Use of eA in Controlled Assessment

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Executive summary

The principal aim of this research was to understand the issues around using e Assessment (eA) in Controlled Assessment (CA)in the United Kingdom. We have used Action Based Research (ABR) methodology to identify any potential benefits to this assessment method with regard to lessening the perceived assessment burden for centres and learners in England, Wales and Northern Ireland.

Initial enquiry shows that awarding organisations (AOs) are further developing the use of eA in general qualifications assessment and, more specifically, CA, with numbers of GCE/GCSEs using eA rising from seven in 2009 to 34 in 2011, in addition to a larger numbers using e-marking and e-moderation as part of the assessment process. The development of eA in general qualifications continues to be a feature of assessment development for awarding organisations.

Online questionnaires were used to gather opinion on a list of issues identified by the project group. Responses record positive opinions for centre capacity, teacher readiness and AO commitment to development work in this field, but learner responses were too limited to report on. To address the problem of limited feedback to online questionnaires we have made a recommendation that further work is needed to investigate how eA for CA is affecting learners.

Issues identified in earlier stages of eA development by QCDA (Qualifications and Curriculum Development Authority) research, and in consultations with AOs during the development of *Regulatory Principals of eA* (2007) and *eA - Guide to Effective Practice* (2007), tend to focus on lack of confidence for practitioners, readiness for centres and AOs, development costs and comparability. Findings for this research are limited by the lower number of responses than hoped for, but show a more advanced state of readiness for AOs, and keenness to use eA and recommend its use to practitioners. Availability of ICT resources is less of an issue and AOs are starting to realise cost benefits for the development and delivery of the assessment.

Practitioners and AO opinion shows that eA can provide opportunities for lessening any potential burden for undertaking eA in CA, by dealing with both scheduling assessment sessions and absenteeism, and by providing opportunities to get learners more engaged with the assessment process. It has been noted that many of the benefits are for the learner, but also for assessment of applied knowledge and skills that might not normally be available through traditional assessment methods.

Rather than coming to final conclusions, this report makes further recommendations for taking forward research into the use of eA in general qualifications, including: an investigation of centre readiness for the use of eA; a longitudinal look at the use of eA in CA/general qualifications; an appropriate comparability study for the use of eA as an alternative to traditional methods; and a supplementary study of learner opinion to annex this research report.

Introduction

EAssessment is currently on the agenda within awarding organisations (AOs). The qualifications regulators have responded by ensuring that their requirements are not hampering innovation while, at the same time, ensuring the integrity of the qualifications system. It is important that dialogue is maintained between AOs and the regulators. This research paper looks at the current use of eA methods and, in particular, their uses for the support of CA. Invitations were made to the regulators in Northern Ireland, England, Scotland and Wales and the JCQ awarding organisations. A research panel led by CCEA Regulation was convened consisting of active participants and observers for the research[1].

Background

The regulators want to promote flexibility and innovation in qualifications development, particularly through the use of eA.There is a need for assessment design to take account of issues relating to access, validity, reliability and comparability. In addition, consideration needs to be given to familiarity with computers, standardisation of marking, and matching the nature of the assessment with learning approaches.

CA – the completion of internal assessments under supervised conditions – has replaced coursework in GCSE qualifications. The main reason for the introduction of CA is to help ensure that work submitted by learners for assessment is genuinely their own. CA regulations set controls on the processes of task setting, task taking and task marking. The current assessment methods used within CA depend mainly on the production of paper-based reports using traditional planning and drafting methods. eA could provide opportunities to develop CA methods to better engage the learner and provide a more effective framework for assessment.Research in this area[2]suggests that, although there is broad support for CA, its implementation has not been without difficulty. The introduction of eA methods could assist with some of these difficulties, provided that resources are adequate (strains on schools' ICT resources is one of the logistical issues raised by stakeholders).

The early stages of the development of eA in general qualifications involved the use of computer-based assessment for testing and compiling coursework evidence in a small number of subjects, and parallel schemes to investigate the usefulness and practicality of theory/exam assessment directly on a computer. In the main, these initiatives have moved past the pilot stage and many have been fully implemented. The concept of using ICT to assess candidates' performance has been widely accepted as a natural step forward but the actual development of this type of assessment has been slower for general qualifications than vocational qualifications. However, it is reported that candidates using eA would be more likely to show innovation and initiative, and eA will also permit realistic standardising of results[3].

Hardware and software advances in recent years allow a broad range of assessment methods which now go beyond short answer/factual answering of questions, lending the use of eA to CA in GCSE. It is timely to look at the use of eA in CA, with the

[1]Panel: AQA, CCEA, CCEA Regulation, Ofqual, Welsh Government and WJEC as active participants; Edexcel and SQA with observer status.
[2]*Evaluation of the Introduction of Controlled Assessment,* commissioned by the qualifications regulators, Ipsos MORI, October 2011
[3]*QCDA: Technology Enabled Assessment; desk research into the use of eA within qualifications,* prepared by Jon Batterham, Edcoms 2009.

introduction of CA into most GCSE subjects from September 2009. Centres and learners have expressed some appreciation of the use of eA for GCSE and other courses, as recorded in the QCDA report on Technology Enabled Assessment previously discussed. Here we reproduce some quotes taken from the CCEA evaluation for GCE Moving Image Arts use of on screen tests (OST) and ePortfolios:

Teacher quotes:

- *'we really like it – it makes it really easy for teachers, technicians and exam officers'*
- *'a very robust exam, which wouldn't be possible through other formats'*
- *'Students really get involved to give better answers, allowing them to re-script and get across the right message'*
- *'Students respond really well; it's very natural experience for them, with full control of the media'*

Student quotes:

- *'you can control it yourself … it's easy to use and works really well'*
- *'You can re-arrange your answer, control the clips and it's less stressful than an assembly hall exam'*

It is significant that all general qualifications AOs are actively increasing the proportion of their GCSE/GCE specifications using forms of electronic assessment and e-processing of assessment. This active increase is taking place whether in pilot or for operational specifications. More specifically, AOs are developing eA to be used in CA for GCSEs.

An evaluation of the introduction of CA[4] found that teachers were largely supportive of the idea of CA, in that it guards against malpractice, provides a fair assessment of pupil performance and assesses a broad range of skills. Although generally positive about the introduction of CA, teachers recorded logistical drawbacks, including: scheduling assessments, strains on ICT resources and the impact of teaching and learning time.

[4] *Evaluation of the Introduction of Controlled Assessment*, Ipsos Mori October 2011

Scoping the conditions for use of eAssessment in Controlled Assessment

AOs are taking forward innovative developments in the area of eA in general and, more specifically, are looking in detail at the use of eA in CA.AOs and regulators working together can bring clear benefits to assessment for some specifications, where teachers are responding positively to the validity and authenticity of the approach for process driven assessments[5].

There are some emerging themes arising from the implementation of CA:

The assessment burden
Concerns have been expressed regarding the potential for burden on candidates and centres because of the common assessment windows used with internal assessment. Use of eA may provide scheduling and delivery method opportunities, through common assessment environments and virtual field work.

The assessment environment
Capacity for the use of IT resources in centres varies with regard to hardware, levels of IT expertise and support. The availability of software can also cause issues for the implementation of eA. Further guidance on the requirements and design of eA conditions could be helpful.

