



Llywodraeth Cymru  
Welsh Government



# Centre Readiness to use E-Assessment

Prepared by  
CCEA, SQA and the Welsh Government

as a joint research project for the UK eA Research and Development Forum

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## Executive summary

E-assessment is a growing feature of both the current delivery and future development of qualifications across the United Kingdom. Policy is encouraging these innovations and awarding bodies are responding to both this and the increasing demand from centres. The Scottish Qualifications Authority (SQA), Welsh Government (WG) and The Council for Curriculum, Examinations and Assessment for Northern Ireland (CCEA) have carried out this collaborative piece of research to investigate the current readiness of centres for e-assessment. The research shows that the readiness for e-assessment in centres varies. There are common issues across Scotland, Wales and N Ireland. Regional differences exist; particularly in relation to government policy and infrastructure. The research recognises the pace of development in this area and provides a snap-shot of centre readiness.

Governments across the three jurisdictions have encouraged innovation in the delivery of qualifications through various strategies and funding initiatives. Much of the funding in this area has been in support of e-learning and development of virtual learning environments, with the e-assessment in qualifications benefitting from the skills development in the workforce and the infrastructure to support this. Despite this, school and college inspection reports record an underuse of ICT for assessment purposes. The economic environment adds to the pressure being experienced for development of ICT resources needed to support e-assessment. These budgetary constraints also impact on staff development activities that are needed to upskill staff.

The number of qualifications that include e-assessment continues to grow. General and vocational qualifications are being developed to be either partly or wholly assessed using e-testing and e-portfolios. Recommendations have been made for the development of further qualifications using e-assessment. This further development will promote the need for resources for; staff development; reviewing policy and infrastructure; and consideration of hardware requirements within centres.

## Introduction

The e-assessment environment for N Ireland, Scotland and Wales shows some individual policy and implementation approaches, with considerable areas of crossover and similarity. This paper examines the current state of the e-assessment environment of general qualifications for pupils aged 14 to 19 in each jurisdiction. It also highlights the developing themes and issues shared across all three areas. Qualitative and quantitative results from a survey carried out in N Ireland and Wales show readiness in terms of infrastructure, staff and hardware capacities, and learner engagement.

The authors acknowledge that e-assessment developments in centres continue at pace. As such, the research in this report should be viewed as a valid snapshot of the issues researched during 2013. Equally, many of the emergent issues detailed in this report will likely remain relevant beyond its publication date.

This report discusses:

- government strategy for e-assessment and e-learning;
- the operating systems used in schools and further education colleges;
- the IT infrastructure and respective schooling and further education sectors in each of the countries examined;
- the range of general qualifications currently offered using e-assessment;
- emerging issues and the potential demand for e-assessment in response to current trends; and
- outcomes of a survey on centre readiness in N Ireland and Wales.

## Background

Assessment is central to all teaching and learning. The way teachers deliver and pupils learn a subject relates to the way it is assessed. Assessment is a key aspect of all qualifications. It tracks progress, assesses knowledge, reports on pupils' levels of attainment and provides formal recognition of learners' achievements.

Currently, increased use of digital technology as both the process and method of assessment is gaining significant momentum in awarding organisations across the UK. As technology advances, we need to ask: are centres ready to use digital technology for assessment purposes?

We use the term e-assessment to describe all the digital technologies used as both the formal assessment method and the reporting tool in assessment. The Joint Information Systems Committee (JISC) define e-assessment as:

'the end to end electronic assessment processes where ICT is used for the presentation of assessment activity, and the recording of responses. This includes the end to end assessment processes from the perspective of learners, tutors, learning establishments, awarding organisations and regulators, and the general public.'<sup>1</sup>

E-Assessment refers to a broad range of assessment types. Generally, there are two types of e-assessment activity:

- Computer-Based Assessment (CBA): where assessment is delivered on and marked by computer;
- Computer-Assisted Assessment (CAA): where assessment relies in part on computers, for example using discussion forums, completing or submitting work electronically or storing work in an e-portfolio.

Eighty-three awarding organisations on the Register of Accredited Qualifications (May 2013) use e-assessment in 2211 qualifications. The type of assessment differs for different qualifications. For example, multiple-choice assessments use basic e-testing applications. Qualifications that are wholly e-assessed use specially developed software packages for e-portfolio and e-testing. Schools and colleges have access to a range of general and vocational qualifications that include e-assessment components.

E-Assessment in qualifications has been available in schools and colleges for many years. Over the last few years, uptake has increased as more qualifications that use e-assessment become available. Evidence suggests that centres and learners prefer to use e-assessment in qualifications<sup>2</sup>.

Awarding organisations have used e-assessment extensively in qualifications offered in schools and colleges. They have implemented modernisation and development projects to advance qualifications assessment further over the next few years. We need to understand centre readiness for e-assessment, taking into account current and potential developments in qualifications assessment, including high-stakes qualifications such as GCSEs and Scottish National qualifications.

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<sup>1</sup> JISC: *Effective Practice with E-Assessment: A good practice guide in designing for learning* is available from [www.jisc.ac.uk](http://www.jisc.ac.uk) (Accessed: August 2 2013), p. 6

<sup>2</sup> [http://www.rewardinglearning.org.uk/accreditation/guidance/e\\_assessment/research.asp](http://www.rewardinglearning.org.uk/accreditation/guidance/e_assessment/research.asp)

## Section 1: Government Strategy

N Ireland, Scotland and Wales each have devolved authority for education in the United Kingdom governmental framework. Governmental strategies across the three areas share some similar themes that emphasise the need to maximise provision for and use of e-assessment through curricular and qualifications provision. These strategies also integrate a range of e-assessment tools into learning experiences by increasing use of virtual learning environments (VLEs). None of the jurisdictions has a discrete strategy for e-assessment. Instead, they make provision for e-assessment through national ICT or e-learning strategies. All jurisdictions have invested considerable financial support for their strategies during the last decade.

Strategies to promote the use of e-assessment share a number of themes across the three areas, although each strategy has developed independently. We should consider whether the three nations can benefit by collaborating to implement digital learning and assessment and where they should adopt different approaches.

For many years, the UK has been seen as a provider or exporter of high quality qualifications. To maintain this reputation, the three jurisdictions (individually and collectively) should consider fundamental design principles and standards to ensure that platforms for delivery and assessment:

- work in multilingual environments;
- can withstand malicious attack;
- ensure fair access for learners with protected characteristics; and
- provide secure and reliable results.

In N Ireland, the Executive divides education in schools and colleges across two portfolios:

- The Department of Education (DE) oversees education provision for the primary and secondary sectors.
- The Department for Employment and Learning (DEL) is responsible for further education.

Both departments include e-assessment strategies in their goals for e-learning. Their formal strategies prioritise different elements of e-learning and approach the issues from different perspectives. DE is mainly concerned with providing and developing e-learning in schools and ensuring its effectiveness as a tool for teaching and learning in the curriculum. DEL emphasises developing skills through e-learning and e-assessment to benefit learners and meet the demands of the labour market. Both policy documents have a series of goals and targets. Further detail on DE and DEL strategy is included in Appendix 4.

In Wales, the Department for Education and Skills (DfES) is responsible for education, both in schools and further education colleges. The 22 local authorities in Wales have responsibility for schools at a local level. Local authorities, regional consortia and Welsh Government have to date focused more on using ICT as a tool for teaching and learning, rather than dealing specifically with e-assessment of general qualifications as a separate issue.

The Welsh Government has commissioned several reports and consultations that impact on ICT/ILT. For example:

- Transforming Schools with ICT – Report to the Welsh Assembly Government of the Schools ICT Strategy Working Group (2008);
- Find it, make it, use it, share it: learning in digital Wales (Digital Classroom Teaching Task and Finish Group, 2012)
- The ICT Steering Group’s report to the Welsh Government (2013).

In the introduction to *Transforming Schools with ICT*, notes:

‘... we had to recognise that the benefits already being experienced by embedding the use of ICT in the daily work of schools were far from uniformly spread. Our task was to try and identify the practical steps which should be taken over the next few years to move closer to realising the aspirations of the e-confident school and the e-confident learner.’<sup>3</sup>

Subsequent groups have taken forward specific aspects of this work. The Digital Classroom Teaching Task and Finish Group was set up in 2011 to consider which digital classroom delivery aspects should be adopted to transform learning and teaching for those aged 3–19. The Group’s report sets out what it concluded “the Welsh Government and many others should do to introduce, embed and promote the use of digital technologies to enhance learning and teaching”.

