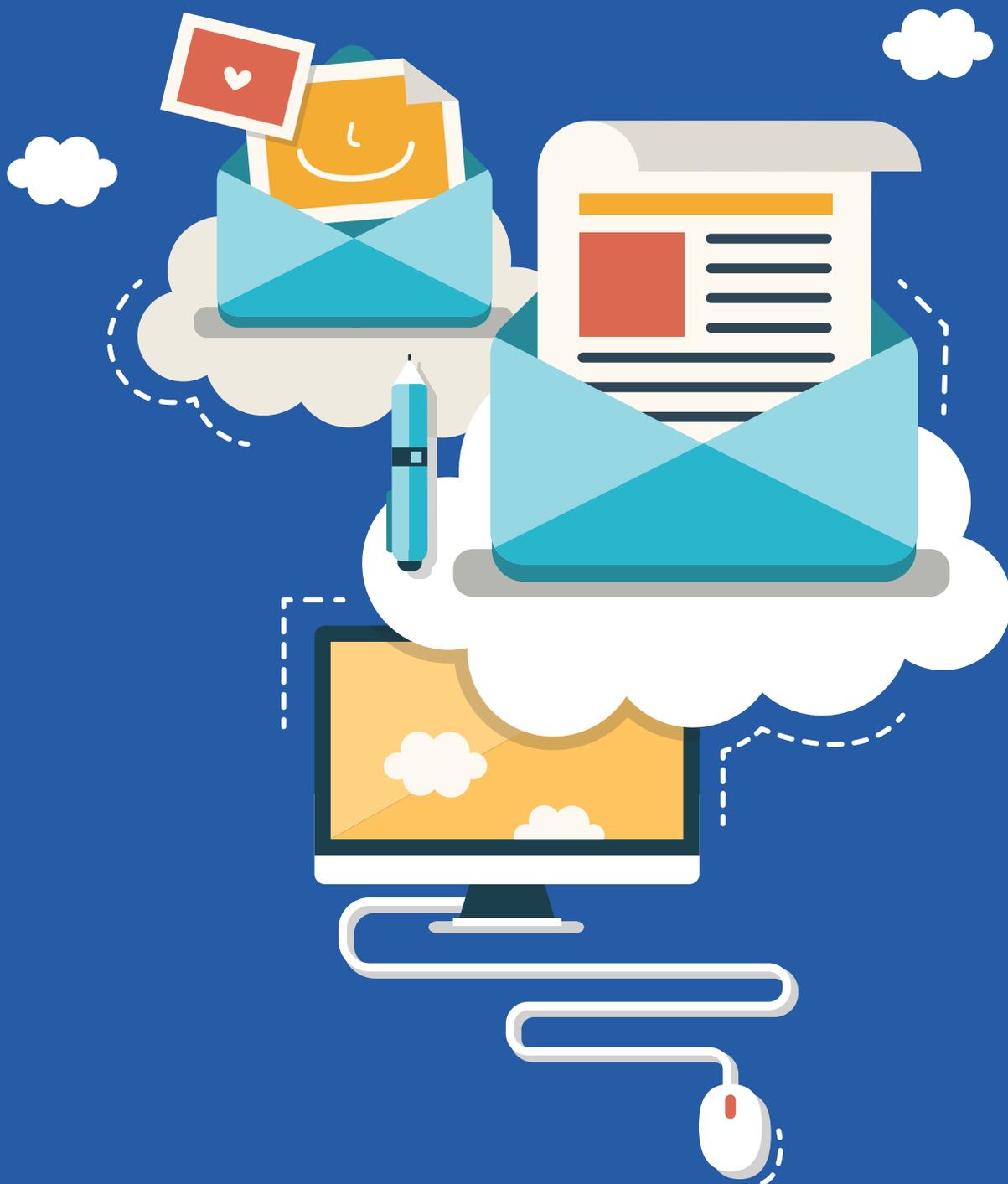


A Study of Learner and Centre views on the use of Electronic Assessment in Vocational, Professional and Technical Qualifications



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SQA Accreditation and CCEA Regulation
as a joint research project for the UK eA Research and Development Forum

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Executive Summary

Between September 2017 and February 2018, The Council for Curriculum, Examinations and Assessment (CCEA Regulation) and the Scottish Qualification Authority (SQA Accreditation) carried out a piece of research into learner and centre experiences of the use of e-assessment in vocational, professional and technical qualifications. This work augments previous studies looking at learner experiences for general qualifications, and wider work based on centre readiness for using e-assessment in qualifications. The work was based on a sample of Pearson, City and Guilds and SQA vocational, professional and technical qualifications from the occupational areas of hairdressing, plumbing and business. The findings included responses to an online survey from 158 learners and centre practitioner or manager views gained during visits to a sample of ten centres.

Findings from the study show that 90 percent of learners express a preference for using e-assessment, expressing positive emotional responses when using e-assessment. Learners also cited low levels of test anxiety and included potential benefits to using e-assessment in their feedback. Centres chose to use up to 100 percent e-assessment in the qualifications sampled, and recorded benefits and preferences in using e-assessment over pen-and-paper methods.

Recommendations from this work include developing communications for awarding organisations, centres and stakeholders, to show these research findings alongside outcomes from previous research. Qualifications regulators should also consider requiring awarding organisations to provide information on current and planned e-assessment development as part of their reporting on qualifications development.

Introduction

E-assessment is used extensively in qualifications offered by regulated awarding organisations across Scotland and Northern Ireland. Large numbers of candidates are using e-portfolio and e-testing to assess all or part of the qualifications they take. E-assessment has been used extensively in vocational qualifications across the two countries.

The report explores the use of assessment methods in vocational qualifications offered by awarding bodies in Northern Ireland and Scotland. In particular, learner experiences and teaching professionals' views on pen-and-paper assessment and e-assessment are presented.

Background

The eA Research and Development Forum recently published an e-Assessment Review Report that looked at learner and awarding organisation experiences in delivering and taking assessment using electronic and pen-and-paper methods, based on GCE qualifications. The main findings of this report included positive experiences and outcomes for learners, and greater opportunities for creating reliable and engaging testing of assessment objectives. A similar understanding of centre and learner experiences of using e-assessment in vocational qualifications would provide a fuller picture of the current issues facing awarding organisations.

The Scottish Qualifications Authority (SQA Accreditation) and The Council for the Curriculum Examinations and Assessment (CCEA Regulation) undertook a collaborative study, focusing on centre views and learning experiences of using e-assessment in vocational qualification. The study looks at using e-assessment and some comparisons with pen-and-paper assessment across qualifications used in the two jurisdictions for qualifications based on National Occupational Standards, and qualifications based on similar occupational areas.

¹ The term vocational used in this report refers to Vocational Qualifications in Scotland and Professional and Technical Qualification in Northern Ireland.

² The eA R&D Forum comprises regulators and the main awarding organisations for Scotland, Wales and Northern Ireland.

³ eA Assessment Review Report 2016–2017 is available on the CCEA website.

Methodology

This study focuses on qualifications at Regulated Qualifications Framework (RQF) Level 3 and Scottish Credit and Qualifications Framework (SCQF) Levels 6 & 7 in the occupational areas of Hairdressing and Plumbing. Qualifications in these skill areas are popular across the jurisdictions. Examples of e-assessment and pen-and-paper assessments used in these occupational areas are readily available. Qualifications with optional or a combination of electronic and pen-and-paper assessments were selected to investigate learner and centre experiences. The area of business was added at a late stage to augment a drop in the number of potential learner responses for the research in Northern Ireland.