Preparation/readiness of candidates and centres for the use of e-assessment
AOs have been active in piloting eA activities for CA in a variety of ways, but concerns have been expressed regarding the scaling up of pilot work. Furthermore, pilot work tends to be concentrated on subjects which lend themselves to eA, such as Engineering and Moving Image Arts, and in qualifications with a smaller cohort of candidates.

[5]Edexcel e-Scape system

Current use of eA in GCSE CA - Baseline

A look at the use of eA in general qualifications gives an indication of the current practices being developed by AOs. This is a baseline pointer as to what is being developed in GCSE CA, and provides a view to begin action-based research into the use of eA in GCSE CA more specifically.

Baseline analysis was taken from information provided to CCEA Accreditation by AQA, CCEA, OCR and WJEC, recording current general qualifications using various forms of eA and showing each qualification's candidature, pilot or operation status, proportion of eA used and year of introduction. This information was collected during the summer term for qualifications provision during 2010/11.

The data returned by AOs actively participating in the CCEA Accreditation research project was combined and subsequently analysed using Statistical Packages for Social Sciences SPSS.17.0. Descriptive statistical analyses were used to summarise the data, which are presented in graphical and tabular formats. Analyses distinguished each type of eA considered (i.e. Computer-Based Tests, Controlled Assessment and Online Marking), in order to highlight any differences between the three. The type of qualification (i.e. Functional Skills, GCSE or GCE) is also reported upon.

Findings from previous work by QCDA, the regulators, AOs and others have been supportive of the development of eA in general qualifications, but recognise that there are challenges to its wider use. Some of these challenges include resourcing the development at AO level and resourcing the provision of eA in centres, along with technical, practical and staffing issues. The introduction of CA in GCSEs has brought new challenges for the administration, setting and taking of assessments.

The use of eA in CA has been recorded for 34GCE/GCSE qualifications, which include a range of subjects for all four AOs identified above (see Appendix 1,Table 1). Most of these qualifications are operational, including Modern Foreign Languages, Science, Business, and ICT. This provided a good operational basis for investigation into the issues of using eA in CA as well as providing a positive indicator that AOs are moving towards the use of eA in this way. Greater use of eA for computer-based tests and the administration/marking of GCSEs is recorded, which shows the overall direction of travel for qualification assessment development, highlighting CA as a relatively new feature.

Large cohorts of learners are taking some of the qualifications using eA in CA, although some of these candidates may have taken a pen and paper version as an option rather than eA. Smaller candidatures are recorded for other subjects and qualifications with pilot status. These candidates are taking qualifications with up to 100% use of eA including CA, with a mean of 38% for all GCSE qualifications; a significant component of the total assessment for GCSE qualifications.

A look at the use of eA for all general qualifications shows extensive use of e-testing, e-portfolio and e-marking/administration. Changes in the recorded use of e-testing and e-portfolio in the last three years show a jump from seven qualifications to thirty-four, with a large number of qualifications using e-marking as a first step into the area of e-assessment.

Action-based research

Research Approach

The project was underpinned by a collaborative approach between AOs and qualifications regulators on a project panel administrated by CCEA Accreditation. The research was carried out during the assessment windows for the academic year 2011/12.CCEA Accreditation administrated the reporting of the outcomes of the project in conjunction with the other qualifications regulators.

An action-based research (ABR) program to investigate the issues of using eA in CA for General Qualifications was designed. AOs participating in the project took forward the operational work for the testing of the use of eA in CA for General Qualifications, and contributed to the ABR project, by gathering;

- emerging issues for investigation;
- centre experiences; and
- learner experiences.

Online questionnaires were developed by the panel for AOs, centres and pupils. Questionnaires were available on the CCEA website in English and Welsh. These were available online from 1st April to 31st May 2012 and AOs contacted centres to encourage their participation.

Issues investigated

During the ABR phase a number of issues were investigated where they naturally occur in the qualifications/pilots being offered by the AOs involved. The list of issues identified by the panel is listed below:

- resourcing eA and hardware/software requirements for centres;
- security of data transmitted and data protection (including storage at the assessment centre);
- absenteeism from CA sessions;
- access to assessment for disabled learners;
- platforms used;
- assessment arrangements and how technology is (or could be) used;
- variety of subject contexts;
- marking and moderation procedures;
- issues for learners in taking CA;
- eA issues currently being raised by centres and by AOs;
- current e-marking and e-moderation;
- contingency plans needed, for example in the event of local systems failures or disaster recovery;
- candidates' familiarity with hardware and software used;
- confidence in eAssessment methods;
- reliability of platforms and networks;
- tutors' attitude to the use of new technology, and their influence on candidates;
- integrity of data sent to and received from centres;
- securities within the examination setting – e.g. will candidates find it easier to see each others' work;

- the availability of assessments in Welsh and Gaeilge, for both the assessment environment and the language of assessment;
- the cost or Return on Investment for development of e-Assessment.

Questionnaire development

A series of online questionnaires (see Appendix II) were developed to investigate the issues of using eA in CA in a range of qualifications. The research group was particularly interested in practitioners' and learners' views on the processes and experiences of using electronic assessments in CA.

Although the original intent was to focus on the use of eA in CA in GCSEs alone, this was broadened to include GCE 'CA' and for a broader use of the term in Functional Skills. Participating AOs were asked to identify two subjects that use eA in CA to participate in the research. The following specifications were chosen, which provided a good spread in terms of qualification type and subject area:

- AQA GCSE Science
- AQA GCSE ICT (Functional Skills)
- CCEA GCSE French
- CCEA GCSE Moving Image Arts
- WJEC GCE Applied Business
- WJEC GCE Applied ICT

As part of this research, a variety of participants within AOs and centres (including teachers and learners) had the opportunity to comment on their experiences of eA in CA.

Responses

The response rate for the online questionnaires was low, particularly for learners;11 responses were received from AOs, 54 from teachers and 37 from learners. In addition to the low response rate impacting the value of the data received, a subset of the responses were centred on the use of computer-based testing for CA for Functional Skills and not for CA per se, therefore results must be treated with caution. Learner responses have not been reported on here as feedback was limited; rather, a recommendation is made that further work is needed to investigate issues affecting learners.

The Results section gives a summary of all the feedback received from respondents who completed the online questionnaires. Some individual comments have been reported to ensure that the research findings are useful for assisting developments in the area of using eA in CA.

Results

Awarding Organisation Results

In total, questionnaires were completed by 11 individuals from the three AOs, representing Director/Senior Managers, ICT Managers, eA Manager and Programme Managers. Respondents based their answers on AQA GCSE Science, both WJEC GCE Applied Business and GCE Applied ICT, AQA Functional Skills, both CCEA GCSE French and GCSE Moving Image Arts.