In January 2013, Welsh Government established a steering group to take forward consideration of the future of computer science and ICT in schools. The group’s recommendations covered a range of themes relating to ICT, digital literacy and computing in schools.

The *Programme for Government* in Wales includes specific commitments related to ICT provision in schools and colleges, including (i) ‘build the foundations for an all Wales virtual learning environment enabling every school in the country to access on-line learning resources from across the World’; (ii) ‘through the 21<sup>st</sup> Century Schools Capital Programme we will ensure state of the art ICT provision’. These commitments should help build an environment in which e-assessment can grow.

In Scotland, responsibility for education provision rests with the Cabinet Secretary for Education and Lifelong Learning, and work in these areas is carried forward within the Learning and Justice Directorate. The most recent strategy work in the area of ICT and e-learning by the Scottish Government, Learning and Justice Directorate and the Enterprise, Environment and Digital Directorate, focuses on reforming the higher and post-16 sector, and on Scotland’s digital economy and ICT infrastructure.

This strategy work is informed by studies undertaken by Her Majesty’s Inspectorate for Education, Scotland (HMIE) (2002<sup>4</sup>, 2004<sup>5</sup>, 2005<sup>6</sup>, 2007<sup>7</sup>). These studies looked specifically at the use of ICT in education. This included reference to online learning and assessment. The underlying aims of these policies are to improve learners’ life chances and provide an educational infrastructure to extend the geographical scope of learning.

A 2011 overview report by HMIE<sup>8</sup> does not mention ICT in relation to secondary schools. It states that, in the primary sector, ‘As yet, children have insufficient opportunities to use information and communication technology (ICT) to support their learning across curricular areas’. The report notes that colleges use ICT successfully to engage learners and stimulate reflective learning. However, a more detailed HMIE report to

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<sup>3</sup> *Transforming Schools with ICT: The Report to the Welsh Assembly Government of the Schools ICT Strategy Working Group*, available from [www.wales.gov.uk](http://www.wales.gov.uk)

<sup>4</sup> *Into the Classroom of Tomorrow* (HMIE Scotland), 2002 available from <http://dera.ioe.ac.uk>

<sup>5</sup> *Using ICT in Learning and Teaching* (HMIE Scotland), 2004 available from <http://www.educationscotland.gov.uk/>

<sup>6</sup> *The Integration of Information and Communications Technology in Scottish Schools* (HMIE Scotland), 2005 available from [www.educationscotland.gov.uk](http://www.educationscotland.gov.uk)

<sup>7</sup> *Improving Scottish Education: ICT in Learning and Teaching* (HMIE Scotland), 2007 available from <http://dera.ioe.ac.uk>

<sup>8</sup> *Quality and improvement in Scottish education: trends in inspection findings 2008–2011*, available from [www.educationscotland.gov.uk](http://www.educationscotland.gov.uk)



the Scottish Funding Council in 2010 indicated that, for most colleges, there is a 'call to action' to improve VLE use.

The Scottish Government's post-16 education reform is leading to a process of college regionalisation. Scotland's 41 colleges are merging to create 13 college regions and three specialist colleges. The aim is for colleges to become more efficient and flexible, for example by sharing platforms and technology. In time, this may support better use of ICT for learning, teaching and assessment.

For Scottish education authorities and schools, government investment in Glow, an online community for Scottish schools, is arguably the most significant development. This could have the most direct effect on using e-assessment in the future.

For Scotland, Wales and N Ireland, government strategies are driving forward the development of technology-enhanced learning. External influences on educational policy, such as the wider economic environment or educational reform, may affect the priority given to the implementation or currency of the strategy. However, all three jurisdictions have developed and implemented policies to promote world-class education systems. These include promoting modernisation of examinations and assessment.

## Section 2: ICT Infrastructure

Across the three areas, the ICT infrastructure to support e-assessment in schools and further education colleges depends on interrelated issues:

- local internet provision;
- the ICT environment in schools and colleges; and
- the number of staff and their expertise.

### Local Internet Provision

The geography of all three countries has an impact on the connectivity of local internet services. The most noticeable distinction is between urban and rural communities. For example, N Ireland currently has internet speeds ranging from 8.9 Mbps in Belfast to 4.3 Mbps in rural areas of Fermanagh. Studies by Ofcom, the communications industry regulator, reveal that N Ireland has some of the lowest broadband speeds in the UK. Wales has a similar problem. ICT provision is not as well developed in sparsely populated rural areas in the north of the country as it is in urban areas of south Wales. There are plans in N Ireland and Wales to develop internet availability through new projects and significant financial investment. For example, Superfast Cymru, a partnership between Welsh Government and BT, aims to provide 96 per cent of homes and businesses in Wales with access to fibre broadband by 2016.

The Scottish Government has invested heavily in developing and securing reliable internet provision across the country. Digital Scotland (2010<sup>9</sup>, 2011<sup>10</sup>) includes plans to ensure next generation broadband by 2020. This has already led to investment in high-speed broadband infrastructure, linking all 32 local authorities and key educational organisations, including SQA, colleges and universities. In a recent update, the Government announced a further £264 million investment. BT, European Structural Funds (ESF) and local authority funding will also contribute to this initiative.

Scottish Funding Council (SFC) investment means that all of Scotland's Further and Higher Education Institutions are connected via JANET, the UK's education research and development network. JANET provides a shared service for broadband connection. SFC invested an estimated £8.6 m in 2007–8 and £6.1 m in 2008–9<sup>11</sup> in the broadband network. The recently formed Further and Higher Education Sector Oversight Board has developed and co-ordinates a Further and Higher Education ICT Strategy<sup>12</sup>. This mostly focuses on efficiencies and infrastructure. However, a sub-group may consider the use of ICT in learning and assessment.

As far back as 2002, over 98 percent of schools in Wales were connected to the broadband Lifelong Learning Network with bandwidth of 2 Mb or higher (for primary and special schools) and 8 Mb or higher (for secondary schools). A Welsh Government Local Education Authority (LEA) survey indicated that over 85 percent of schools had a network point in every classroom.

The Learning in Digital Wales (LiDW) Grant Programme aims to improve broadband connectivity and network infrastructure for schools. This underpins the successful use of digital technology for teaching and learning, including access to the all-Wales learning platform: Hwb. The programme includes capital and revenue funding amounting to £39 million over two years to improve broadband services in schools. This is

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<sup>9</sup> *A Digital Ambition for Scotland* (2010) available from [www.scotland.gov.uk](http://www.scotland.gov.uk)

<sup>10</sup> *Scotland's Digital Future: A Strategy for Scotland* (2011) available from <sup>11</sup> *McClelland Review of ICT Infrastructure in the Public Sector in Scotland* (2011) available from [www.scotland.gov.uk](http://www.scotland.gov.uk)

<sup>11</sup> *McClelland Review of ICT Infrastructure in the Public Sector in Scotland* (2011) available from [www.scotland.gov.uk](http://www.scotland.gov.uk)

<sup>12</sup> *Further and Higher Education ICT Strategy* available from [www.sfc.ac.uk](http://www.sfc.ac.uk)

the first step of a wider digital learning strategy which attempts to boost IT competency of teachers entering the profession and help promote a culture of digital citizenship for learners.

## ICT environment in schools and colleges

The environment facilitating e-assessment in schools and colleges is unique to each individual school or college. This is because available funding differs between schools and the school culture determines the ICT environment. Although it is impossible to determine the ICT environment in all schools, the annual Chief Inspector's Reports from the national education and training inspectorates provide a snapshot of the ICT environment in each of the areas we are investigating. Common themes emerge from analysing these reports. The main theme shows the difference in how schools and further education colleges integrate e-learning and e-assessment.

In N Ireland, the Chief Inspector's Report 2010–2012 expressed schools' concern about the need to improve learners' ICT skills development to enhance teaching and learning<sup>13</sup>. The Chief Inspector further highlights that, in most schools, learning platforms and virtual learning environments remain chronically underused. She concludes that it is worrying that in 50 percent of post-primary schools inspected, using ICT to support learning was less than satisfactory, despite significant investment<sup>14</sup>. In 2005, Educational Technology Strategy Management Group (ETSMG) published an update report raising similar concerns about under using ICT in the classroom environment<sup>15</sup>. There are examples of a sound ICT culture in schools in N Ireland, for example using Moodle as a VLE for web-based assessments and homework tasks. Many schools have a ratio of one computer to two learners. Others are implementing ICT Action Plans to reach this ratio.