This work was carried out between Sept 2017 and February 2018, with active research during November and December 2017. This included exploring the use of electronic and paper-based portfolios and e-testing. It used a learner questionnaire and centre visits as primary research methods.

The qualifications identified as providing the best evidence for the purposes of this study were:

Vocational Area	Northern Ireland	Scotland
Plumbing	City and Guilds Level 3 Diploma in Plumbing	SQA SVQ in Domestic Plumbing and Heating at SCQF Level 7
Hairdressing	City and Guilds Level 3 Diploma in Hairdressing	SQA SVQ in Hairdressing at SCQF Level 6
Business	Pearson Level 2 Diploma in Business	

Online learner questionnaire

A learner questionnaire was developed to focus on learner preferences and emotional responses to the use of assessment methods in the qualification they were taking. CCEA Research and Statistics developed an online consultation questionnaire that was available between 15 November and 8 December 2017. Active centres for the qualifications were asked to give learners taking the qualifications a link to it. All data collected was analysed using SPSS for Windows. Thematic content analysis was undertaken to analyse all qualitative data.

Centre visits

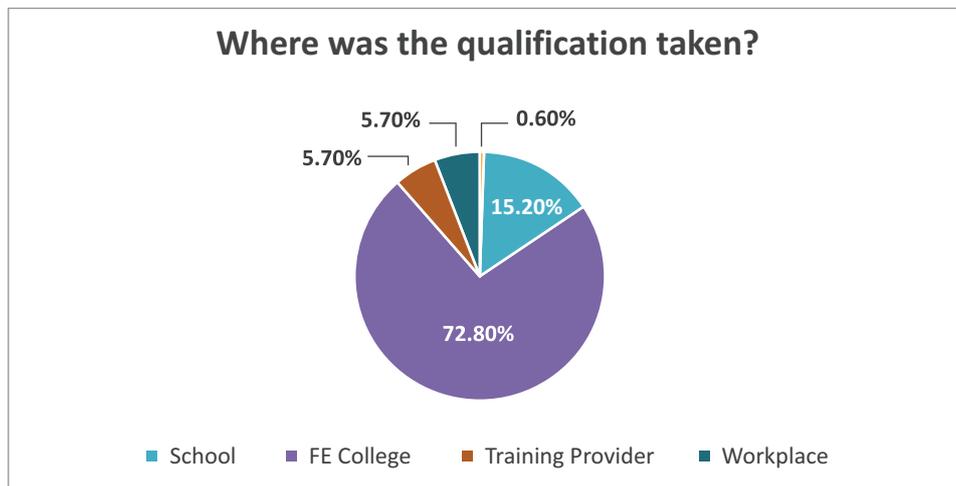
A sample of centre visits was taken in Northern Ireland and Scotland to investigate tutor views for the learner groups involved in taking the selected qualifications. The sample was selected to ensure a spread of centres representing rural and urban centres and different types of providers, including further education, private training organisations and schools. A standard visit checklist was developed that would both gather information and act as a prompt to encourage areas for discussion during the visits. Appendix II is a copy of the visit checklist.

Findings

Learners

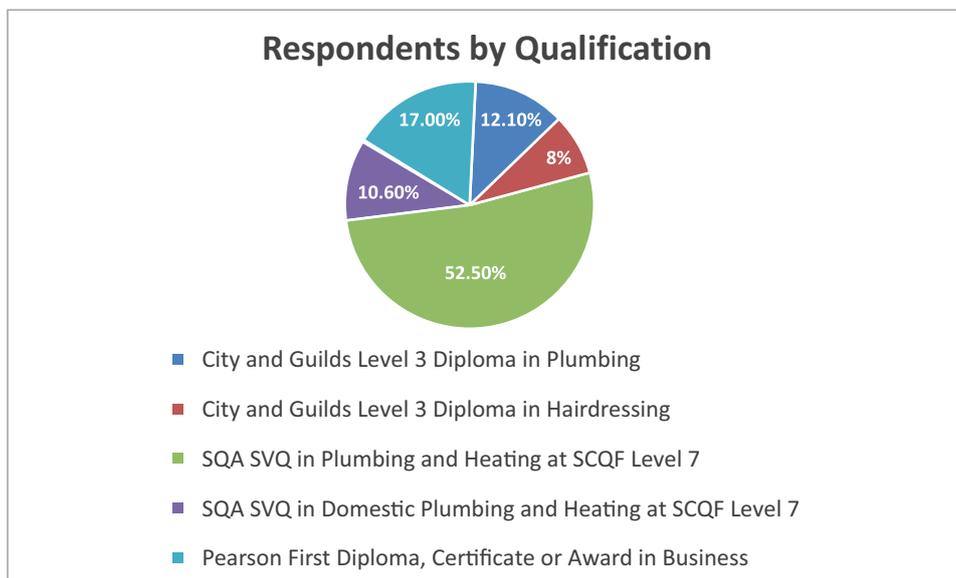
Results are based on completed questionnaires from 158 respondents. CCEA Research and Statistics produced a report, which you can find in Appendix I. This report has been used to inform and develop the research findings.

Scottish centres made up 78 percent of the respondents and 22 percent were from Northern Ireland. Respondents represented a range of ages. The largest group represented was the 14–19 year old age group, which made up 60 percent of the respondents. Females made up 32 percent of respondents and males accounted for 68 percent.

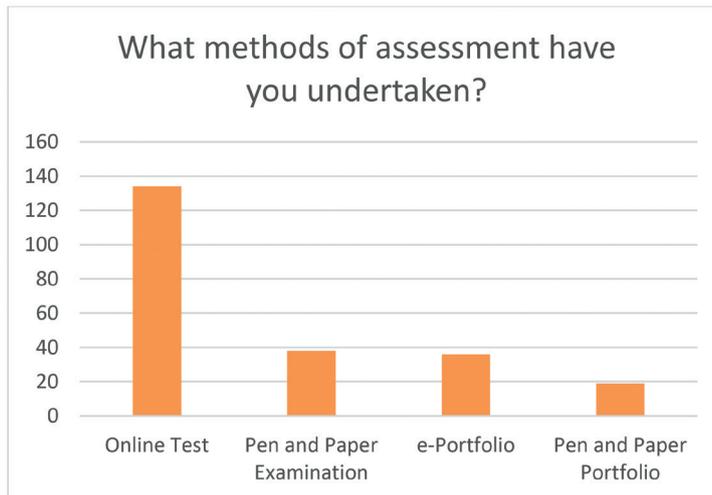


Respondents were taking the qualification with a range of provider types, the largest being further education colleges.