Eight out of 11 respondents across all participating AOs felt it was easy for their organisation to provide eA to centres. Three respondents felt it was not easy. Comments focused on the investment needed to provide eA, and the variability of IT infrastructure and support:

- *"A substantial investment of time and money has been necessary to bring us to the point where eA is a credible product offering for us."*
- *"Considerable amount of investment in infrastructure and process."*
- *"There are issues with the variability of IT infrastructure and support within schools and colleges which makes it difficult to support them with the installation and management of … software."*

Seven respondents indicated that they encountered technical difficulties preparing for eA, others did not. Some comments included:

- *"Providing an eA system that was acceptable to users. We believe we have now largely cracked this (though there is always room for improvement)."*
- *"Installation onto different server set ups in different schools and colleges was a challenge and the use of proxy servers and the inability of schools to set up the server in the way needed with regard to ports have all caused problems."*
- *"We have had significant technical support issues with our chosen supplier."*

Six respondents indicated that they encountered technical difficulties during the administration of eA in controlled assessment; four respondents did not. Comments from those who encountered technical difficulties included:

- *"A small proportion of centres had technical issues accessing our tests. Most of these were traced to local issues, for example with centres' firewalls and other infrastructure issues."*
- *"Ironing out process issues with this new method. The process has now been improved and should be easier to administrate."*

Six respondents indicated that they did not encounter any technical difficulties after the CA had taken place. However, five respondents reported encountering difficulties. One respondent commented:

- *"Gathering material required a considerable investment in infrastructure. However the system is now in place and future operations should be easier and less expensive."*

Five respondents did not feel eA is comparable to paper-based assessments. Four respondents felt that it was and one was unsure. Individual comments included:

- *"A much larger investment in infrastructure is required, both in centres and in the AO."*
- *"It doesn't need to be comparable in these circumstances." (taking a qualification that was designed to be assessed electronically)*
- *"Qualification written as paperless from start. Paper and onscreen are different - it does not matter in our case as we are not offering an either or scenario i.e. they are obliged to complete on screen. For ICT and Business qualifications, the offering of tasks electronically is not seen as something we should avoid."*
- *"The performance data from the small number of tests currently support the fact that there is little difference between performance on-screen against that on paper though the entries are too small to be certain and we are continuing to monitor this. If it is shown that differences do occur then the awarding process will take that into account as we have the ability to set different grade boundaries. Anecdotal evidence is that candidates do actually engage better with on-screen rather than paper based and that it is a better motivator for them."*

Six out of 11 respondents across all participating AOs considered that teachers were confident in supporting candidates using the eA software. Two respondents considered that teachers were not confident. Individual comments included:

- *"Most are - but there still remain some who find it difficult."*
- *"Some are very good but in many cases the students know more than the teachers and actually have few problems with the software."*

Five respondents indicated that their organisation does not train teachers in the use of eA in CA, whilst four respondents indicated that they do. Individual comments included:

- *"Genuinely not needed. We are looking to provide a system which will deliver and collect tasks/resources - this may require some support (probably an online tutorial) but at present nothing needed."*
- *"No, but provides extensive reference material. Our system is designed to be easy to operate."*
- *"There are guides and other documentation as well as an on-screen tutorial but no F2F training."*
- *"There is no need for training on using this method. It is more of a "This is how it's done" information guide provided."*

Respondents were asked what systems are in place to ensure the successful transition of assessment evidence between centres and AOs. The following comments were provided:

- *"A marks collection engine and portfolio system were constructed from scratch."*
- *"All done automatically through integrated web services with the system being linked to our Entries and processing systems so we reconcile data at all stages."*
- *"Assessments are either submitted online or if printed they are returned like any other script via Parcelforce."*
- *"This is the current weak point of the system as CDs are sent to Moderators. This will change shortly and will be linked to our e-portfolio system."*

Five respondents across the three AOs indicated they had not saved money by using eA. Three respondents from two AOs indicated that they had saved costs. Comments included:

- Expected costs savings will happen but not at the present time. (3 Comments)
- "*Developer costs outweigh savings*." (1 Comment)

Five respondents from two AOs aim to replace paper based assessments with eA, three respondents indicated that they do not have plans to do so, whilst the remaining respondent was unsure. Comments included:

- E-assessments are not appropriate for all subjects. (2 Comments)
- Schools are not ready for e-assessments at present. (1 Comment)
- Will continue to pilot in schools with different subjects. (1 Comment)

Respondents were asked to detail the advantages of eA for their organisation. The following comments were provided:

- The advantages are more for the learner. (2 Comments)
- Assessing candidates' functional work e.g. bespoke spreadsheets rather than a description of the work. (2 Comments)
- Quicker, more secure processing of papers. (2 Comment)
- Reduced administration burden. (1 Comment)

Respondents were asked to detail the disadvantages of eA for their organisation. The following comments were provided:

- Running paper and eA parallel – "*duplication of effort*". (2 Comments)
- Infrastructure and development costs. (2 Comments)
- Additional technical support required for schools and colleges. (1 Comment)

Eight respondents across all AOs indicated they view eA in CA as successful. One respondent did not find it successful. Individual comments included:

- *"The ability to provide complex stimuli with functional responses has been ideal. … this is an invaluable tool that provides genuine assessment of certain skills, knowledge and understanding. It is far more desirable than descriptive responses."*
- *"…the future for on-screen in general and for CA on-screen specifically is the way to go. We just need to be imaginative, think outside the box, be persistent and get support from regulators and government to get the schools on board"*

Teacher Results

In total, questionnaires were completed by 54 teachers. Of these, 25 respondents based their answers on AQA ICT Functional Skills. However, as these e-assessments were not taken under CA conditions for this qualification, the results have been reported separately. The main teacher results are therefore based on the other 27 responses, with a slight variation in the number of responses to each question.

The majority of respondents classified themselves as Teacher (n=38). The remaining respondents classified themselves as Exams Officer (n=8), Head of Department (n=3) and Principal / Head teacher (n=2).

Of the 45 respondents who commented, the majority were from secondary schools (n=18) and Academies (n=12). Of the remaining respondents seven were Grammar; six were comprehensive; three FE and three 6th Form colleges.

The table below indicates which specifications respondents were basing their answers on.

AQA ICT Functional Skills	25
WJEC GCE Applied ICT	9
CCEA GCSE French	8
WJEC GCE Applied Business	5
CCEA GCSE Moving Image Arts	4
AQA GCSE Science	1

Responses from CA Subjects

Of the 27 respondents, 16 indicated that it was easy for their centre to use eA for this CA. Eight respondents felt it was not easy. Comments included:

- All files were available in good time prior to the examination. (3 Comments)
- Time consuming for downloading / converting files etc. (3 Comments)
- Everything went according to plan. (1 Comment)

Of the 27 that responded, 20 indicated that they had sufficient computers for candidates to undertake their eA at the appropriate time, though there were pressures on resources. Comments included:

- Larger cohort meant that other ICT classes were deprived at this time. (3 Comments)
- Small cohort therefore had enough computers. (2 Comments)
- Centre had enough ICT facilities to accommodate the examination. (1 Comments)

Of the 25 that responded to this question, 14 indicated that they had not experienced technical difficulties during their learners' eA sessions. Ten respondents had experienced technical difficulties. Comments included:

- Problems with key codes and passwords. (4 Comments)
- *"Problems were solved by teachers and technicians".*
- *"Computers crashed due to problems with internet link".*
- *"Issue converting different video formats".*

Of the 27 respondents, 13 felt their candidates had enough experience of the eA software prior to the live assessment. Six respondents felt candidates had limited experience. Comments included:

- *"Students seemed confident and did not express any concerns".*
- *"Students were informed of the relevant links to practice and left to familiarise themselves with this".*

Respondents were asked how centres ensure that candidates have the appropriate level of ICT skills to undertake e-assessment. Comments included:

- Students are taught the necessary skills by their teacher. (4 Comments)
- Familiarisation tests and past examination papers are used. (3 Comments)
- Students receive extensive ICT teaching from Y8 with allocated timetabling slots. (2 Comments)

Of those respondents who commented,11 respondents required additional assessment timetabling; 17 required additional set up time and 17 required technical support staff. Comments included:

- ICT staff and technicians were required throughout the process from the beginning up until and during the assessment. (12 Comments)

Respondents were asked what effect they considered eA would have on their candidates. 12 out of 20 considered candidates would have an advantage; 8 considered it would neither advantage nor disadvantage. No one thought their candidates would be disadvantaged. Comments included:

- *"Doesn't feel like a real exam therefore candidates are more relaxed and should do better".*
- *"Students can discuss best practice between sessions".*
- *"Candidates can view film clips and segments as they like".*

17 out of 20 respondents considered that eA in CA was user friendly for the majority of their candidates. Three respondents considered it was not user friendly.