The Chief Inspector's Report for Further Education (N Ireland) in 2012 cites that innovative use of ICT contributes to the success of 81 percent of inspected lessons, where the outcomes were deemed to be 'good' or 'better than expected'.

Inadequate use of ICT featured in 20 percent of lessons inspected, where the quality of teaching and learning was insufficient. Targeting innovative use of ICT is an important goal in college development plans and features significantly in quality improvement. Assessment for learning can contribute to this goal, including developing formative and continual assessment use, using either e-portfolio or college devised or sourced assessment resources, tools and packages.

The ratio of computers to learners measures the resources available for information learning technology (ILT). This is reported to DEL through monitoring college development plans. The ratio is approximately one computer for every two full time learners. This crude measurement may indicate the number of computers available in a college, but each college and campus will have a range of designated resources suited to particular courses, for example Apple Macs for media or design courses. If colleges use these resources for e-assessment, teachers must ensure that the resources are available by booking rooms in advance. This will avoid disruption to students on other courses who may wish to use the same computers. Flexible timetabling, alongside planned blended learning and assessment, is key to using computer resources efficiently. Some colleges have a 'bring your own device' (BYOD) initiative to allow learners to upload

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<sup>13</sup> *The Education and Training Inspectorate: Chief Inspector's Report: 2010-2012* available from [www.etini.gov.uk](http://www.etini.gov.uk) (Accessed: August 7 2013), p 15

<sup>14</sup> *Ibid.*, p 19

<sup>15</sup> *Empowering Schools Strategy: Update Report 2005* available from [www.deni.gov.uk/](http://www.deni.gov.uk/) (Accessed: August 2 2013), p 2

assessment evidence. Colleges are investigating how to use other devices such as smart phones in a similar way.

N Ireland FE colleges use a self-assessment process called Improving Quality: Raising Standards (IQRS) to review the quality of course (and qualification) provision. Using ILT and e-assessment is embedded in this self-evaluation and improvement process. FE colleges take different approaches to target setting, particularly for using ILT and e-assessment, using internal evaluation against team activity for ILT or e-assessment – for example awarding bronze, silver or gold status – and the process of teams and whole college approaches to raising the activity levels. Colleges could have between 50 and 80 percent of teaching teams using ILT. IQRS aims to increase this percentage, which will place increasing demands on ICT networks and hardware.

Increased demand on ICT networks can be seen with the successful pilot of e-portfolios provided by awarding organisations. The pilot expanded access to ILT resources for participating courses and increased the potential for using these assessment methods across all the awarding organisation's courses.

We should also consider other issues, such as staff training and financing licences for using awarding organisations' e-portfolios. We can also see ILT resourcing at whole college level during initial assessment of Essential Skills, involving large cohorts of learners over a short assessment window.

In Scotland, two pieces of research from 2012 highlighted centres' views on e-assessment, including some issues relating to 'readiness' to use e-assessment. The enhanced training needs analysis (ETNA) survey, conducted by the JISC RSC Scotland, provides a regular overview of how colleges in Scotland use ICT. Findings from the 2012 survey<sup>16</sup> indicate that, although respondents identify technology's potential to enhance learning and teaching, centre readiness is still an issue. Respondents cautioned that:

- staff and students do not necessarily engage well with all technologies;
- resources are not always accessible or of the required quality: academic staff mentioned demand exceeding supply, slow computer speeds, software errors and limited software support;
- students do not always have access to technology or the skills they need to use it; and
- technology cannot replace traditional face-to-face methods of learning and teaching.

The second piece of research from 2012 was a small consultation that the Scottish Qualifications Authority (SQA)<sup>17</sup> commissioned for internal use. It aimed to identify costs and efficiencies in centres' use of e-assessment. The research involved four colleges, two schools and one training provider. Findings showed that centres were not aware of the additional costs of using e-assessment, although some thought increasing its use might require dedicated e-assessment labs, with consequential costs.

All centres thought that e-assessment brought efficiencies, for example by reducing the time spent marking and internally verifying paper assessments. Most centres focused on the qualitative benefits of freeing staff to do more productive tasks, for example creating or improving learning, teaching and assessments resources.

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<sup>16</sup> *Growth and Development: an analysis of skills and attitudes to technology in Scottish Further Education*, ETNA Vol. V (Jisc RSC Scotland), 2012 from <http://www.rsc-scotland.org/>

<sup>17</sup> Report on generating efficiencies through the use of the Assessment Creation and Delivery System (ACD) (2012), Walter Patterson and Bob Penrose.

In Wales, in 2007, Estyn (Her Majesty's Inspectorate for Education and Training in Wales) reported on the impact of the Better Schools Fund provision for ICT in Schools<sup>18</sup> (2007). The report comments on:

- the increased use of VLEs in schools;
- the positive impact of interactive whiteboards in lessons; and
- how 'teaching and learning in specific subject areas are benefiting from the thoughtful, well-planned use of specialist software and equipment'.

At the time, secondary schools had an issue with ICT as a key skill and the variation in attainment within and between schools. The report identified factors that contribute to lower standards in inspection, including:

- the range of opportunities to use ICT being confined to particular classes or certain subjects;
- teachers' lack of confidence with particular aspects of ICT;
- too little account taken of learners' use and knowledge of ICT outside the school; and
- teachers not always having high enough expectations of the level of skills that learners could achieve.

The report stated 'ICT may also be used to facilitate the assessment of a learner's performance, especially at Key Stages 2 and 3'. It also indicated that the ICT curriculum for GCE and GCSE qualifications would be reviewed in 2010 and supported 'the commitment to accrediting ICT skills at Key Stage 4'.

Most members of the working group set up as part of the Estyn review believed that ICT should be elevated to a core subject: 'This would support our challenging aspirations for monitoring all levels of ICT capability and establishing a minimum ICT entitlement in all classrooms and settings across Wales'.

The working group acknowledged that e-assessment opportunities were becoming more widely available. The group saw this as driving 'the need to reach appropriate levels of provision and access whilst promoting the effective use of ICT in all schools'. The report focuses on assessment of ICT skills, rather than using e-assessment across the wider subject range. The report made no direct recommendations about e-assessment. Subsequent developments such as LiDW have focused on the ability to provide adequate numbers of computers and sufficient bandwidth.

Despite the range and complexity of issues that affect the ICT environment, all the areas consulted noted that financial constraints were a significant issue. Although ICT provision has received substantial investment, there remains disparity between schools on a number of different levels:

- school type;
- financial resources available;
- the extent of hardware and software available; and
- specialised technical support available.

Where there is no specified ICT technician, the ICT head of department usually takes responsibility for ICT queries. We should point out that this issue is only apparent in the schools sector. It is usually through grant funding that schools can advance ICT provision.

## **Staff Capacity**

As the technological environment is rapidly changing, e-assessment must integrate these changes into classroom activity. Teachers' ability to deliver online assessment shapes the ICT infrastructure. The first

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<sup>18</sup> An evaluation of the impact of the Better Schools Fund provision for ICT in Schools - March 2007 (Estyn, Wales) 2007 from <http://www.estyn.gov.uk/>

report of the e-assessment forum<sup>19</sup> that examined controlled assessment and e-assessment highlighted that some teachers lacked confidence when dealing with new software. Teacher training remains a significant issue for developing e-assessment across the three areas. Staff training in all three areas is mainly the remit of individual schools and colleges, with some external training for in-service teacher development days. Teachers or lecturers in all three areas do not need to have an ICT qualification.

In N Ireland, the Chief Examiner's Report emphasised the chronic and continued under use of ICT for learning and assessment in most schools inspected. The Chief Inspector has called for increased leadership and training to ensure that schools use ICT to support teaching and learning, as well as for assessment purposes.

In the past, NOF (New Opportunities Fund) funding provided ICT training for teachers. DE considered that this training helped improve teachers' ICT competencies. When NOF funding ran out, the Regional Training Unit (RTU) developed the Online Learning and Teaching for Educators certificate (OLTE), accredited by the Open College Network N Ireland. This extensive course targets teachers with a sufficient level of competence. It provides guidance on how to use the virtual learning environment effectively. The RTU ended this qualification in 2012. The RTU no longer provides specific ICT training, apart from its summer school programme for learners and teachers.

Various agencies provide training support to develop innovative assessment in N Ireland schools. These include:

- the Regional Training Unit (RTU) as part of School Management Training;
- Education and Library Board Curriculum Advisory Support Officers (CASS) as part of their role in both the e-learning and ICT needs of teachers and the implementation of N Ireland educational technology strategy; and
- CCEA and other awarding bodies support for introducing e-assessment in their qualifications taken in schools.

