.0*[10]*,* explores the impact of the internet on today's learners, and considers ways of modernising assessment to narrow the gap between learners' everyday lives and the assessment practices we impose. Further personalisation may, for example, create a role for user-generated content in assessments. We believe that the Solar project model will be able to respond to such changes.

Solar will continue to have a growing effect on the nature of qualifications and how they are assessed — and will continue to promote exciting opportunities for colleges to use e-assessments that impact positively on the learning experience of Scotland's learners.

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[9] http://www.scotland.gov.uk/News/Releases/2004/06/5713
[10] http://www.sqa.org.uk/sqa/22941.html