15 out of 20 respondents were confident in preparing candidates for using eA in comparison with paper based assessments. Four respondents were not confident. Respondents were split on whether this would have any bearing on candidates. Comments included:

- *"Lack of support staff and limited technical knowledge from other teachers meant students lacked the necessary technical support unless provided by specialist teacher".*
- *"Nervous teachers can lead to nervous students".*

15 out of 20 respondents indicated that they would prefer eA over paper based assessments. Three respondents preferred paper based assessments, whilst the remaining three were unsure. Comments included:

- Easier, less exam-like feel and more with today's expectations. (2 Comments)
- "Combination of both types of assessments should remain".

11 out of 20 respondents felt that eA for CA is robust. However, six respondents considered it was not robust and three were unsure.

14 out of 20 respondents would recommend an increase in the use of eA in CA versus paper-based assessment. Six respondents would not recommend an increase. Comments included:

- Schools are not funded to deal with administration and unreliable computers and require investment in infrastructure. (2 Comments)
- eA is too time consuming. (1 Comment)

16 out of 20 respondents would recommend eA to other teachers / centres. Two respondents would not recommend eA, whilst the remaining two were unsure.

18 out of 20 respondents considered that eA is accessible for the majority of candidates.

12 out of 20 respondents felt that eA is accessible for SEN candidates.

11 out of 20 respondents felt that eA is accessible for English as an additional language. For five respondents this question was not applicable.

Nine out of 20 respondents considered that eA is accessible for education other than at school candidates. For nine respondents this question was not applicable.

Responses from non CA Subject (Functional Skills)

A summary of the main points recorded by AQA ICT Functional Skills teachers;

- 16 out of 25 indicated that it was easy for their centre to use eA. Those that did not think it was easy recorded logistics for carrying out sessions and technical issues as the main consideration.

- 22 out of 25 indicated that they had enough computers for all candidates to undertake their eA at the appropriate time. This was facilitated by extended access (5-day) windows and smaller cohorts of learners needing access at one time.

- 19 out of 24 respondents required additional assessment timetabling, 20 required additional set up time and 19 required technical support staff.

- 21 out of 24 respondents considered that the eA was user-friendly for the majority of their candidates.

- 18 out of 24 respondents were confident in preparing candidates for using eA in comparison with paper-based assessments.

- 14 out of 24 respondents indicated that they would prefer eA over paper-based assessments. Eight respondents preferred paper-based assessments;

- 14 out of 24 respondents would recommend an increase in the use of eA in CA versus paper-based assessment. Ten respondents would not recommend an increase.

- 14 out of 24 respondents would recommend eA to other teachers/centres. Six respondents would not recommend eA and four were unsure.

Discussion

Context

Initial investigation into the current provision of eA within general qualifications showed a large increase in the number of GCSEs and GCEs using a variety of eA methods compared to the findings of a study in 2008. CA was introduced for first assessment 2010 in GCSEs. The use of eA in CA is therefore relatively new; however, AOs are developing and operating e-portfolio assessment of CA across a range of subjects.

These findings are based on the experiences and opinions of AOs and teachers for AQA GCSE Science and Functional Skills, CCEA GCSE Moving Image Arts and GCSE French, and WJEC GCE Applied Business and GCE Applied ICT, all of which include CA. For the purposes of discussion, AQA Functional Skills ICT, which does not use controlled assessment in the same way, has been looked at separately. Mostly senior managers from AQA, CCEA and WJEC responded to the online survey, giving opinion that included organisational and operational aspects of the development and use of eA in CA.

Responses from centres were based on all of the qualifications above and were made mostly by teachers, with some examinations officers and HOD/Principals also. Most of the respondents were from secondary schools and academies, some from grammar and sixth form schools.

It is important to reiterate that the number of responses to online surveys were low, affecting the quality of the findings.

Awarding Organisation experiences

The majority of respondents recorded ease in the provision of eA in CA, but recognised the high levels of investment needed in setting up assessment infrastructure and operational methods and the challenges in operating eA across a variety of platforms available in centres. This is not the case in Northern Ireland where one common platform is used across schools.

Teacher experiences

The majority of teachers indicated ease of use of eA in CA, considering that preparation and administration of the assessment was effective. However, some experienced technical difficulties in the operation of the assessment session. The majority of teachers considered that their centre had sufficient computers to administrate CA using eA methods, although use of ICT rooms and resources may have had an effect on the availability of rooms for general/ICT teaching. It is recognised that this may become a bigger issue if/when scaling up assessment sessions from the smaller cohorts of candidates involved.

Mixed opinion was recorded for candidate readiness for the assessment session and use of eA in CA. Some recorded that student confidence and familiarisation with use of applications was a positive factor; others emphasised the use of past tests, teaching of skills and general ICT teaching as necessary preparation for the assessment session. Availability of sample assessments and/or past assessments

are clearly an important part of preparing learners for eA, as they are for general examination preparation.

Technical issues

Technical difficulties are a feature of the development and delivery of eA, and AOs recorded some difficulties in preparing for assessment during and after assessment. However, it is important to note that these difficulties are recorded by a minority of respondents. Responses include the comments *'we have now largely cracked this'* or *'the process has been improved'*, which is an indicator of several AOs' stage in the development process. Most of the technical issues were based around local issues in assessment centres, design of a system suited to users or the expense of gathering assessment evidence. The involvement of a third party (technical partner) in the development of eA was not identified as causing significant problems.

Although technical difficulties have been recorded by some teachers, the majority recorded no difficulties in the use of eA in CA, reflecting AOs' opinions on the current use of the assessment tool. Where technical problems did arise, these included use of passwords and key codes, file formats, and network capabilities, most of which were solved by technicians.

Additional set up time and technical support needed was mentioned by a number of teachers.

Benefits

Advantages of eA tend to be based around the learner's experience of the assessment and the use of additional assessment functionality, along with reduced administrative burden. Costs, duplication of effort where traditional and eA methods were used and additional technical support in schools were recorded as disadvantages. Most recorded that eA in CA is successful in providing the opportunity to appropriately assess skills and understanding and allow for creativity in assessment design that suits or is necessary for the assessment.

Most teachers considered that eA in CA was user friendly for the majority of candidates.

The potential for cost savings has been one of the drivers of the development work around the use of eA in general, with long-term cost savings being an anticipated outcome. Some AOs have recorded cost savings from the introduction of eA in CA; others have commented that the savings are anticipated in the long term. A common theme to the responses here focussed on the benefits for the assessment of the learner rather that cost savings. Some respondents intend to replace/reduce paper-based assessments with eA across a range of appropriate specifications; others do not yet have plans to do so or will continue with pilot work. Readiness of schools and other assessment centres is a concern that could impact on a greater roll-out of eA across a greater number of GCSE qualifications.