More recently, because of operating systems transformation in schools, C2k provided training courses both online and face-to-face. These courses gave teachers a platform to embed 'an e-learning pedagogy in online training and support'. C2k provides online support for teachers in the form of downloadable guides and training videos, through the Fronter Support and Ideas Room. Teachers can also use the online forum to share ideas and discuss issues with colleagues and other practitioners.

As part of its case study research on Controlled Assessment, CCEA examined the use of e-assessment in further education colleges. The assumption was that mainly ICT lecturers and other enthusiasts were using e-assessment within qualifications. Previously, it was hoped that teaching staff in FE colleges should hold a Level 2 qualification in ICT. Extensive staff development programmes have supported this. However, there is no requirement to hold an ICT qualification to enter teaching in further education. This creates a variety of levels of competencies in the use or application of ICT for teaching and assessment. Some college ILT managers claim that only enthusiasts use e-assessment. However, there is extensive evidence that lecturing teams are using e-testing and e-portfolios, not only in pilot schemes but also across whole subject areas.

Continuing professional development for using ILT is part of the 36 hours a year N Ireland college lecturers have for staff development. There is higher demand for ILT-specific training than in-house training can supply. Colleges or schools can provide in-house training or, in limited circumstances, use external trainers.

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<sup>19</sup> *Use of E-Assessment in Controlled Assessment* available from [http://www.rewardinglearning.org.uk/accreditation/guidance/e\\_assessment/research.asp](http://www.rewardinglearning.org.uk/accreditation/guidance/e_assessment/research.asp)

However, the difference between the training that staff need and what is available can limit their ability to keep up-to-date with some emerging developments in e-assessment. The Regional Support Centre of N Ireland (RSCni) provides support to the FE sector by hosting a series of regional events and webinars for colleges. It can be difficult for lecturing staff to attend external events. To overcome this, RSCni provides practical, half-hour long courses in colleges. Webinars have been a successful delivery tool to suit the needs of the colleges. RSCni have also carried out a series of health checks for colleges in this field.

N Ireland colleges offer mentoring for those staff developing or delivering e-assessment. This support can take a range of forms, including:

- ILT or ICT mentors;
- ILT champions; and
- lecturers with designated time for quality improvement for ILT in course provision.

Each trainee lecturer has a mentor who demonstrates how to integrate ILT effectively in a classroom setting. The mentor then observes lessons delivered by the trainee lecturer. Throughout the course of the training, the mentor advises, supports and encourages the lecturer to integrate ILT into lessons. In collaboration with the six area-based colleges, JISC has developed a Level 4 certificate in Technology Enhanced Learning, which it has used with some staff in colleges. We can see evidence of increasing demands on ICT networks and hardware at team level with the successful pilot of e-portfolios provided by awarding organisations. The pilot expanded access to ILT resources for participating courses and increased the potential for using these assessment methods across all the awarding organisation's courses. We should also consider other issues such as staff training and financing licences for using awarding organisation e-portfolios. During initial assessment of Essential Skills, involving large cohorts of learners over a short assessment window, demands on ICT networks increased at whole college level.

Teacher-training courses in N Ireland for both secondary level and further education do not include a specific ICT qualification component. Teachers do not need to hold an ICT competency qualification to gain employment. ICT/ILT is, however, an integral part of teacher training. Courses offer modules on the use of ICT and encourage trainee teachers to integrate ICT into teaching practices and classroom experience. However, the structure and content of these ICT elements has been criticised for encouraging ILT development without first establishing basic digital literacy skills.

In 2012, research<sup>20</sup> by SQA highlighted a similar account of staff readiness to carry out e-assessment in schools and colleges. The report observed that many centres acknowledged that e-assessment has significant benefits. These include:

- being able to give learners immediate feedback on performance;
- offering flexibility to reassess learners' work;
- allowing learners access to formative assessment at home; and
- using e-portfolios to capture a wider range of evidence.

The survey concluded that respondents felt there was a need for further staff training to develop specific ICT classroom skills.

The situation in Scotland is similar to that in N Ireland. There has been no wide scale ICT training initiative for teaching professionals since Masterclass<sup>21</sup>. During that time, teaching professionals had increased confidence in the use of ICT, which was probably due to the Masterclass initiative. Launched in 2002,

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<sup>20</sup> *Report on generating efficiencies through the use of the Assessment Creation and Delivery System (ACD)*, 2012  
Walter Patterson and Bob Penrose.

<sup>21</sup> *Evaluation of the Masterclass Initiative* (The Scottish Executive Social Research Unit), 2005 available from [www.scotland.gov.uk](http://www.scotland.gov.uk)



Masterclass supported local authorities and schools to develop their ICT integration strategies. Over 600 teaching and education professionals trained to be ICT champions. Masterclass aimed to establish a shared vision of the potential and challenges of ICT and to support using it in learning, teaching and management. An evaluation of Masterclass in 2004–5 showed it had gone some way to achieving its aims.

Education Scotland provides continued professional development (CPD) resources for teachers. The JISC RSC Scotland and the College Development Network provide similar resources for college teaching professionals. Neither the Scottish Teaching Qualification nor the Teaching Qualification for Further Education require teachers to use e-learning or e-assessment. Teaching professionals can, however, access a range of training courses and qualifications, including Professional Development Awards in e-learning and in e-assessment (SQA) and e-assessment for learning (JISC RSC Scotland).

In Wales in 2007, Estyn reported that ‘In the majority of primary and special schools, good progress has been made since 2002 in ensuring that all staff have the appropriate levels of skills and confidence to use suitable ICT resources in their teaching.’ The report did not comment directly on the use of e-assessment.

To meet the statutory requirements to work as a qualified teacher in maintained schools, trainees must achieve Qualified Teacher Status (QTS) standards<sup>22</sup>. General QTS requirements apply to those aiming to teach ICT. These include the requirement for a secure knowledge and understanding of the subject they are trained to teach. QTS requires all teachers to know how to use ICT effectively to teach their subject and to support their wider professional role. The standards are given in the form of statement, for example trainees wishing to achieve qualified teacher status must demonstrate that:

- They know how to use ICT effectively, both to teach their subject and to support their wider professional role.
- They use ICT effectively in their teaching.

These statements do not specify relevant qualifications or refer to levels of expertise, neither do they specifically address the management of e-assessment. N Ireland requires similar standards in ICT competency for beginning teachers through the Beginning Teacher programme. Scotland also requires trainee teachers to reach similar standards during their probationary year.

During consultation on its interim report in 2007, one of the issues raised with the ICT working group was the variation in the level of ICT training that initial teacher training providers in Wales offered. ICT is one of the priority areas during teachers’ early professional development. Aside from Qualified Teacher Status (QTS) standards, the General Teaching Council for Wales (GTCW) made proposals to ensure that high quality training for teachers was available across Wales. These proposals, based on providers’ quality assurance and a voluntary code of practice, include ICT training.

In the 2007 survey of LEAs, 71 percent of authorities indicated that they provided some form of ICT training to head teachers. In one case, this training was linked to formal accreditation. Authorities also provide training to teaching and support staff. They continue to develop a range of local programmes for practitioner development, as well as initiatives that focus on promoting good practice.

In 2013, the ICT Steering Group recommended that *“Pathways for Initial Teacher Training (ITT) in Computing should be created to encourage the best talent into the profession. All entrants to the teaching profession should have the skills to deliver the Digital Literacy Framework (DLF)”*. In response, Welsh Government noted that *“...any changes to the National Curriculum in relation to ICT, Computing or Digital*

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<sup>22</sup> Qualified Teacher Status Standards Wales 2009 available from <http://teachertrainingcymru.org>



*Literacy, would lead automatically to changes in both Qualified Teacher Status (QTS) standards and Initial Teacher Training (ITT)”.*

The ICT Steering Group also recommended that “*a National Technology Framework should be devised to create an effective technology infrastructure for education*”. Welsh Government noted that “*...an assessment of the existing infrastructure in schools in Wales is required, alongside a period of stakeholder engagement to determine the appetite for, and commitment towards change...*”

### Section 3: ICT Operating Systems

Each of the three countries has its own school and college based IT operating systems. These provide access to a virtual learning environment (VLE), digital resources and for some the capacity for online e-assessment.