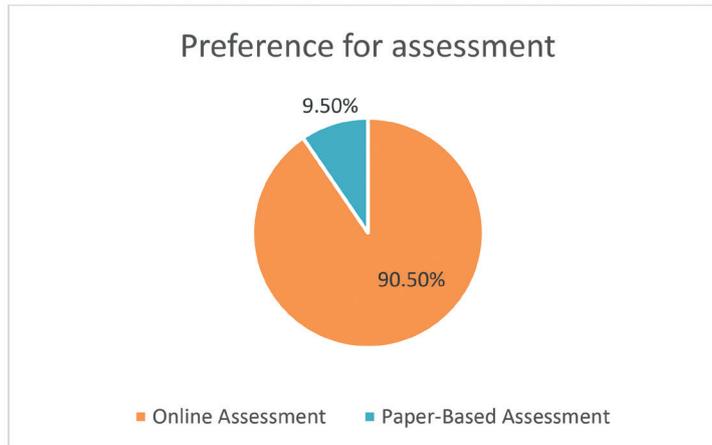
Learners taking the qualifications selected for the study responded. The largest number of responses (65 percent) came from learners taking the SQA or City and Guilds Plumbing qualification.



Respondents had taken a range of assessment methods with an online test being the most popular.



When asked to express a preference for online or paper-based assessment, over 90 percent of respondents preferred online assessment.



Learners were asked about their emotional responses to using electronic and pen-and-paper assessment. The primary emotion respondents experienced during pen-and-paper assessment was nervousness. The most frequent responses for on-screen tests or e-portfolio assessment were relaxed, confident and well prepared. Qualitative comments viewed online assessment as easier to use. Respondents liked the flexibility of online assessment models with multiple choice questions based on various parameters that allowed for quicker feedback. Respondents also stated that online assessments allow for more varied sources of evidence, including e-portfolio, photographs and video.

Centres

A sample of ten centres was visited for this study. These were selected to ensure the spread included rural and urban centres and different types of providers, including further education centres (FE), training organisations and schools. A visit checklist was developed that would gather information and act as a prompt to encourage areas for discussion during the visits. A copy of the visit checklist can be found in Appendix II.

Individuals or small groups of teachers, tutors or assessors were interviewed in each centre to gather views and information on their experiences of using e-assessment for one of the five qualifications included in the study. Table 1 lists the types of centre and qualifications offered.

Table 1

Country/Jurisdiction	Centre Type	Qualification Offered
Northern Ireland	FE Colleges (2)	City and Guilds Level 3 Diploma in Hairdressing
	Training Organisation (1)	City and Guilds Level 3 Diploma in Hairdressing
	Training Organisation (1)	City and Guilds Level 3 Diploma in Plumbing
	School (2)	Pearson Level 2 Diploma in Business
Scotland	FE Colleges (2)	SQA SVQ in Hairdressing at SCQF Level 6
	FE Colleges (2)	SQA SVQ in Domestic Plumbing and Heating at SCQF Level 7

Assessment pattern and assessment approaches

Five of the ten centres visited in the study, including both FE centres and both training organisations in Northern Ireland, plus one of the four FE centres in Scotland, assessed either the selected Plumbing or Hairdressing qualification totally online (100 percent e-assessment). Four of these five centres used awarding organisation (AO) e-testing and e-portfolio systems to do this. The fifth centre used an AO system for e-testing alongside a commercial e-portfolio product.

The remaining five centres in the study used a mix of e-assessment and other assessment approaches. In Northern Ireland, both schools were using an AO e-assessment system for the external assessment for one of the four units in the Business qualification. This assessment approach is an AO requirement. The remaining three units were assessed using controlled assessment of internally assessed pen-and-paper components.

In Scotland, the three FE centres using less than 100 percent e-assessment estimated that between 60 and 80 percent of either the Plumbing or Hairdressing qualification was assessed online, using the AO e-testing system. The remaining (mostly practical) components of the qualifications were assessed using a range of approaches: projects, assignments, direct observation and, for Plumbing, manual calculations and drawings. These centres were positive about e-assessment, but pointed out that it was not ideal for assessing these practical components. Two of the three centres said they planned to use an e-portfolio in the future to help capture evidence of practical work.

Eight of the ten centres visited indicated that they were content with the ratio or mix of pen-and-paper and e-assessment they were currently using. One centre commented that 100 percent e-assessment was very appropriate to the learners, tutors and the vocational context. Both of the FE centres in Northern Ireland endorsed the 100 percent e-assessment (e-portfolio and online testing) approach. Of the remaining two centres,

one did not express a clear view on this. The remaining centre disagreed with using e-assessment for the qualification. This latter view is expanded on in the next section: Teacher, lecturer and trainer views on e-assessment.

Several of the teachers, tutors and assessors said they would like to use more e-assessment in future. This included centres already using 100 percent e-assessment. Tutors in both Northern Ireland colleges said e-assessment was working very well for Hairdressing. One training organisation said it suited the delivery method for Plumbing and provided methods of assessment that learners would be familiar with in employment.

Teacher, lecturer and trainer views on e-assessment

When asked to provide more detail on their views of e-assessment, by rating its use on a scale of Excellent/Very Good/Good/Poor, the responses were:

- Excellent (4 centres);
- Very Good (3 centres);
- Good (1 centre); and
- Poor (1 centre).

They were then asked what they thought their learners' experiences of using e-assessment might be, using the same scale. Their responses were very similar:

- Excellent (4 centres);
- Very Good (2 centres);
- Good (2 centres); and
- Poor (1 centre).

The lecturers at the one remaining FE centre did not give clear ratings either on using e-assessment or on their learners' experience of using it. They were however generally positive about e-assessment and offered suggestions on how the e-assessment system they were using could be improved.

Most of the responses to these two questions indicate very positive views on e-assessment from the teachers, tutors and assessors involved in the study. One FE centre commented that e-portfolios are preferable to pen and paper as they motivate learners, providing instant feedback and more time to teach. Another FE centre noted that, though e-testing questions could be improved, learners prepare more for these online tests than for pen-and-paper tests.

One of the ten centres expressed a very different view on e-assessment. This accounted for the 'Poor' responses to each question. These ratings came from a teacher in a small to medium, urban school, who disagreed with using e-assessment for the Business qualification. The reasons given were that:

- e-assessment had reduced pupil attainment;
- the learners using it were disadvantaged in comparison to those using pen and paper;
- the preparation and ICT skills required caused fatigue; and
- it did not suit pupils from socially deprived backgrounds with limited access to ICT at home.

This last point, about some learners' not having access to online resources at home, was also mentioned by tutors in both of the training organisations and by a teacher in the other school included in the sample. Although using e-assessment for the same qualification, the teacher in the large, rural school commented that using e-assessment was welcomed. They reported that online extended responses were particularly good, generating longer and better quality responses than handwritten responses from the same pupil group. This teacher's view was that e-assessment suited less academic learners.

Tutors were asked to use the same scale to rate specific examples of pen-and-paper assessments and their learners' experience of using them. This question was included to try to ensure that forms of assessment centres use, but which are not offered online, were not overlooked in the study. Responses included:

- 'Excellent' for observed practical work (2 centres);
- 'Very Good' for project reports (4 centres); and
- 'Very Good' for pen-and-paper tests (1 centre).

When asked what they thought their learners' experiences of using these assessment approaches were, the responses were the same. Not all centres answered this question and although it was not generally applicable to the centres offering 100 percent e-assessment for the selected qualifications, one of these centres did express a view. Some centres offering the selected qualifications still valued pen-and-paper approaches, including some centres that use e-assessment in preference to pen and paper.