Comparability

There is mixed opinion on the comparability of the use of eA methods with traditional methods, but a common theme to responses was to question what comparability meant in these circumstances. AOs have evidence that little difference exists in the achievements of learners taking eA or traditional assessments, recognising that this is currently only for small cohorts and is being kept under observation. However, some qualifications have been designed to be assessed electronically and others can only develop assessment features using eA. Comparability is of greatest concern where specifications offer the choice of eA or traditional assessments. Where there is no choice and all candidates take an eA, the issue is less important.

Earlier work on e-assessment[6] by the regulators and AOs identified that there can be a lack of comparability when certain conditions apply, for example differential speediness, where candidates are less pressed for time in one mode than another. However, as CA is usually taken over a longer period of time than a typical written assessment, we did not find any evidence that the time taken to complete a CA is an issue in this regard.

Teacher readiness/confidence

AOs considered that teachers were mostly confident in using eA in CA, but, more importantly, students using the eA software have few problems with the technology. Teachers, however, did record increased stress levels with supervising CA sessions using eA. Teacher confidence can be linked to subject area, and it is notable that ICT was one of the subject areas included in this research, despite the fact that one might expect teachers to be less worried about supervising an eA session. Some AOs considered that specific training in the use of eA for CA was not needed, but rather developments should be supported by reference and information guides. Some had developed on-screen tutorials, whilst others provided training sessions for teachers. Most teachers responding to the questionnaire felt confident in preparing candidates for the assessment session.

Ultimately, most teacher responses recorded a preference for eA methods over traditional methods. They would recommend an increase in the use of eA in CA, and also recommend the assessment tools to other teachers, although it was recorded that traditional method should be retained for some subjects, and where a combination of methods is appropriate.

[6]Consensus statement on technical issues in the early stages of using e-assessment in UK general qualifications Boyle et al 2009, available at http://www.e-assessment.com/news/regulators-and-awarding-body-consensus-statement-e-assessment

Conclusions and recommendations

Analysis of the current provision of eA in CA shows that AOs are making advances in the use of eA as an assessment tool in the assessment of General Qualifications. Previous case studies of the use of eA in qualifications tended to focus on pilot programmes, whereas use of the assessment tool in General Qualifications is now recorded as the sole method or optional method for whole qualifications.

Although the number of responses to the survey was lower than hoped for, a review of the comments recorded by teachers and AOs show some notable shifts in opinion/experiences in comparison with previous studies into the use of eA. Several advantages have been recorded for the use of eA in CA specifically.

Both AOs and teachers record confidence in the use of eA in CA. Although this might be expected from a sample more inclined to use eA, it shows a readiness and willingness to use the tools, and recognition of the advantages for specific and general specifications using eA.

Some cost savings have been recorded by AOs and others are anticipated over time. Where initial investment for eA had previously been a feature for the development of eA tools, real benefits are now being recorded alongside this consideration. Additional time and technical support are needed at centre level, but this seems to be less of a feature as teachers are becoming more familiar with the concepts and tools for using eA in CA.

In some cases, administrative burden has been reduced by eA in CA over traditional methods. Not all eA tools collect assessment evidence online, but seamless systems have been developed for the collation and exchange of assessment evidence between centres and AOs. From the AOs' experience, this also facilitates the marking and moderation of assessment evidence.

AOs and teachers both express a desire to see an increase in the development and use of eA in CA. They particularly recommend its application across specifications where it facilitates appropriate assessment of knowledge and skills that would be difficult to assess by more traditional means. Teachers would generally recommend the use of eA tools in CA to other teachers.

A communications plan has been developed for the dissemination of the outcomes for the project (Appendix III). A brief paper or messages will be developed for use on websites and printed material to accompany the dissemination of this report.

This research has provided an insight into the increasing use of eA in CA in a range of General Qualifications. The work has, however, highlighted the need for further investigation into the use of eA in CA specifically and, more broadly, the use of eA in all aspects of assessment in general qualifications.

1. Comparability is more of an issue where assessment can be taken using eA alongside traditional methods for CA for the same specification. There are also wider concerns on the comparability of the assessment experience for learners and outcomes. A study should be developed to look at issues of comparability.

2. This research has not successfully gathered opinion on learner experiences. A subsequent study using altered research tools to gather opinion sound be appended to this paper.

3. The AO and teacher opinions recorded and analysed in this paper have provided changing viewpoints on general eA since previous research by QCDA and others. It would be useful to take a longitudinal view of the development of eA in general qualifications by revisiting this research activity in a few years time.

4. It has been recorded in this report that eA places demands on IT resources available in centres, teachers are expressing a varying level of confidence for the use of eA and AOs consider that they have/are solving software issues. It is timely to carry out an investigation into centre readiness for the use of eAssessment.

Appendix I

Analysis of the current use of eAssessment in general qualifications

Analysis

Data gathered is presented in Appendices I - III, which show a break down by AO and qualification where eA is used in a variety of formats for e-portfolio and e-testing, or where AOs are developing the e-administration/marking of assessment. For the purposes of this report general qualifications include GCSEs, GCEs and Functional Skills. Table 1 shows the total number of qualifications currently using eA as an assessment component for these types of qualifications, as reported by AOs in September 2011.

Table 1; Qualifications using e-Assessment

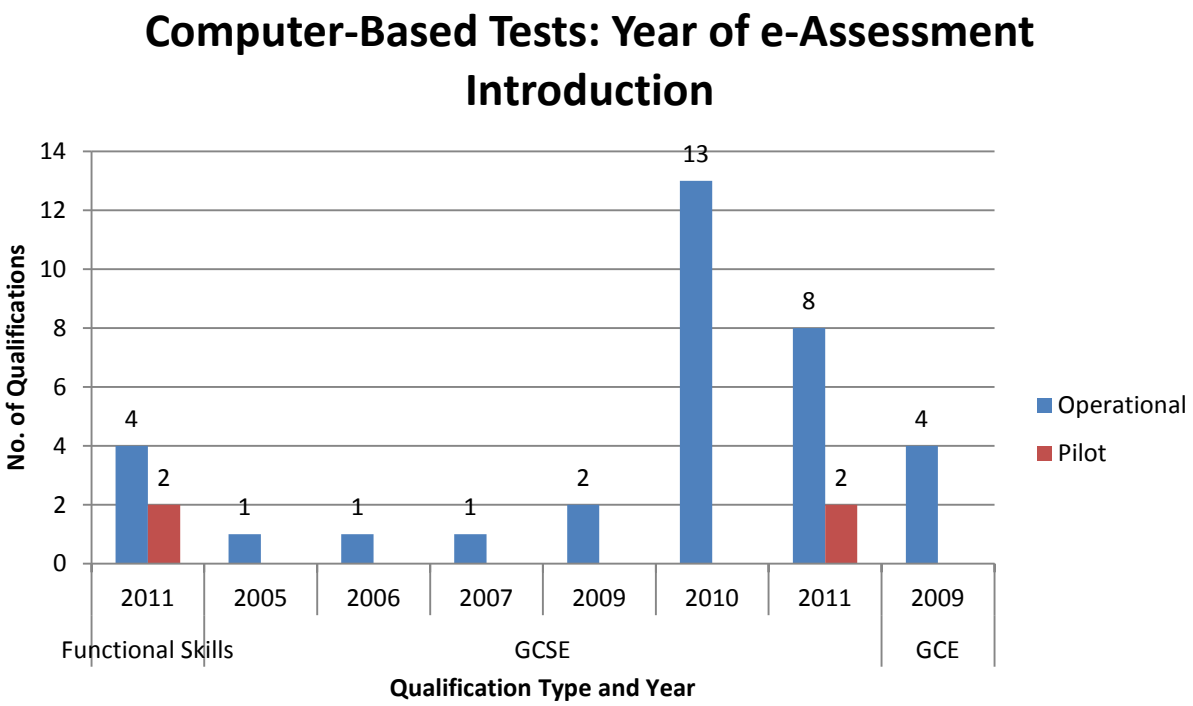
	Computer-Based Tests			Controlled Assessment			Online Marking		
	Pilot	Op.	Total	Pilot	Op.	Total	Pilot	Op.	Total
Functional Skills	2	4	**4**	0	0	**0**	2	4	**4**
GCSE	2	26	**30**	2	28	**30**	3	82	**85**
GCE	0	4	**4**	0	8	**8**	0	54	**54**
Total:			**38**			**38**			**143**