In N Ireland, the operating system that schools use is undergoing significant change. During 2013–14, primary and secondary schools across N Ireland began to migrate from Learning NI to Fronter. They should complete this process during 2014–15. C2k provides a connected ICT infrastructure across N Ireland, including:

- all the hardware and software requirements for schools;
- secure internet access;
- Learning NI, a virtual learning environment;
- a help desk; and
- user support infrastructure.

Learners can use Learning NI to access their school files and check their email remotely. Teachers can upload resources, digital learning material and assessment tests for learners. Learning NI also facilitates online discussion and sharing within and across schools by linking individual school networks to an online data centre that provides publicly accessible digital resources<sup>23</sup>.

In April 2012, DENI announced the development of EN(ni), a new education network for schools, which provides:

- updated hardware and software;
- access to learning resources known as the digital school;
- e-learning tools;
- lessons and resources available outside the classroom; and
- a cloud environment for all schools.

This new infrastructure replaced Learning NI with Fronter and provides an updated and wider range of services.

Scotland first used Glow, a VLE system, in 2001. Education Scotland developed and managed it. It provides integrated, secure online tools and resources for learners, teachers and parents. These include:

- a VLE and content delivery system;
- email;
- videoconferencing;
- video resources;
- game-based learning resources; and
- communication via social media, including blogs and discussion forums.

Users can access Glow from anywhere, at any time. Schools and colleges can collaborate to share digital infrastructure and resources. Glow serves 1.5 million potential users. These include learners, parents, teachers and almost 3000 schools, including nurseries and primary and secondary schools.

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<sup>23</sup> 'Circular 2007/24: Use of Information and Communications Technology in Schools', available at: [www.deni.gov.uk](http://www.deni.gov.uk) (Accessed: August 5<sup>th</sup> 2013), Appendix B

As part of Curriculum for Excellence, Scottish learners are required to record and reflect on their educational experiences. They produce a profile in P7 and S3, summing up and recording their progress and achievements. Education Scotland worked with the local authorities to develop an electronic solution, based on Wordpress, to support this process. This automatically generates a profile, or e-portfolio, as learners record their experiences. To date forty thousand learners across Scotland have used this approach to create e-portfolios. You can find examples of these and ways that learners have used other Glow components to enhance learning and teaching on the [Glow website](#). The Scottish Government ICT in Education Project Implementation Board is developing a second version of Glow, based on the MS 365 platform. Education Scotland has indicated that the aim is for Glow to provide any-device access via its secure environment. The Wordpress blogging tool continues to be available to learners.

Some schools across Scotland are engaging with hand-held devices such as iPads, Windows 8 tablets, Android tablets, Kindles and Chromebooks. They aim to help improve outcomes for primary and secondary learners and to enhance and enrich learning in Curriculum for Excellence. A Glow blog, *Learning with Devices*<sup>24</sup>, shares the developing narrative of the pedagogy that these schools are using with tablets.

SQA has developed its own e-assessment system to use with a range of SQA qualifications. The centres that deliver SQA qualifications can choose which e-assessment systems to use. Many schools use e-tools available in Glow to support learning, teaching and formative assessment.

For summative assessment, free e-assessments are available for some school and college qualifications from SQA's e-assessment system, [Solar](#). Solar generates e-assessments, using pre-specified rules and drawing on banks of items. SQA pre-verifies the summative assessments and learners generally take these in secure conditions. Solar also offers access to formative assessments. These are quality assured and provide detailed feedback. Learners can access them at any time via the Solar Open Assess portal.

SQA does not currently provide an e-portfolio tool. From 2007 until summer 2013, it offered access to an SQA [DeskSpace](#) e-portfolio (PebblePad platform) for [Skills for Work](#) qualifications. DeskSpace supported reflective learning, so it was ideally suited to Skills for Work qualifications, which focus on generic employability skills needed for the workplace. About 100 centres used the system. These were mostly schools, but also some colleges. Almost 1400 learners registered to use the system. The ESF funding for DeskSpace ended in June 2013. SQA is now liaising with Education Scotland and the Scottish Government Learning Directorate about developing a Glow e-portfolio solution that could be used to support assessment for SQA qualifications. As well as DeskSpace, SQA has offered some learners the opportunity to use games-based assessment, and assessment using a wiki and blog.

Wales has recently developed a national online learning and education platform for schools. Built on Microsoft Sharepoint, Hwb is an all-Wales learning platform that provides access to online classroom-based resources. These include tools to help teachers and learners collaborate by creating and sharing their resources. Hwb hosts:

- the national repository of digital content;
- new content commissioned by the Welsh Government; and
- content that teachers and learners have created and uploaded.

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<sup>24</sup> *Learning with Devices* available from <https://secure.glowscotland.org.uk/login/login.htm>

The Welsh Government also has a dedicated iTunes University site (Education Wales). It uses this platform, which is widely used outside of education, to help provide rich media educational resources to teachers and learners in Wales. All schools in Wales are able to access Hwb as at the end of the 2014 school year.

For all the schools that require it, Hwb+ will also be available during the 2014–15 academic year. Hwb+ offers each school a collection of online tools and services to facilitate digital learning. These features will include:

- a public facing website;
- a virtual classroom;
- announcements and events;
- blogs;
- wikis;
- forums;
- a personalised user interface; and
- access to Office 365, which includes email, videoconferencing, an e-portfolio and online access to core Microsoft Office applications, including Word, Excel and PowerPoint.

Recent developments, such as MOOCs (Massive Online Open Courses), have gained excited interest in some schools. However, it is too early to predict their future development as contributors to assessed programmes of study.

In each of the three jurisdictions, there is no common information sharing resource for FE colleges.

In N Ireland, the Northern Ireland College Information System (NICIS) provides a common ICT system across all FE colleges. The NICIS allows colleges to share information and administrative procedures across institutions. However, each college operates its own discrete ICT system.

Each college also operates its own virtual learning environment. Most FE colleges in N Ireland use the Moodle e-learning platform. Some use Blackboard<sup>25</sup> and others use both. Tutors or lecturers in each of the colleges decide how much they use these platforms. This means we have no record of how much tutors in the FE sector use these VLEs for e-assessment. Both Blackboard and Moodle have the capacity to formally assess learners and record the outcomes in a portfolio. These VLEs also offer a platform for lecturers to develop formative assessment and for other college functions such as careers provision. Colleges have bought a range of e-portfolios directly from qualifications sellers. For example, some colleges use e-volve from City & Guilds in competency-based practical assessments and the knowledge elements in skills-based (NVQ) QCF qualifications. Some post-primary schools use Moodle as well as Learning NI. However, we do not know the extent of school use.

In Scotland, colleges use a range of e-assessment systems. Findings from the 2012 ETNA survey<sup>26</sup> show that colleges were using e-tools such as Solar, GOLA/e-volve, and Turnitin, within the VLE. The most commonly used were Solar and the VLE tools. Of the VLE systems available, we found Moodle had about a two-thirds market share. Mahara was the most commonly used e-portfolio.

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<sup>25</sup> The Blackboard Learning System is a virtual learning environment and course management system designed by Blackboard Inc. As a web-based application, it offers the opportunity to add online elements to courses traditionally taught face-to-face.

<sup>26</sup> Growth and Development: an analysis of skills and attitudes to technology in Scottish Further Education, ETNA Vol. V (Jisc RSC Scotland), 2012

Between 2010 and 2013 the FE sector in Wales was restructured into a smaller number of larger regional structures that are currently being implemented. Colleges in Wales have been using Moodle for a number of years, sometimes with 14-19 networks funding. Further research is needed to gauge the extent to which they use it for formal and/or informal e-assessment.

## Section 4: Range of general qualifications currently offered using e-assessment

Some qualifications are available across N Ireland, Scotland and Wales. Others are available in one or two regions only. There are different qualifications systems (with some similarities) for 14–19 year olds in Northern Ireland, Wales and Scotland. Northern Ireland has an eight level framework for qualifications: the National Qualifications Framework (NQF) and the Qualifications and Credit Framework (QCF). Scotland has a twelve level framework: the Scottish Credit and Qualifications Framework (SCQF). Wales has an eight level framework: the Credit and Qualifications Framework for Wales (CQFW). *Qualifications Can Cross Boundaries*<sup>27</sup> in Appendix II details where qualifications for 14–19 year olds sit within and across these frameworks.

Northern Ireland and Wales provide a range of general qualifications, including GCSE, AS Level and A Level and other general qualifications. In Scotland, National Qualifications (NQs) are comparable qualifications that 14–19 year old learners take. FE colleges offer these qualifications, plus a wider range of mostly vocational type qualifications, to post-16 learners.