Assessment resources

Centres were asked about the resources available for both pen-and-paper and online assessment. Teachers, tutors and assessors in almost all of the centres were positive about the AO e-assessment systems they used, although some FE tutors reported that poor questions can sometimes appear in the e-testing systems. One college tutor praised the AO system the centre used, reporting that the college was able to customise elements of the system in conjunction with the software provider to allow for project-based learning.

Some teachers, tutors and assessors mentioned their centres' ICT labs, which were adapted for test conditions, and the support they received from the centres' IT technicians. The Scottish centres listed the AO formative e-assessments available for the selected qualifications. One centre mentioned the commercial e-portfolio it used. Various other commercial educational resources and AO paper resources were mentioned. Some AO resources were rated as better than others. One FE tutor reported that the centre resources were better than those of the AO.

When asked about any additional assessment resources they would like, most teachers, tutors and assessors said they were well resourced. However, some listed things such as more training and support, and more preparation and development time. One school said it needed further ICT labs or resources, as well as access to hardware, training and support. The second school said that although it was currently well resourced with ICT labs, it would need more if e-assessment was used across other subjects. A small training provider also said that if it was to make more use of e-assessment, it would

need more computers. Tutors in the Scottish centres requested more AO formative online assessments as well as model answers and reading lists relating to optional units in the large Plumbing award.

The school teacher who wanted more ICT labs or hardware, rated their school's infrastructure as 'poor'. However, the remaining teachers, tutors and assessors were positive about access to hardware, software and broadband. Only one tutor in an FE centre mentioned that their centre's Wi-Fi could sometimes be poor. A tutor in another college reported that a paper option for an online test was available, but had rarely been used.

When asked about learners' using their own or the centre's computers, they reported that learners mostly use the centres' computers, but occasionally use their own phones, tablets or laptops. One tutor pointed out that if learners did not have access to online resources at home, they could be disadvantaged when completing written, open book assignments online.

Learners' digital skills, support and accessibility

The general view from most of the teachers, tutors and assessors interviewed was that learners' digital skills were well developed. They believed that learners were digitally capable and therefore comfortable when presented with e-assessment. One college tutor commented that learners were familiar with the digital perspective as they regularly use smartphones, tablets and laptops. However, tutors from one of the training organisations and teachers from both schools included in the study noted that learners who do not have access to computers outside the school have less well developed ICT skills. As a result, they were less familiar with and less prepared to use e-assessment. One of the teachers commented that although learners' digital skills were 'quite well' developed, she recognised that 'e-assessment is not suitable for everyone'.

When teachers, tutors and assessors were asked to rate whether e-assessment was 'accessible' to learners in their centre, on a scale of Fully/Quite Well/Partially/Not at All, most said that the e-assessment was 'Fully' accessible to learners. They reported that learners received induction and training in how to use the online systems and had access to practice tests and one-to-one support, as required. One college tutor noted that the e-assessment system was 'self-explanatory' and learners rarely required help.

Teachers from the schools rated e-assessment as only 'Quite Well' or 'Partially' accessible. They also thought that learners' preparation to use e-assessment was only 'Quite Well' or 'Partially' developed. Tutors from both training organisations also suggested learners' preparation for e-assessment was 'Fairly Good'. The reasons cited for these responses related either to some of the learners' lack of access to online resources at home or to the centres' need for better access to dedicated resources to support learner preparation. All four of these interviewees said learners were well supported in the centre.

Teachers and trainers digital skills and support

Teachers, tutors and assessors were asked 'To what extent do you consider yourself prepared/skilled to deliver and/or assess using e-assessment?' They were asked to rate their response on a scale of Fully/Quite Well/Partially/Not at All. The responses indicated

that most consider themselves to be 'Fully' skilled and prepared. Only one FE tutor responded 'Quite Well', qualifying this by saying 'pretty confident'. Most interviewees mentioned the training they were given. One interviewee commented that all lecturers and Heads of Service have one-to-one training on the centre's e-assessment system. Another stated that the AO provided training in setting up the e-assessment system and webinars for updating staff. One school reported that all staff in the school have school iPads and Apple TV and two-thirds of lessons are delivered using ICT.

When asked about any additional resources centre staff may need to develop and use e-assessment, responses included more:

- access to formative online assessments;
- feedback on correct options in multiple choice question items;
- access to subject expert or learning technology co-working;
- development time; and
- internal support when a new product, such as an e-portfolio, is being launched.

Benefits of e-assessment

Finally, teachers, tutors and assessors were asked to list the benefits of e-assessment for the centre and for learners. Interviewees identified these benefits for the centre:

- instant or less marking;
- more time for teaching;
- analysis of data online;
- reduced storage space;
- no 'teaching-to-the-test';
- minimised malpractice;
- employers being able to access systems to see learner progress;
- internal and external verifiers being able to access learners' e-portfolios remotely; and
- transparency.

One school commented that the Education and Training Inspectorate had given very positive feedback on using e-assessment, linking it to successful implementation of e-learning.

Teachers, tutors and assessors suggested the following benefits of e-assessment for learners:

- easy to engage;
- accessibility;
- instant feedback motivates learners to study for tests;
- learners can see their progress;
- access to online mock assessments;
- learners prepare more than for pen-and-paper assessments; and
- learners can submit evidence such as photos or images of practical work.

Only one school suggested that there were few benefits for either centres or learners, responding that these were 'limited' in both cases.

As teachers, tutors and assessors were not asked about the potential drawbacks of e-assessment in this study, it is not possible to know what they may have suggested. Some issues were mentioned during the interviews, such as centres experiencing some poor quality questions in the e-tests offered by the AOs. The key challenge raised, which schools and some of the other centres referred to several times, was some learners' lack of access to online resources at home. This placed them at a disadvantage in preparation and readiness for e-assessment in centres. Apart from this issue, teachers, tutors and assessors involved in delivering qualifications using e-assessment for all or some of the awards gave a positive impression. They welcome e-assessment and its increasing use in schools, FE centres and training organisations.

Discussion

The number of respondents (n 158) is considered a fair sample representation for the vocational qualifications selected. By selecting qualifications and centres for visits, the research has tried to minimise potential for gender bias and encourage respondents from urban and rural settings (including areas of social deprivation). Ten centres were visited as part of the research, including further education colleges, training organisations and schools. This was only a representational sample for the purposes of research.

A variety of benefits to the learner and the centre were included where electronic methods of assessment had been used. These include ease of use, flexibility and ability to include wider types of assessment evidence. These findings reiterate what was previously expressed in other eA R and D Forum research for learners and centres using general type qualifications and for centre readiness research. The comparative findings demonstrate a move toward greater appreciation of some of the benefits of using e-assessment in qualifications over time. This also reinforces that there has recently been a greater demand from learners and centres for this type of assessment.

Half of centres visited used 100 percent e-assessment (online testing and e-portfolio) and the remainder used between 25 and 80 percent. Using e-assessment is not prescriptive in the Plumbing or Hairdressing qualifications. Centres can choose to use bespoke awarding organisation e-assessment packages and platforms or alternatives. This shows a high percentage of centres chose to use e-assessment methods, and these choices are reinforced by learners stating very high preference level (90.5 percent) for e-assessment.