Op. = Operational up to and including 2011.

Some subjects have been entered as both 'pilot' and 'operational', thus their addition may be greater than the actual 'total' figure. Subjects marked as 'operational' but being introduced in 2012 are excluded from 'operational' figures, but included in the 'total' figure.

- The greatest number of subjects involved in eA is through online marking, with a total of 143 qualifications across Functional Skills, GCSE and GCE at both the pilot and operational phases.
- Computer-Based Tests and CA each currently involve 38 qualifications, both operational and pilot.
- These subjects are provided in the Appendix I & II.
- Data was also provided on the number of candidates and year of introduction of e-assessment. However, comparison of these two variables may not be accurate or reliable, as numbers generally represent the total cohort for a given qualification, as opposed to exact numbers of candidates undertaking eA options/components. Thus, these data are not analysed here.
- Evaluations have been planned for 21 of the qualifications for which information was provided, for both operational and pilot provision, of which 13 were for controlled assessment; providing a valuable input to this action based research project.

Computer-Based Tests:



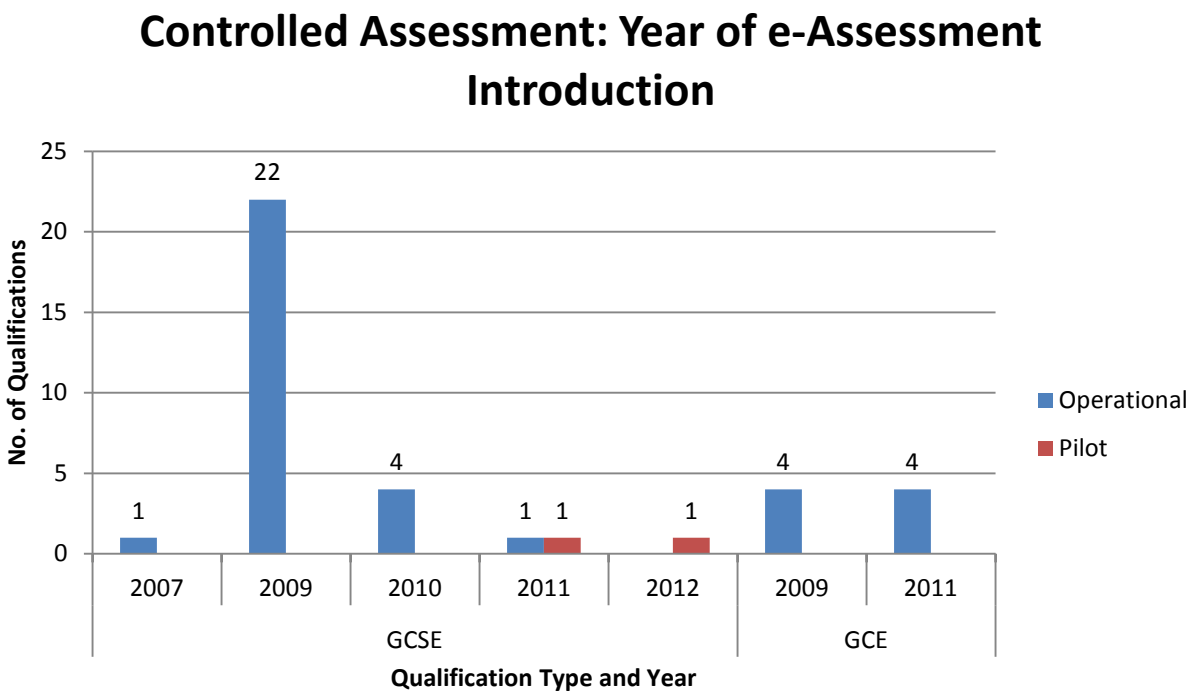
- There are 4 Functional Skills, 26 GCSE and 4 GCE qualifications currently operating eA in terms of computer-based tests.
- The majority of qualifications introduced computer-based tests more recently, from 2009.
- Pilot Functional Skills (n = 2) and GCSE (n = 2) qualifications introduced computer-based tests in 2011.
- Of the operational qualifications, the mean proportion of each qualification e-assessed using Computer-Based Testing ranges from one-quarter (GCE; 25.0%) to just over half (Functional Skills; 50.17%).

Table 2; Computer-Based Tests (Potential Candidates)

Qualification Type	Pilot/ Operational	N	Minimum	Maximum	Mean
Functional Skills	Pilot	2	36400	79200	57800.00
	Operational	4	3300	79200	32775.00
GCSE	Pilot	2	8000	10850	9425.00
	Operational	25	0	437400	30480.08
GCE	Operational	4	29	747	293.00

- The number of candidates per qualification is approximate and a maximum, as data provided by AOs range from the entire cohort (who may or may not choose to use eA over traditional assessment methods) to approximate figures.
- However, the figures give an idea of the potential maximum candidature for each qualification.

Controlled Assessment



- There are 28 GCSE and 8 GCE qualifications currently operating eA in terms of Controlled Assessment.
- The majority of GCSE and GCE qualifications introduced CA more recently, from 2009.
- Pilot GCSE (n = 2) qualifications introduced CA from 2011.