### Scotland's new National Qualifications for 14–19 learners

SCQF Level	New National Qualifications	Current National Qualifications
1	National 1	Access 1
2	National 2	Access 2
3	National 3	Access 3 and Standard Grade (Foundation level)
4	National 4	Standard Grade (General level) and Intermediate 1
5	National 5	Standard Grade (Credit level) and Intermediate 2
6	Higher (new)	Higher
7	Advanced Higher (new)	Advanced Higher

## Qualifications taken by 14–19 learners in Northern Ireland and Wales

NQF/QCF/CQFW	Examples
Entry Level 1 to 3	Vocational and academic EL qualifications
1	GCSE Grades D-G VQs Level 1 Essential Skills
2	GCSE Grades C-A* VQs Level 2 Essential Skills
3	GCE A Levels (AS and A2) VQs Level 3

The following sections outline the range of qualifications offered in each jurisdiction using e-assessment. For Northern Ireland and Scotland awarding organisations have provided some entry information that can give an insight into the relative uptake of e-assessed qualifications. Detailed information was not available from all awarding organisations and therefore the information below provides only a small snapshot.

The following information primarily focuses on general qualifications using e-assessment offered in a school-based setting. Further education colleges mostly provide vocational qualifications, with limited provision of general qualifications. Most e-assessment practice then falls into vocational provision – but brings some innovative and interesting developments into this study of centre readiness. E-Assessment is currently used in three areas:

- initial skills assessment mostly for 16–19 learners entering full-time course provision;
- formative assessment developed mostly in-house and provided through VLEs, including Moodle; and
- summative assessment using awarding organisation assessment tools, including e-portfolio and e-testing.

Overall, across each of the jurisdictions, awarding organisations are the main drivers for developing the use of e-assessment. Most provision is for GCSE, rather than A Level qualifications. Qualifications provision using e-assessment at A Level is mainly for applied subjects.

### Northern Ireland

Innovation in assessment using e-assessment has been developed in Northern Ireland 14–19 qualifications. CCEA (an awarding organisation) has developed and introduced GCSE and A Level specifications in Applied ICT, which incorporate a significant portion of e-assessment tasks, and in Moving Image Arts, which is designed to be wholly e-assessed. CCEA Accreditation, working in co-operation with regulators and awarding organisations across the three countries, has published *Regulatory principles for e-assessment* and produced case studies on how schools and colleges can use e-assessment.

Five main awarding organisations offer general qualifications in Northern Ireland. The following table outlines the range of general qualifications offered by awarding organisations in Northern Ireland that use e-assessment as part of their assessment arrangements:

Awarding Organisation	Qualification Type	Qualification Name
AQA	GCSE	Computer Science
OCR <sup>28</sup>	GCSE	Citizenship
		Economics
		Engineering: Single Award
		Engineering: Double Award
		Environmental and Land Based Science
		Geography
		Health and Social Care: Single Award
		Health and Social Care: Double Award
		ICT
		Latin
		Law
		Manufacturing: Single Award
		Manufacturing: Double Award
		Physical Education
Pearson (Edexcel)	GCSE	French
		German
		Spanish
	GCE	Applied Art and Design
		Applied Art and Design (Double Award)
		Applied ICT (Single Award)
		Applied ICT (Double Award)
		Additional Applied Art and Design
		Additional Applied ICT
		WJEC <sup>29</sup>
Business Studies		
Catering		
Electronics		
Film Studies (Pilot)		
Geology		
Hospitality (Single Award)		

<sup>28</sup> Please note that of all OCR's specification titles offered in N Ireland, only GCSE Environmental and Land Based Science, GCSE Health and Social Care (Single and Double Award) and GCSE Latin are currently being used in schools.

<sup>29</sup> In N Ireland, three centres are taking WJEC e-assessed qualifications at GCSE level.



Awarding Organisation	Qualification Type	Qualification Name
		Hospitality (Double Award)
		Hospitality and Catering (Double Award)
		Mathematics – Linear
		Physical Education
	GCE	Applied Business (Double Award) (Pilot)
		Applied Business (Pilot)
		Applied ICT (Double Award) (Pilot)
		Applied ICT (Pilot)
CCEA	GCSE	Moving Image Arts
	GCE	Moving Image Arts <sup>30</sup>

For the 2013 summer series, CCEA was able to provide the following entry statistics for its e-assessed general qualifications. N Ireland entries are highlighted in bold.

Qualification	Centre Entries	Candidate Entries (Summer 2013)		
		NI	Non-NI	Total
GCSE Moving Image Arts	40	<b>351</b>	92	443
AS Level Moving Image Arts	90	<b>590</b>	146	736
A Level Moving Image Arts	73	<b>411</b>	75	486

The uptake and integration of Moving Image Arts has been successful. CCEA (awarding organisation) developed a range of Modern Languages (QCF) qualifications with the intention of using e-assessment. This re-design included changing the name to Online Language Assessment (OLA). Over a three-year period, centres were prepared for the phased introduction of OLA. In May 2011, a major problem arose when a large number of learners attempted to take online assessments. There were issues with the speed of the assessment and the overall capacity provided for assessment on the C2k network. Also, CCEA's server capacity created unforeseen problems when candidates attempted to upload their assessments. This issue has yet to be resolved and learners are still taking the OLA languages assessment using traditional pen and paper methods.

## Wales

The range and type of qualifications taken in Welsh centres mirror those in N Ireland. Precise figures on the uptake in Wales are unclear as a number of awarding organisations offer general qualifications to learners based at centres in Wales. There are specific examples of applied A Levels offered by WJEC which include e-assessment. However, the nature and level of those qualifications mean the centres involved are self-selecting, possibly from a subject rather than an e-assessment perspective. The relatively small number of entries for applied qualifications at this level could not reveal issues that might become apparent if entry numbers were scaled up.

<sup>30</sup> The CCEA Moving Image Arts qualification at both GCSE and A Level is 100% e-assessed

Learners in Wales currently take GCSE and A Level qualifications with a number of different awarding organisations. WJEC is, however, the main provider of general qualifications in Wales. The following table outlines its current provision:

Awarding Organisation	Qualification Type	Qualification Name	e-Assessment Type
WJEC	GCSE	Electronics Unit 1	On-screen examination Optional on-screen assessment
		Electronics Unit 2	On-screen examination Optional on-screen assessment
		Geology	On-screen examination Optional on-screen assessment
		Hospitality and Catering Unit 2	Optional e-assessment opportunities
		Hospitality and Catering Unit 4	Optional on-screen assessment
		French Unit 1 Foundation and Higher	Optional on-screen assessment
		German Unit 1 Foundation and Higher	Optional on-screen assessment
		Spanish Unit 1 Foundation and Higher	Optional on-screen assessment
	GCE	Applied Business Unit 1	On-screen examination All other units (coursework or controlled assessment) are e-assessed
		Applied Business Unit 5	On-screen examination all other units (coursework or controlled assessment) are e-assessed
		Applied ICT Unit 1	On-screen examination All other units (coursework or controlled assessment) are e-assessed
		Applied ICT Unit 7	On-screen examination All other units (coursework or controlled assessment) are e-assessed

## Scotland

SQA has already developed e-assessments for Lifeskills Mathematics, a new Curriculum for Excellence (CfE) subject. The Assessment Support materials available for LifeSkills Mathematics include e-assessments for units at Levels 3, 4 and 5. Centres can access both formative and prior-verified summative e-assessments from the SOLAR e-assessment system.

SQA, or centres under SQA guidance, devise course assessments for the new National 5, Higher and Advanced Higher qualifications. Schools and colleges can use e-portfolios or other e-assessment approaches to support learners to generate evidence for non-question paper components of their course assessments.

SQA offers Functional Skills at Levels 1 and 2 in English, Mathematics and ICT with e-assessed components for 16 to 19 year olds. These qualifications are part of all apprenticeships. They give learners practical skills required for everyday life, education and the workplace. The SOLAR e-assessment system delivers on-screen assessments for the Reading and Writing components of the English Functional Skill, and those for the Mathematics and ICT Functional Skills. Practice e-assessments are available, including the web-based simulations required for the ICT assessments, as well as prior-verified summative e-assessments. Centres schedule the summative assessments within fixed assessment 'windows'. Computers mark some learner responses and SQA marks others. SQA makes results and certification available within four weeks of the assessment windows closing. Functional Skills assessments take place under exam conditions with invigilators present at all times. SQA has produced a document<sup>31</sup> summarising the JCQ Instructions for Conducting Examinations that are most relevant to its delivery of online Functional Skills assessments.