All centres are confident in the type of assessment methods they are using, including the high use of e-assessment. This represents centres' move to wholly embrace e-assessment compared to the previous research mentioned above (especially for colleges and training providers). This is further supported by most centres expressing views of using e-assessment as 'very good' or 'excellent' and learners wanting to use these methods. A teacher interviewed at one of the ten centres visited had concerns about the possible increase in using e-assessment, and their perceived impact on learner participation in assessment. This shows that although positive attitudes toward using e-assessment are widespread, there is a continuing need to consider those centres that do not embrace using these methods.

One AO provides an e-portfolio. Every AO whose qualifications featured in the research offered e-testing software. All ten centres visited made use of these e-testing resources. Four of the centres visited in Northern Ireland used an e-portfolio offered by the AO. Only one Scottish centre used a commercial e-portfolio. Centres appreciated the ease of use, adaptability and efficiency that bespoke e-portfolio systems allow.

Only one centre recorded an issue with IT infrastructure that might affect delivering electronic assessment. The change from previous research results and experiences is significant. From the sample centres visited, it appears that smaller centres may struggle more with implementing e-assessment and its associated costs.

Findings from discussions with tutors or teachers at centre visits and from the learners surveyed, show that there is a general feeling of competence in the digital skills used in e-assessment. Staff and learners discussed having highly developed digital skills, mainly due to regular use of personal and centre IT devices. This could demonstrate an increased willingness to use electronic assessment methods in comparison to previous research – for both tutors, teachers and learners.

The three qualifications selected for the study contained either mandatory elements or optional e-assessment methods. This allowed tutors and learners to express views based on optional and comparative use of e-assessment and pen-and-paper methods. Although only 85 percent of learners had used e-assessment before, 90 percent expressed a preference for using it.

Conclusions

Learners and centres expressed positive views and experiences that support developing e-assessment in vocational qualifications further.

- Most learners (90 percent) express a preference for using e-assessment that is above the level they are currently using.
- Most centres (9 out of 10) embrace using e-assessment and actively promote its use.
- Centres choose to use up to 100 percent e-assessment for the qualifications sampled, including half using 100 percent and the remainder using between 25 and 80 percent.
- No major infrastructure or network issues are negatively affecting the delivery of e-assessment in centres, although centres expressed uncertainty that this would be the case if e-assessment were scaled up to involve larger numbers of learners and qualifications.

There is good support for using awarding organisation bespoke e-assessment software. All ten centres are using bespoke awarding organisation e-assessment products, with only one centre using a commercial product in addition.

There has been significant positive change in learner and centre or practitioner attitudes toward using e-assessment, compared to previous research cited.

Continuing development of e-assessment in vocational qualifications should take into account that a minority of centres (1 out of 10 in this study) are less enthusiastic about using e-assessment, including where electronic assessment is mandatory and not suited to the particular subject.

Recommendations

1. Communicate and promote the findings of this research in the light of previous research outcomes with a range of audiences, including awarding organisations and representative bodies and through a webinar to include centres and stakeholders.
2. Qualifications regulators should consider including that awarding organisations consider e-assessment development in their annual statements of compliance or AO plans for qualification development or self-assessment, as a method of assessing continued development in this area, where appropriate.
3. Carry out further research to include qualifications for other vocational areas and to gather learner and centre attitudes for qualifications that don't readily make use of e-assessment.

Appendices

Research Report:
e-Assessment in Vocational Qualifications – Learner
Experience

Appendix I

CCEA RESEARCH AND STATISTICS UNIT

Research Report:

e-Assessment in Vocational Qualifications – Learner Experience

Creation Date:

Version: 1.0

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1. Executive Summary

Rationale

The Scottish Qualifications Authority (SQA Accreditation) and The Council for the Curriculum Examinations and Assessment (CCEA Regulation) are collaborating on a study that will focus on centre views and learner experiences of using e-assessment in vocational qualifications. CCEA's Research and Statistics designed a learner questionnaire to investigate learner experiences of using e-assessment in vocational qualifications. Feedback from this research will be used to inform regulatory advice and guidance and to support innovation in qualifications development.

The following report is a summary of feedback gathered during the consultation process. This includes feedback from centres in Northern Ireland and Scotland. The majority of respondents were from Scotland (77.8 percent, n = 123) with the remainder (22.2 percent, n = 35) from Northern Ireland.

Key Findings

The majority of respondents (90.5 percent, n = 143) prefer using online assessment (including online test and/or an e-portfolio). Qualitative comments in support of online assessment viewed this method as easier to use, liked the flexibility of online assessment models with multiple choice questions based on various parameters that allowed for quicker feedback to students. Respondents also stated that online assessments allow for more varied sources of evidence, including e-portfolio, photographs and video.

The majority of those using various qualifications both online (online test or e-portfolio) and pen-and-paper methods of assessment (pen-and-paper examination or pen-and-paper portfolio) found the format of the assessments easy to follow.

Respondents were asked if they experienced any difficulties using e-assessment. A small number highlighted that they found the wording of certain questions 'poor' or that their answers were marked as wrong when they were in fact correct. Others had difficulties logging in.

Survey respondents were asked about their emotions when being assessed using pen-and-paper methods or via on-screen test or e-portfolio. The primary emotion respondents experienced was nervousness (n = 38) during pen-and-paper assessment. The most frequent responses for on-screen test or e-portfolio were relaxed (n = 36), confident (n = 29) and well prepared (n = 22).

2. Introduction

2.1. Background

E-assessment is used extensively in qualifications offered by regulated awarding organisations across Scotland and Northern Ireland. Large numbers of candidates are using e-portfolio and e-testing as whole or component parts of assessment qualifications. E-assessment has been used extensively in vocational qualifications across the two countries.

The eA R and D Forum¹ recently published an e-Assessment Review Report² that looked at learner and awarding organisation experiences in delivering and taking assessment using electronic and pen-and-paper methods, based on GCE qualifications. The main findings of this report included positive experiences and outcomes for learners, and greater opportunities for creating reliable and engaging testing of assessment objectives. A similar understanding of centre views and learner experiences of using e-assessment in vocational qualifications will provide a fuller picture of the current issues facing awarding organisations.

The Scottish Qualifications Authority (SQA Accreditation) and The Council for the Curriculum Examinations and Assessment (CCEA Regulation) are collaborating on a study that will focus on awarding organisation views and learner experiences of the use of e-assessment in vocational qualifications. CCEA's Research and Statistics designed a learner questionnaire to investigate learner experiences of the use of e-assessment in vocational qualifications.

The questionnaire looks at the comparative use of e-assessment and pen-and-paper assessment across qualifications in the two jurisdictions that are based on National Occupational Standards, or similar occupational areas.

¹ The eA R and D Forum comprises regulators and the main awarding organisations for Scotland, Wales and Northern Ireland

² [eA Assessment Review Report 2016–2017](#) is available on the CCEA website.

The feedback from this study will help inform the development of regulatory advice.

2.2. Project Scope

Information on learners' experiences of e-assessment and pen-and-paper assessment was sought for the following qualifications:

- City and Guilds RQF Level 3 Diploma in Plumbing;
- City and Guilds RQF Level 3 Diploma in Hairdressing;
- SQA SVQ in Plumbing and Heating at SCQF Level 7;
- SQA SVQ in Hairdressing at SCQF Level 6;
- Person First Diploma, Certificate or Award in Business; and
- Other.