Table 3: Controlled Assessment: Percentage of Operational Subject e-Assessed

Qualification Type	N	Minimum	Maximum	Mean
GCSE	28	4	100	38.39
GCE	8	17	83	36.50

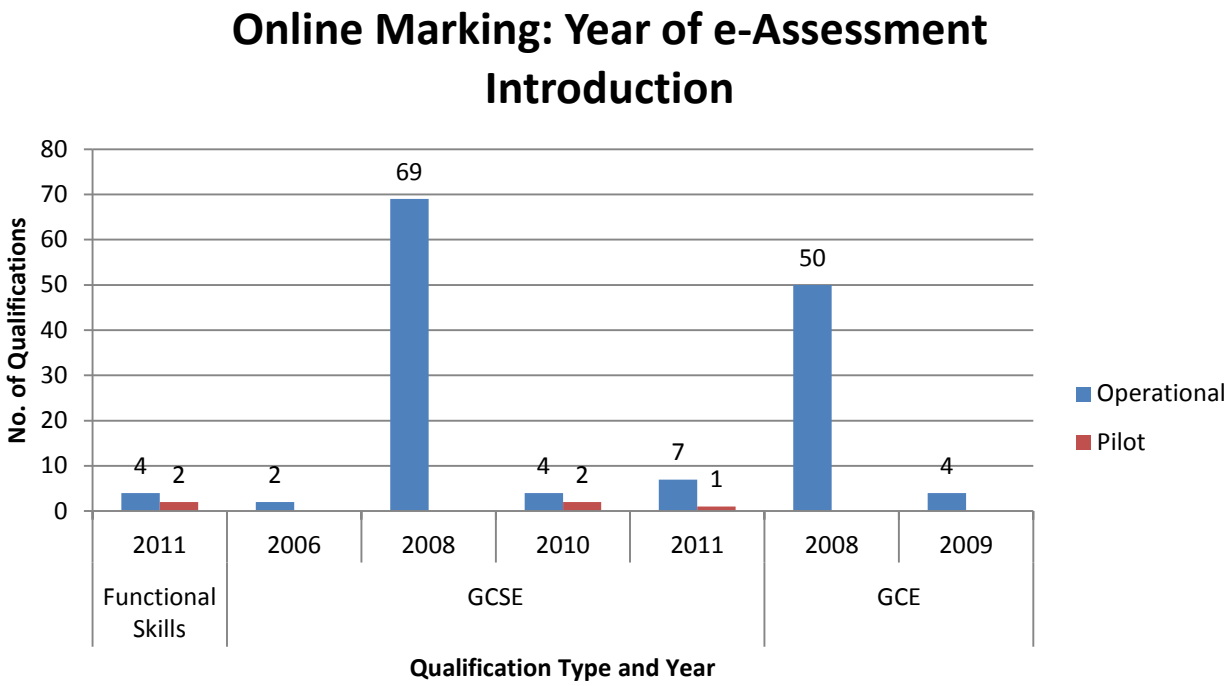
- Of the operational qualifications, a mean of just over one-third of each qualification is e-assessed via CA (36.50% for GCE and 38.39% for GCSE).

Table 4: CA (Potential Candidates)

Qualification Type	Pilot/ Operational	N	Minimum	Maximum	Mean
GCSE	Pilot	1	50	50	50.00
	Operational	28	121	259467	38795.39
GCE	Operational	8	0	18647	3521.75

- The number of candidates per qualification is approximate and a maximum, as data provided by AOs range from the entire cohort (who may or may not choose to use eA over traditional assessment methods) to approximate figures.
- However, the figures give an idea of the potential maximum candidature for each qualification.

Online Marking:



- There are 4 Functional Skills, 82 GCSE and 54 GCE qualifications currently operating eAin terms of online marking.
- The majority of GCSE and GCE qualifications introduced online marking in 2008.
- Pilot Functional Skills (n = 2) and GCSE (n = 3) qualifications introduced online marking recently, in 2010 or 2011.

Table 5: Online Marking: Percentage of Operational Subject e-Assessed

Qualification Type	N	Minimum	Maximum	Mean
Functional Skills	4	0	100	50.17
GCSE	82	0	100	50.28
GCE	54	0	100	40.00

- Of the operational qualifications, a mean of just over half of each Functional Skills and GCSE (50.17% and 50.28%, respectively) and 40.0% of each GCE qualification is assessed using e-assessment, for online marking.

Table 6: Online Marking (Potential Candidates)

Qualification Type	Pilot/ Operational	N	Minimum	Maximum	Mean
Functional Skills	Pilot	2	36	55	45.50
	Operational	4	36	12500	3972.75
GCSE	Pilot	3	10850	14150	12374.67
	Operational	82	0	639578	40021.16
GCE	Operational	54	29	200996	25820.20

- The number of candidates per qualification is approximate and a maximum, as data provided by AOs range from the entire cohort (who may or may not choose to use eA over traditional assessment methods) to approximate figures.
- However, the figures give an idea of the potential maximum candidature for each qualification.

Appendix II
Questionnaires (off-line versions)

e-Assessment in Controlled Assessment for General Qualifications

Teacher Questionnaire

Respondent:

Principal / Headteacher ☐
Vice-Principal / Deputy ☐
Exams Officer ☐
Teacher ☐
Other *(please specify)*
_____

Centre Type:

Academy ☐
Comprehensive ☐
Independent ☐
Secondary ☐
Grammar ☐
Voluntary ☐
Other *(please specify)*
_____

Please identify the subject and Awarding Organisation you are basing your answers on. All responses should be based on the Controlled Assessment (CA) element within your chosen subject. If you are commenting on more than one qualification listed below, please use a separate response for each qualification

AQA – GCSE Science ☐
AQA –ICT (Functional Skills) ☐
CCEA – GCSE French ☐
CCEA – GCSE Moving Image Arts ☐
WJEC – GCE Applied Business ☐
WJEC – GCE Applied ICT ☐

How easy was it for your centre to use e-assessment for this controlled assessment?

Very easy	easy	Not easy	Not at all easy
☐	☐	☐	☐

Please comment on your answer

Did your centre have enough computers for all candidates to undertake their e-assessment at the appropriate time?

Yes ☐ **No** ☐ **N/A** ☐

Please comment on your answer

Were there any candidates absent for their e-assessments?

Yes ☐ **No** ☐

If yes, what did you do?

Did you encounter any technical difficulties during the e-assessment session(s)?

Yes ☐ **No** ☐

If yes, please comment on your answer

How much experience of the eA software did your candidates have prior to the live assessment?

Enough ☐ **Limited** ☐ **None**☐ **N/A** ☐

Please comment on your answer

How does your centre ensure that candidates have the appropriate level of ICT skills to undertake e-assessments?

Did this e-assessment require additional assessment timetabling?

Yes ☐ **No** ☐ **Don't Know** ☐

Did this e-assessment session require additional set up time?

Yes ☐ **No** ☐ **Don't Know** ☐

Did this e-assessment require technical support staff?

Yes ☐ **No** ☐ **Don't Know** ☐

If yes, please comment

In the CA of for this subject, what effect do you feel e-assessment has on candidates:

Advantage ☐
Disadvantage ☐
Neither advantage or disadvantage ☐

Please comment on your answers

In your experience, is the e-assessment in CA user-friendly for the majority of candidates?

Very user friendly	User friendly	Not user friendly	Not at all user friendly
☐	☐	☐	☐

If no, please comment on your answer

In your opinion, how confident were teachers in preparing their candidates for using the e-assessment in CA, in comparison with paper based assessments?

Very confident	Confident	Not confident	Not at all confident	Don't Know
☐	☐	☐	☐	

If not confident or not all confident, in your opinion did this have any bearing on the candidates?

Yes ☐ **No** ☐ **Don't Know** ☐ **N/A** ☐

Please comment on your answers

Which Assessment method do you prefer?

e-Assessment ☐ **Paper** ☐ **Don't know** ☐

Please comment on your answer

Do you think the use of e-assessment for controlled assessment is robust?

Yes ☐ **No** ☐ **Don't Know** ☐

Please comment o your answer

Would you recommend an increase in the use of e-assessment in CA verses paper based?

Yes ☐ **No** ☐

Please comment on your answer

Would you recommend e-assessment to other teachers/centres?

Yes ☐ **No** ☐ **Don't know** ☐

If no, please provide reasons?