SQA offers a range of qualifications in the Digital Literacy area. Some of these are suitable for 16 to 19 year old learners. These are currently being revised and centres are likely to use e-assessment to deliver them in future. Scotland's colleges offer a range of other qualifications, including SQA Higher National Qualifications (HNC or HND), National Progression Awards (NPAs) and National Certificates (NCs). They also offer qualifications awarded by other organisations. They deliver and assess these qualifications using various e-assessment systems, including VLEs, SOLAR, GOLA/e-volve, Questionmark and e-portfolio approaches such as Mahara.

SQA statistics offer an insight into learners using e-assessment in Scotland for the period November 2012 – October 2013. The table below lists a selection of qualification types and subjects with the highest use of e-assessment (SQA Solar) and the number of entries for each qualification<sup>32</sup>.

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<sup>31</sup> [Summary of JCQ Instructions relevant to delivery of SQA online Functional Skills assessments](#)

<sup>32</sup> These statistics are the most recent available at the time of publication.

Awarding Organisation	Qualification Type	Qualification Name	Number of Entries
SQA	Scottish Vocational Qualifications	Plumbing	6300
		Hairdressing	2700
		Beauty Therapy 1, 2 and 3	2440
	Higher National Qualifications	Computing	2200
		Care	800
	National Qualifications	Personal Finance Award (Intermediate 1)	8000
		Computing (Intermediate 1 and 2 Higher)	1200
	Other Vocational Qualifications	Functional Skills	4000
	Sector Specific	Streetworks	1800

## Summary findings

The rationale underpinning this collaborative research project is to better understand centres' readiness to use e-assessment across N Ireland, Scotland and Wales. Following desk research and analysis of qualitative and quantitative questionnaire responses, this section aims to provide summary findings, highlighting the factors that could have a potential impact on centre readiness across the three jurisdictions studied.

### Policy development

Some of the factors that could affect centre readiness to use e-assessment are similar across N Ireland, Wales and Scotland. A review of government policy and strategy shows that all three nations have actively promoted using ICT and e-learning at various points since the year 2000. They have also encouraged e-assessment, but to a lesser extent as this has tended to be referred to as part of each country's strategy to encourage using e-learning and ICT in education generally. Overall, the focus on e-assessment has perhaps been strongest in N Ireland, where key government departments' e-learning policies made specific reference to using it.

Current e-learning strategies in N Ireland continue to emphasise the need to maximise its use through qualifications and in the tools available in school VLEs. In Wales, in addition to national initiatives such as 'Hwb' digital learning for Wales, local authorities have led on local e-learning developments across Wales. In Scotland, current policy is more focused on reforming post-16 education and on extending ICT infrastructure across the public sector generally. However, the Scottish Government is continuing to support the development of Glow, the schools' intranet.

Over the years, government policy has led to improvements in e-learning potential across the three countries. In N Ireland, this has meant improvements in infrastructure, internet connectivity and the ratio of computers to learners in FE colleges. Classroom 2000 (C2k) provides hardware, software and, more recently, Fronter centrally for schools. In Wales and Scotland, decisions on educational technology and infrastructure have tended to be devolved to local authorities. This is why the pattern of provision is more varied. National infrastructure has also influenced government initiatives and improvements. For example, in Wales the infrastructure in rural areas is not developed as well as in some more highly populated areas. The establishment of local authority regional consortia may lead to greater consistency in the future. Scotland is in a similar situation, but the Scottish Government plans to extend high-speed broadband to rural schools as part of the Digital Scotland programme.

### Current use of e-assessment

Despite signs of progress in infrastructure and access to e-learning tools, feedback from the HMIe in Scotland and the Chief Inspector in N Ireland suggests that schools and colleges may continue to underuse ICT for learning and assessment, and that learners' ICT skills development could be improved. There are also more learners than available computers. Some schools have noted a lack of space available to them. Some schools have invested in tablets and other mobile technologies, although recent cuts to school budgets and re-deployment of resources may restrict their ability to do this.

In the primary research, we found that half of respondents using e-assessment rated their learners' overall experience as either good or very good. Staff reported that students generally engage well with on-screen testing and that they see it as less intimidating than traditional approaches. The questionnaire findings also indicated that roughly three quarters of this group believed that their learners have the necessary skills to use e-assessment. This is contrasted with data that indicates that only one third of respondents believed that staff in their centre had the necessary skills to competently support and deliver e-assessment.

Most respondents claimed that there was limited policy direction or time allocated for e-assessment in curriculum planning meetings. There was also little encouragement to consider using e-assessment or to develop staff competency in using e-assessment. The support for e-assessment in the schools and colleges that responded was driven either departmentally or individually. Although anecdotal evidence – from visits conducted by researchers – suggests that there are schools that have holistic vision for e-assessment and ICT in general, this research shows a lack of readiness to embrace e-assessment wholly.

## Teaching workforce

There have been several large-scale, government-funded ICT training programmes aimed at teaching professionals. However, across all three countries, ICT training appears to have now become the remit of individual authorities, schools or colleges. Recent budgetary constraints mean that funding for this will be reduced and there will be less time for staff to train in using technology for learning and assessment.

Without centralised funding or training provision and/or promotion, an e-assessment focus is not apparent across the three countries. Each country has pockets of individual or centre expertise in e-assessment. To make widespread gains, training needs to be further encouraged and developed. Awarding organisations offering more qualifications that use e-assessments could encourage centres to become more competent in facilitating e-assessment and its required skills and infrastructure. The four key stakeholders, centres, technology providers, relevant funding bodies and awarding organisations, also need to take a more co-ordinated approach. This is not currently happening everywhere. Where this does happen, it is mainly the result of promotion by individual enthusiasts in centres and not because of any external promotion, directive or design.

To enable centres to implement e-assessment successfully they may need financial support for more ICT technical staff or training for teachers.

## The range and type of qualifications featuring e-assessment

For a full list of the range and type of qualifications that feature e-assessment, see Section 4 of this report. The range and type of general qualifications that include e-assessment in Wales is similar to those in N Ireland. It includes subjects such as Applied ICT and Moving Image Arts. An independent ICT steering group in Wales has recently recommended developing other qualifications that will include an e-assessment component. In Scotland, the first new National Qualification to incorporate e-assessment is Lifeskills Maths. Many of the other new National Qualifications could have potential to use e-portfolios. Once these qualifications become established, there should be opportunities to consider more online testing and developing additional qualifications designed for online assessment.

## Infrastructure

All three jurisdictions provide national school intranets: Fronter in N Ireland, Glow in Scotland and Hwb or Hwb+ in Wales. All of these provide a similar range of tools and services. In all three countries, colleges operate their own VLE systems. Moodle is the most commonly used in N Ireland and Scotland. There are signs that this growing use of Moodle, sometimes combined with Mahara, may lead to collaboration between providers. This would not only lead to a reduction in the number of VLEs in use overall, but also encourage more standardised approaches to using these tools to support assessment. Colleges in the three jurisdictions are connected via [JANET](https://www.ja.net/)<sup>33</sup>, the national UK research and development network. In N Ireland the colleges use a common ICT system.

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<sup>33</sup> <https://www.ja.net/>

Comments from the HMIE in Scotland and the Chief Inspector in N Ireland highlight that VLEs remain underused. There is a call to increase VLE use in most schools and colleges. Research suggests a need for further staff training in using VLE e-tools, e-portfolios and social media for assessment evidence.

Despite heavy financial investment, the infrastructure available to rural schools differs from that of urban schools. The geography of the three nations is especially challenging, which means that internet provision in schools is not consistent. It generally depends on local availability. Most respondents surveyed indicated that their broadband service was unreliable and this had an impact on provision for learners.

### **Access to hardware**

Some schools have tried using tablet devices or bring your own device (BYOD) schemes, however almost all respondents to the questionnaire favoured using traditional desktop devices over tablets. Centres are using hardware in flexible and innovative ways to increase the capacity for e-assessment.

Centres need to consider the hardware infrastructure alongside their capacity to use it effectively. The questionnaire responses indicated that there is limited technical support in the schools and from external bodies. A significant proportion of respondents felt that this lack of technical support and personal competency was a significant barrier for using e-assessment. Financial constraints have also impacted on the technical readiness of centres and their hardware provision. Although some schools can self-fund hardware provision, tightening budgets and rapidly developing technology limit this option. In Further Education colleges – which are also self-funding – a similar picture is emerging.