3. Method

3.1 Online Questionnaire

CCEA Research and Statistics developed an online consultation questionnaire that sought the learners' views of their experiences of e-assessment and pen-and-paper assessment. The questionnaire was available between 15 November and 8 December 2017. There were 158 respondents to the questionnaire.

3.2 Interpretation of Tables

The value 'n' in the report is the number of actual respondents to the items being presented, described or illustrated. In some instances, where the respondents have been asked to provide multiple responses to an item, 'n' may be greater than the total respondent figure.

3.3 Analysis of Data

All data collected was analysed using SPSS for Windows. Thematic content analysis was undertaken to analyse all qualitative data.

4. Results

This section presents the results for each question from the e-assessment in the Vocational Qualifications Learner Questionnaire. Results are based on completed questionnaires from 158 respondents. Results relate to the number of respondents who answered each question, which may be fewer than the overall total of 158. The main qualitative comments to support the quantitative responses provided are also highlighted. A number of respondents reiterated comments throughout their questionnaire; as a result some comments may be repeated throughout the report.

4.1 Respondent Demographics

Table 1 Region

Region	(%, n =)
Northern Ireland	(22.2, n = 35)
Scotland	(77.8%, n = 123)
Total	100% (n = 158)

Table 1 displays that the majority of respondents (77.8%, n = 123) are from Scotland.

Table 2 Age

Age	(%, n =)
14–19	(59.5%, n = 94)
20–29	(29.7%, n = 47)
30+	(10.8%, n = 17)
Total	100% (n = 158)

The majority of respondents are under 30 years of age.

Table 3 Gender

Age	(%, n =)
Male	(67.7%, n = 107)
Female	(32.3%, n = 51)
Do not identify with either	–
Total	100% (n = 158)

The majority of respondents (67.7%, n = 107) are male.

Table 4 Qualifications

Qualifications*	n =
City and Guilds Level 3 Diploma in Plumbing	n = 17
City and Guilds Level 3 Diploma in Hairdressing	n = 11
SQA SVQ in Plumbing and Heating at SCQF Level 7	n = 74
SQA SVQ in Hairdressing at SCQF Level 6	n = 15
Person First Diploma/Certificate or Award in Business	n = 24
Other	n = 18
Total	n = 159

*Respondents were able to select multiple qualification types.

Other responses included:

- SQV Hairdressing Level 3 (n = 8); and
- Level 3 Plumbing and Heating (n = 5).

Just under three quarters of the respondents (73.2%, n = 115) indicated that they take the qualifications at an FE college. The remaining respondents take their qualifications at school (15.3%, n = 24), through a training provider (5.7%, n = 9) or through their workplace (5.7%, n = 9). One respondent indicated other, but did not specify where they take their qualification.

4.2 Assessment

Tables 5–9 display the qualifications taken by the respondents and the methods of assessment undertaken for each qualification. Respondents were able to select multiple qualifications and assessment types. The analysis from Tables 5–9 also provides insight into respondents' thoughts on the assessment methodology used for each qualification.

Table 5 City and Guilds Level 3 Diploma in Plumbing

Assessment method	(n =)	Assessment format easy to follow
Online Test	n = 17	(n = 17)
Pen-and-Paper Examination	n = 1	(n = 1)
e-Portfolio	n = 1	(n = 1)
Pen-and-Paper Portfolio	n = 2	(n = 1)

All of those taking an online test (n = 17) for their City and Guilds Level 3 Diploma in Plumbing found the format of the assessment easy to follow. Similarly, those taking a pen-and-paper examination (n = 1) and e-portfolio (n = 1) reported that these assessment methods are easy to follow. One of the two respondents that used a pen-and-paper portfolio found this method easy to follow.

Table 6 City and Guilds Level 3 Diploma in Hairdressing

Assessment method	(n =)	Assessment format easy to follow
Online Test	n = 9	(n = 7)
Pen-and-Paper Examination	n = 2	(n = 2)
e-Portfolio	n = 7	(n = 6)
Pen-and-Paper Portfolio	n = 1	(n = 1)

All respondents that accessed a pen-and-paper examination (n = 2) and pen-and-paper portfolio (n = 1) for this qualification found the format of both assessments easy to follow. The majority of those using an online test (n = 7) and e-portfolio (n = 6) indicated that these assessment methods are easy to follow.

Table 7 SQA SVQ in Plumbing and Heating at SCQF Level 7

Assessment method	(n =)	Assessment format easy to follow
Online Test	n = 69	(n = 66)
Pen-and-Paper Examination	n = 19	(n = 16)
e-Portfolio	n = 2	(n = 2)
Pen-and-Paper Portfolio	n = 8	(n = 6)

The majority of respondents that accessed an online test (n = 66), pen-and-paper examination (n = 16) and pen-and-paper portfolio (n = 6) for this qualification found the format of these assessment methodologies easy to follow. Both respondents (n = 2) who accessed an e-portfolio found this method of assessment easy to follow for this qualification.

Table 8 SQA SVQ in Hairdressing at SCQF Level 6

Assessment method	(n =)	Assessment format easy to follow
Online Test	n = 14	(n = 13)
Pen-and-Paper Examination	n = 10	(n = 9)
e-Portfolio	n = 13	(n = 12)
Pen-and-Paper Portfolio	n = 5	(n = 5)

This table shows that the majority of respondents taking an online test (n = 13), e-portfolio (n = 12) and pen-and-paper examination (n = 9) for this qualification found the format of these assessment methodologies easy to follow. All of those accessing a pen-and-paper portfolio (n = 5) were satisfied that this format of assessment was easy to follow.

Table 9 Pearson First Diploma, Certificate or Award in Business

Assessment method	(n =)	Assessment format easy to follow
Online Test	n = 8	(n = 8)
Pen-and-Paper Examination	n = 1	(n = 1)
e-Portfolio	n = 2	(n = 2)
Pen-and-Paper Portfolio	–	–

Table 9 shows that all of those taking an online test (n = 8), e-portfolio (n = 2) and pen-and-paper examination (n = 1) for their Pearson First Diploma, Certificate or Award in Business found the format of the assessments easy to follow.

Table 10 Preferred Assessment Type

Preferred Assessment Type	(%, n =)
Online Assessment (including online test and/or an e-portfolio)	(90.5%, n = 143)
Paper-Based Assessment (including a pen-and-paper examination and/or a paper-based portfolio)	(9.5%, n = 15)
Total	n = 158

Table 10 shows that the majority of respondents (90.5 percent, n = 143) prefer using online assessment (including online test and/or an e-portfolio).

Qualitative comments in support of online assessment viewed this method as easier to use (n = 7), liked the flexibility of online assessment models with multiple choice questions (n = 4) based on various parameters that allowed for quicker feedback to students (n = 3). Respondents also stated that online assessments allow for more varied sources of evidence, including e-portfolio, photographs and video.

Some of those who preferred paper-based assessment (9.5%, n = 15) felt that the multiple choice element of online assessments has encouraged laziness (n = 4) and creates a clear disconnect between learners and the teacher as a guide to provide insights, understanding and critical thinking (n = 3). A further three respondents found paper-based assessments a better measure of students' ability (n = 3) and work ethic (n = 3).