Compared with paper based assessments, how accessible are e-assessments for:

- **The majority of all candidates**

Very accessible	Accessible	Not accessible	Not at all accessible
☐	☐	☐	☐

- **Special Educational Needs Candidates**

Very accessible	Accessible	Not accessible	Not at all accessible
☐	☐	☐	☐

- **English as an Additional Language Candidates**

Very accessible	Accessible	Not accessible	Not at all accessible
☐	☐	☐	☐

- **Education Other Than At School Candidates**

Very accessible	Accessible	Not accessible	Not at all accessible
☐	☐	☐	☐

Please comment on your answers

Please use the space below to provide any additional comments.

e-Assessment in Controlled Assessment for General Qualifications

Awarding Organisation Questionnaire

Respondent:

Director / Senior Manager ☐
E-Assessment Manager ☐
Processing Manager ☐
ICT Manager ☐
Specification Manager ☐
Other *(please specify)* _____

Please identify the specification that you are basing your answers on. All responses should be based on the Controlled Assessment (CA) element within your chosen subject. If you are responding for more than one specification, please complete a questionnaire for each specification.

AQA – GCSE Science ☐
AQA –ICT (Functional Skills) ☐
Both AQA Subjects ☐
CCEA – GCSE French ☐
CCEA – GCSE Moving Image Arts ☐
Both CCEA Subjects ☐
WJEC – GCE Applied Business ☐
WJEC – GCE Applied ICT ☐
Both WJEC Subjects ☐

How easy was it for your organisation to provide e-assessment methods?

Very Easy	Easy	Not easy	Not at all easy
☐	☐	☐	☐

Please comment on your answer

Did your organisation encounter any technical difficulties during your e-assessment processes?

- **preparing for the eA?**

Yes ☐ **No** ☐ **Don't Know** ☐

If yes, please comment on your answer

- **During the administration**

Yes ☐ **No** ☐ **Don't Know** ☐

If yes, please comment on your answer

- **After the CA had taken place**

Yes ☐ **No** ☐ **Don't Know** ☐

If yes, please comment on your answer

Do you feel e-assessment is comparable to paper-based assessments?

Yes ☐ **No** ☐ **Don't Know** ☐

If yes/no, how is this measured and do you have any supporting evidence?

In your opinion, do you feel teachers are confident in supporting candidates using the e-assessment software?

Yes ☐ **No** ☐ **Don't Know** ☐

Please comment on your answer, including any supporting evidence

Does your organisation train teachers in the use of e-assessments in CA?

Yes ☐ **No** ☐ **Don't Know** ☐

Please comment on your answer

What systems are in place to ensure the successful transition of assessment evidence between centres and awarding organisations?

Has your organisation saved costs by using e-assessment?

Yes	No	Don't Know
☐	☐	☐

Please comment on your answer

Does your organisation aim to replace paper based assessments with e-assessments?

Yes ☐ **No** ☐ **Don't Know** ☐

Please comment on your answer

What are the <u>Advantages</u> of e-assessment for your organisation?

What are the <u>Disadvantages</u> of e-assessment for your organisation?

How successful would you view e-assessment in CA?

Very successful	Successful	Not Successful	Not at all Successful
☐	☐	☐	☐

Please comment on your answer

Please use the space below to provide any additional comments

e-Assessment in Controlled Assessment for General Qualifications

Learner Questionnaire

Please select which of the following qualifications you are basing your answers. All responses should be based on the Controlled Assessment (CA) element within your chosen subject. If you have used e-assessment for the Controlled Assessment part of more than one qualification below, please complete an additional questionnaire for each qualification.

AQA – GCSE Science ☐
AQA – ICT (Functional Skills) ☐
CCEA – GCSE French ☐
CCEA – GCSE Moving Image Arts ☐
WJEC – GCE Applied Business ☐
WJEC – GCE Applied ICT ☐

Did you have any previous experience of using computers for assessment, before you took this qualification?

Yes ☐ **No** ☐

If yes, please describe your previous experience

Did you practice using computers for this assessment, before you took the actual Controlled Assessment?

Yes ☐ **No** ☐

Please rate the following aspects of e-assessment in your controlled assessment:

- **Ease of completing your assessments**

Very easy	easy	difficult	very difficult
☐	☐	☐	☐

- **Length of assessment at a computer**

Too long	About right	Very Slow
☐	☐	☐

Please comment on your answers

Please rate your overall enjoyment of the e-assessment.

Very enjoyable	Enjoyable	Not enjoyable	Not at all enjoyable
☐	☐	☐	☐

Please comment on your answer

Would you have preferred a paper test in this controlled assessment, compared to the e-assessment you took?

Yes ☐ **No** ☐ **Not Sure** ☐

Please comment on your answer

Would you like to see an increase in the use of e-assessment instead of paper based assessments for controlled assessment?

Yes ☐ **No** ☐

How could the e-assessment be improved?

Please use the space below to provide any additional comments.

Appendix III
Communications Proposals

Communications proposals

for the collaborative action based research project
on the use of eAssessment in Controlled Assessment for GCSEs

Prepared by
CCEA Qualifications & Skills Accreditation
June 2012 (version 2)

Background

eAssessment (eA) developments have gathered pace, in particular with the use of eA for controlled assessment for general qualifications. A research project is being taken forward by a panel comprising of qualifications regulators and awarding organisations to investigate issues arising on the use of eA on Controlled Assessment.

The collaborative research approach is administrated by CCEA (RA). Baseline research has been completed to look at the current position for the use of eA in controlled assessment. It is anticipated that a research report will be produced based on the action research findings, along with other potential outputs including guidance and case studies. Chatham house rules apply to meetings and internal project communications; all drafts will be approved by the participating organisations prior to any publication or communication outcomes from the project.

This paper is being developed mid project in anticipation of outputs from the action research phase. It is not yet certain what the content of the research report will be or potentials for case studies and guidance, but it is anticipated that the report will provide opinions and experiences of learners, centres and awarding organisations. A draft report will be agreed by the active participants in the 2012 summer term, finalised at a panel meeting in September and published in an appropriate format in October.

It may be necessary to develop an annex to the report, detailing outcomes from additional research activities to engage with learner opinion on the use of e-assessment in controlled assessment.

Communications Proposal

A two phase communications plan should be developed with partners which reflects the publishing of the report and development of guidance based on the requirements for each country regulator and awarding organisation.

Consideration should be given to;

- Internal communication with participating bodies during the development of the report
- Awarding organisation community, which may be in the form of a report accessed through the regulators web-sites with accompanying promotion, and a seminar (if appropriate)
- Government interests
- Guidance for centres/learners

Phase 1 - Development of the report

The draft report will be developed by the active participants of the research project during the summer, and be available for the wider group and others before finalising in September 2012. It may be appropriate to involve the wider stakeholders in the development of the final draft; including government interests. The final report is planned to be available for October 2012, and could be placed on the regulators and/or awarding organisations web-sites in the first instance.

Phase 2 - Development of guidance

It is envisaged that guidance and case studies of good practice will be developed, although detail on this will only become clear at draft reporting.

It may be suitable to hold a centralised UK seminar for all Awarding Organisations based on the outcomes of the project; the report, guidance and case studies. Consideration should be given to attendance at the eAssessment Association conference to be organised and held in northern England venue later this year.

Each country regulator would decide on best way forward for communication of the outcomes. Possible actions for Northern Ireland;

- Information meeting/s with stakeholders to include CCEA AB, DE/DEL, C2K and others
- Seminar for examination centres