4.3 Difficulties using e-Assessment

Respondents were asked if they experienced any difficulties using e-assessment. Some highlighted that their answers were marked as wrong when they were in fact correct (n = 5). Others (n = 3) found the wording of certain questions 'poor'. Other difficulties included:

- problems logging in (n = 3);
- questions repeated two or three times during the same SOLAR (n = 1);
- SOLARs kept freezing (n = 1); and
- difficulties completing assessment in time (n = 1).

4.4 Emotions Experienced by Learners

Survey respondents were asked about their emotions when being assessed using pen-and-paper. The primary emotion respondents experienced was nervousness (n = 38) during pen-and-paper assessment. This could suggest that nervousness or 'test anxiety' is a stable feature of high stakes assessments. Other associated emotions included unprepared (n = 9), stressed (n = 6), scared (n = 4), intimidated (n = 3) and not confident (n = 3).

Nineteen respondents said they felt relaxed during the assessment. Other positive emotions experienced included:

- confident (n = 16);
- well prepared (n = 14);
- happy (n = 5); and
- calm (n = 2).

Survey respondents were also asked about their emotions when being assessed by on-screen test or e-portfolio. The most frequent responses included relaxed (n = 36), confident (n = 29) and well prepared (n = 22). Eight respondents explained that they find pen-and-paper easier; seven stated that they prefer this method. A smaller number indicated that they like the multiple choice element (n = 4) and enjoy uploading photos into their portfolio (n = 1).

Similar to the pen-and-paper responses, the prevailing negative emotion reported was nervousness (n = 16). Other responses included:

- scared (n = 5);
- unprepared (n = 3);
- pressurised (n = 1); and
- not confident (n = 1).

A higher proportion of on-screen or e-portfolio respondents reported feeling 'well- prepared' for the exam compared to pen-and-paper respondents. Work could be undertaken to understand the nature of, and factors contributing to, respondents' 'preparedness', as this may be essential to understanding their assessment enjoyment and preferences.

Numerous variables could potentially contribute to ratings of assessment enjoyment and emotional experience during an assessment. Possible factors include:

- assessment design and validity (including content-assessment consonance, ease of use/operational and technical design, including access provision);
- exam content and context preparedness, including familiarity with the form of assessment/mode of delivery;
- environmental conditions;
- level of assessment challenge and performance expectations; and
- additional intrinsic and extrinsic individual factors, including candidates' combined skills and motivations, as well as their physical and mental fitness on the assessment day.

4.5 Additional Comments

Respondents were asked to make additional comments or recommendations on their assessment experience(s).

Six respondents outlined their preference for online assessment as they found this method easy to follow and well organised. A smaller number (n = 2) indicated that they prefer pen-and-paper assessments as they find them less pressurised than those online.

Respondents made a number of recommendations to help improve their assessment experience(s).

These include:

- more past papers (n = 6);
- more mock tests (n = 6);
- more opportunities for online Solar assessments (n = 3);
- more notes, handouts or booklets (n = 3);
- revision lists (n = 2);
- more revision time at home (n = 2);
- more time to complete assessments (n = 1); and
- better wording in assessment questions (n = 1).

5. Conclusion

The majority of respondents (90.5%, n = 143) prefer using online assessment (including online test and/or an e-portfolio). Qualitative comments in support of online assessment viewed this method as easier to use, liked the flexibility of online assessment models with multiple choice questions based on various parameters that allowed for quicker feedback to students. Respondents also stated that online assessments allow for more varied sources of evidence, including e-portfolio, photographs and video.

The majority of those using various qualifications both online (online test or e-portfolio) and pen-and-paper methods (pen-and-paper examination or pen-and-paper portfolio) found the format of the assessments easy to follow.

Future Research

A higher proportion of on-screen or e-portfolio respondents reported feeling 'well prepared' for the exam compared to pen-and-paper respondents. Work could be undertaken to understand the nature of, and factors contributing to, respondents' 'preparedness' may be essential to understanding their assessment enjoyment and preferences.

The research highlighted some of the difficulties associated with e-assessment. Future research could collect more information on the nature and severity of the difficulties respondents encountered. Future research may benefit from logging and examining these to determine their characteristics and potential impact on assessment experience and/or candidates' performance.

Appendix II

Research into e-Assessment for Vocational Qualifications – Centre Visit Checklist

The Scottish Qualifications Authority (SQA) and the Council for the Curriculum, Assessment and Examinations in Northern Ireland (CCEA) are working together to investigate candidate experiences and centre views on the use of e-assessment in vocational qualifications. Interviews with tutors, trainers and assessors will form part of this wider piece of research and help us gather views on the e-assessment and pen-and-paper or other forms of assessment currently in use.

For the purposes of this research we are using the following definition of e-assessment from The Joint Information Systems Committee (JISC):

... the end-to-end electronic assessment processes where ICT is used for the presentation of assessment activity, and the recording of responses ...

This might typically include e-testing or using virtual learning environments or e-portfolios to record assessment activity and present items for assessment, such as written documents, digital images or audio or video files.

Centre name	No centre will be named in the research report.	
Tutor/trainer/assessor name (optional)	No individuals will be named in the research report.	
Role (optional)	We are asking about your role as it may provide context to the feedback you offer.	
Which of the following two SQA qualifications do you deliver and/or assess? – SVQ 3 in Hairdressing (SCVQ Level 6) – SVQ 3 in Domestic Plumbing and Heating (SCVQ level 7)		
Section 1 Assessment: pattern of use		
1.	Which assessment approaches are used by your centre to deliver this qualification?	<ul style="list-style-type: none"> – pen and paper (tests; projects; portfolios) – e-portfolios – online testing – other (please specify)
2.	Are there any approaches that you feel (would) work especially well for this qualification?	<ul style="list-style-type: none"> – pen and paper – e-portfolio – online testing – other (please specify)

3.	e-assessment – where e-assessment is used:																												
3.1	What proportion of the qualification would you say is assessed by e-assessment?	<ul style="list-style-type: none"> – 25% – 33% – 50% – more 																											
	Is this ratio appropriate?	<ul style="list-style-type: none"> – yes – no (please explain) 																											
3.2.	How would you rate the use of e-assessment for this qualification?	<ul style="list-style-type: none"> – excellent – very good – good – poor 																											
3.3	How would you rate your candidates' overall experience in using e-assessment?	<ul style="list-style-type: none"> – excellent – very good – good – poor 																											
3.4	If you do not yet use e-assessment, to what extent do you feel your centre is ready to deliver e-assessment for this qualification?	<ul style="list-style-type: none"> – fully – quite well – partially – not at all (please explain) 																											
4.	Assessment – where other forms of assessment are used:																												
4.1	How would you rate the other forms of assessment for this qualification?	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;"></th> <th style="width: 15%;">Pen and paper tests</th> <th style="width: 15%;">Practical work – observed</th> <th style="width: 15%;">Projects – reports</th> <th style="width: 15%;">Other – specify</th> </tr> </thead> <tbody> <tr> <td>excellent</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>very good</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>good</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>poor</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				Pen and paper tests	Practical work – observed	Projects – reports	Other – specify	excellent					very good					good					poor				
	Pen and paper tests	Practical work – observed	Projects – reports	Other – specify																									
excellent																													
very good																													
good																													
poor																													

		Comments				
4.2	How would you rate your candidates' overall experience in using these forms of assessment?		Pen- and- paper tests	Practical work – observed	Projects – reports	Other – specify
		excellent				
		very good				
		good				
		poor				
		Comments				
Section 2 Candidates' digital skills and support						
5.	To what extent do you think e-assessment is accessible to candidates in your centre?	<ul style="list-style-type: none"> – fully – quite well – partially – not at all (please explain) 				
6.	To what extent do you feel candidates are	<ul style="list-style-type: none"> – fully – quite well 				

	prepared or skilled to use e-assessment?	<ul style="list-style-type: none"> – partially – not at all (please explain)
7.	To what extent are candidates supported by the centre to use e-assessment?	<ul style="list-style-type: none"> – fully – quite well – partially – not at all (please explain)
8.	What support do candidates require to effectively use e-assessment (if any)?	<ul style="list-style-type: none"> – preparation – training – access to hardware or software – other (please specify)
Section 3 Access to assessment resources		
9.	What assessment resources do you make use of to deliver this qualification?	<p>for example (specify AO resources)</p> <ul style="list-style-type: none"> – TAPs – ASPs – consultation sheets (Hairdressing) – paper portfolios – Solar formative assessment questions – other
10.	What assessment or e-assessment resources (if any) would you like to see being made available to your centre?	
11.	If your centre uses e-assessment, which platforms are used?	<ul style="list-style-type: none"> – Solar – VLE (for example Moodle or Blackboard) – e-volve – e-portfolios (please specify) – other (please specify)
12.	How would you rate the resources available to deliver e-assessment (infrastructure, hardware, software, broadband)?	<ul style="list-style-type: none"> – excellent – very good – good – poor
13.	Do candidates tend to use their own devices or the	<ul style="list-style-type: none"> – mostly their own devices – both their own devices and the centre's computers – mostly the centre's computers

	centre's computers to access e-assessment?	
14.	If candidates use their own devices for e-assessment, which devices do they tend to use?	<ul style="list-style-type: none"> - laptops - tablets - mobile phones - other (please specify)
Section 4 Digital skills: tutors, trainers, assessors		
15.	To what extent do you consider yourself prepared or skilled to deliver and/or assess using e-assessment?	<ul style="list-style-type: none"> - fully - quite well - partially - not at all
16.	What (if any) resources do you currently require to help you develop and use e-assessment?	<ul style="list-style-type: none"> - training - development time - access to hardware or software - support from the centre's Learning Technologist(s) - support from other colleagues - other (please specify)
Section 5 Benefits of e-assessment		
17.	What are the benefits of e-assessment to your centre?	
18.	What are the benefits of e-assessment to candidates?	
19.	Are there other issues relating to e-assessment or other assessment	

	approaches you would like to raise?	
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Thank you for taking the time for this interview.

Appendix III

Qualifications Used for the Study

- *SQA SVQ in Domestic Plumbing and Heating at SCQF Level 7*

This Scottish Vocational Qualification (SVQ) Level 3 in Domestic Plumbing and Heating at SCQF Level 7 allows candidates to demonstrate competence in job-related skills in their particular area of work and expertise. This is a wide-ranging qualification that covers installing, testing, servicing, maintaining, inspecting, pre-commissioning, commissioning and de-commissioning domestic plumbing and heating systems. It also includes applying health and safety and environmental legislation in the building services engineering sector, establishing and maintaining work relationships, co-ordinating a work site, and carrying out electrical work on mechanical building services systems.

The qualification is suitable for school leavers and individuals who are currently in employment and wish to obtain a formal qualification. Entry is at the discretion of the centre, but entrants should be in a job or placement where they are carrying out relevant tasks and responsibilities that allow them to gather the required evidence.

The qualification consists of 12 units: 11 mandatory units and 1 from 4 optional units. The SVQ is a mandatory component of the Level 3 Modern Apprenticeship in Scotland and can be offered by further education colleges, employers and training providers.

For this qualification, knowledge is assessed through projects, assignments, written tests and professional discussion. Performance is assessed through practical activities in the workplace or training environment. All centres currently offering the award use the SQA Solar e-assessment system. Some use e-portfolios to gather and present evidence of work-based practical skills.

- *SQA SVQ in Hairdressing at SCQF Level 6*

This Scottish Vocational Qualification (SVQ) Level 3 in Hairdressing at SCQF Level 6 allows candidates to demonstrate competence in job-related skills in their particular area of work and expertise as a stylist. The SVQ covers creatively cutting and styling hair, creatively cutting hair using a combination of techniques, creatively colouring and lightening hair, and providing client consultation services.

The qualification is suitable for school leavers and individuals who are currently in employment and wish to obtain a formal qualification. Entry is at the discretion of the centre, but entrants should be in a job or placement where they are carrying out relevant tasks and responsibilities that allow them to gather the required evidence.

The qualification consists of seven units: four mandatory units and three from eight optional units. The SVQ is a mandatory component of the Level 3 Modern Apprenticeship in Scotland and can be offered by further education colleges, employers and training providers.

For this qualification, knowledge is assessed through projects, assignments, written tests and professional discussion. Performance is assessed through practical activities in the workplace or training environment. Most centres currently offering the award use the SQA Solar e-assessment system for testing knowledge. Some use e-portfolios to gather and present evidence of work-based practical skills.

- *City and Guilds Level 3 NVQ Diploma in Hairdressing (6008-03) at RQF Level 3*

This technical and professional qualification is aimed at candidates who wish to progress into a career in hairdressing, delivered in further education colleges and private training organisations in Northern Ireland. It includes developing skills and knowledge through a course of 68 credits minimum (a minimum of 680 hours total qualification time), including four mandatory units and ten optional units. Units have a range of assessment methods, including a cross-unit knowledge unit that is assessed via an online test, and online tests, short-answer tests, portfolio and assignment for the mandatory and optional units. City

and Guilds endorse a number of e-portfolio systems including their own Learning Assistant, which centres can opt to use to record learners' progress toward achieving the qualification.

- *City and Guilds Level 3 Diploma in Plumbing Studies (6035-03) at RQF Level 3*

This technical and professional qualification is aimed at candidates who wish to progress into employment in the building services engineering sector, delivered in further education colleges and private training organisations in Northern Ireland. It includes developing skills and knowledge through a course of 53 credits (530 Hours Total Qualification Time), and includes nine mandatory units. Units have a range of assessment methods, including an online test in five of the nine units, practical assignments and externally set assignments. City and Guilds endorse a number of e-portfolio systems, including their own Learning Assistant, which centres can opt to use to record learners' progress toward achieving the qualification.

- *Pearson BTEC RQF Level 1 or Level 2 First Diploma in Business*

This technical and professional qualification is delivered mostly in schools in Northern Ireland. The qualification aims to support young people to succeed and progress in their education. The qualification includes knowledge and applied skills, and includes three core, three mandatory and six optional units taken from two groups of specialist units. Internal and external assessment is used, including an on-screen test for the mandatory Finance in Business unit.

For further information or copies of this report, please contact:

29 Clarendon Road, Clarendon Dock
Belfast BT1 3BG

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COUNCIL FOR THE CURRICULUM, EXAMINATIONS AND ASSESSMENT
29 Clarendon Road, Clarendon Dock, Belfast BT1 3BG
Tel: +44(0)28 9026 1200 Fax: +44(0)28 9026 1234
Email: info@ccea.org.uk Web: www.ccea.org.uk