### **Conclusion**

All three countries have the potential for e-assessment. N Ireland has made good progress, although there are still potential barriers to expanding its use further. In Wales, the available evidence suggests that some centres seem keen to use e-assessment. In Scotland, using Moodle and Mahara in the college sector, as well as the tools available in Glow, may increase the use of e-assessment.

However, this review of all three countries highlights the need to convince teaching professionals of the value of e-assessment. This could include collaborative work with other agencies to offer staff training and greater access to hardware and software for centres.

Findings from this review have improved our understanding of centres' readiness to use e-assessment. Each country could consider further development of e-assessment in qualifications development, while being mindful of centres' readiness. Further discussion is needed between policy makers, developers and providers of e-assessment in qualifications to ensure there is co-ordinated readiness across all stakeholders.

## Appendix I

### Key educational agencies for Scotland

#### Scottish Qualifications Authority (SQA)

SQA is the national accrediting and awarding organisation in Scotland. SQA Accreditation is an autonomous part of SQA, separate from the awarding organisation. It accredits qualifications and approves the organisations that wish to award them in Scotland. Many of these qualifications are Scottish Vocational Qualifications (SVQs), however SQA Accreditation also accredits other vocationally-related qualifications. This includes licensing awards used by industry regulators such as the Health and Safety Executive and Work Place Core Skills Units for Modern Apprenticeships. As an Awarding Organisation, SQA:

- develops and validates qualifications;
- arranges and/or carries out assessment;
- quality-assures the centres offering the qualifications; and
- issues awards to successful learners.

#### Education Scotland

**Education Scotland** is the public body charged with supporting quality and improvement in Scottish education to ensure the delivery of better learning experiences and outcomes for Scottish learners of all ages. It provides information on and support for:

- curriculum areas;
- learning across the curriculum;
- assessment;
- approaches to learning; and
- partnership working.

Education Scotland is also responsible for education inspection and review in Scotland. Her Majesty's Inspectorate of Education (HMIe) previously carried out this role.

#### College Development Network

The **College Development Network** for Scotland supports the sector to deliver best practice, share innovations and develop colleges and their staff. This includes delivering continuous professional development (CPD) activities for college staff and providing advice, guidance and support on curriculum, learning, teaching and assessment.

#### JISC RSC Scotland

The **JISC Regional Support Centre (RSC) for Scotland** advises learning providers in supported further education and higher education institutions on how to use ICT to achieve their mission at strategic and operational levels. This includes advising on developing and implementing e-strategy. JISC also facilitates opportunities for collaboration and sharing best practice and innovation between institutions and partner agencies.



## **Scottish Further and Higher Education Funding Council**

The **Scottish Further and Higher Education Funding Council (SFC)** is the national strategic body responsible for funding teaching and learning provision, research, and other activities in Scotland's colleges and higher education institutions. This includes funding ICT-related initiatives.

## **Skills Development Scotland**

**Skills Development Scotland** is the national public body for Scotland that brings together careers advice and guidance, funding services, and skills development and training. This includes managing the delivery of Modern Apprenticeships in Scotland.

## Appendix II

### SQA guidance on e-assessment

The SQA awarding organisation works with centres and other key education agencies in Scotland to promote using e-assessment for its qualifications. Recent work in the college sector includes establishing a multi-agency college e-assessment group. This group aims to increase the use of e-assessment to support learning and assessment in the newly-regionalised college network. As part of this work, an e-portfolio sub-group is working to identify and develop guidance and resources to support using Mahara and other e-portfolio solutions.

The JISC RSC Scotland is part of this process. JISC works closely with colleges to spread good practice in using technology in education, including providing guidance and case studies. Resources include:

- *Effective use of virtual learning environments*<sup>34</sup>, providing advice on how to create e-assessment and their benefits;
- video case studies on e-portfolio implementation<sup>35</sup>, illustrating five institutions' implementation strategies and the challenges and benefits they encountered;
- *Effective Practice with E-Assessment*<sup>36</sup> offering good practice and case studies on e-assessment technologies and policies and practice in further and higher education; and
- *Effective Practice with e-Portfolios*<sup>37</sup> and the *JISC E-Portfolios infoKit*<sup>38</sup>, providing support and guidance on e-portfolios for further and higher education.

The JISC RSC Scotland has also been involved in supporting the pilot of an e-portfolio system called **In-Folio**, which was specifically developed to address access and inclusion. The JISC Access Inclusion Advisor has written a blog<sup>39</sup> that provides examples of how to use it.

The SQA Accreditation website provides access to the *Regulatory Principles for E-Assessment*<sup>40</sup>, devised by the UK Qualifications Regulators. This document advises Awarding Organisations and centres about standards required for using e-assessment.

The SQA Awarding Organisation website provides access to SQA's Requirements for e-Assessment<sup>41</sup>, which SQA has adapted from these Regulatory Principles for e-Assessment.

For e-portfolios, SQA has adapted requirements for e-portfolios from *E-assessment: Guide to Effective Practice*<sup>42</sup>, another document developed by the UK Qualifications Regulators. These two sets of SQA requirements will give centres and technology providers guidance on the standards expected of non-SQA e-testing and e-portfolio systems used to deliver its qualifications.

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<sup>34</sup> [Effective use of virtual learning environments](#) (2004, updated 2012), JISC infoNet

<sup>35</sup> [Video case studies on e-portfolio implementation](#), Jisc

<sup>36</sup> [Effective Practice with e-Assessment: An overview of technologies, policies and practice in further and higher education](#) (2007), JISC

<sup>37</sup> [Effective Practice with e-Portfolios](#) (2008), Jisc

<sup>38</sup> [e-Portfolios infoKit](#), (2008, updated 2012), JISC infoNet

<sup>39</sup> [Using In-Folio to enable learners to demonstrate and record their own achievements](#)

<sup>40</sup> [Regulatory Principles for e-Assessment](#)

<sup>41</sup> <http://www.sqa.org.uk/sqa/5606.html>

<sup>42</sup> [E-assessment: Guide to Effective Practice](#)

*E-assessment: Guide to Effective Practice* has advice on using e-testing and e-portfolios in assessment. SQA has also published [guidance on using e-portfolios](#), highlighting good practice when supporting learners as they create e-portfolios for SQA qualifications.

## Appendix III

### SQA centre research on e-assessment – 2012

#### a) ETNA study

The ETNA 2012 survey<sup>43</sup> identified that:

- Senior managers would welcome further information about personalisation, repositories, e-portfolios, e-assessment and social media.
- The use of e-portfolio systems was relatively limited; many academic respondents indicated a training need in this area.
- Most respondents did not use the college e-portfolio and those who did generally considered that it was not central to their role.
- Two thirds of academics felt that students did not engage well with e-portfolios.
- The e-assessment tools available were not typically used: only 53 percent of academic respondents agreed that students engaged well with them.
- Most academic respondents said students engaged well with the college VLE, but said they themselves did not use VLE tools designed for creating e-assessments. They used VLEs only infrequently to support assessment.
- Only 56 percent of senior managers reported that the college VLE linked directly to an e-portfolio system.
- Social media tools were widely available, and 70 percent of academic respondents agreed that using these enhanced the quality of the learning experience. However, some suggested these tools could be distracting and were not always appropriate for the learning environment.

#### b) SQA consultation on efficiency gains through e-assessment

In 2012, SQA commissioned a small consultation<sup>44</sup>, for internal use, to identify any increase in centre efficiency, such as staff time or costs, resulting from using e-assessment. The consultation involved four colleges, two secondary schools and one training provider. Respondents included faculty managers, principal teachers, quality managers and e-learning or e-assessment managers.

##### **Savings and costs associated with e-assessment**

Centres had difficulty identifying the costs of e-assessment, and the potential savings they could make. They were not aware of any additional costs of using e-assessment. The technical infrastructure and support needed for e-assessment were already in place to meet requirements for other forms of teaching and assessment. Most centres used existing ICT labs, although one centre had invested in an e-assessment suite with a manager. Some thought expanding the use of e-assessment might require similar dedicated facilities, with consequential costs.

All centres believed that e-assessment brought efficiencies, however few had a clear idea of how to measure this. There was general agreement that less time spent marking and internally verifying paper assessments was a primary saving: for a class of twenty there was the possibility of saving several hours

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<sup>43</sup> Growth and Development: an analysis of skills and attitudes to technology in Scottish Further Education, ETNA Vol. V (Jisc RSC Scotland), 2012

<sup>44</sup> Report on generating efficiencies through the use of the Assessment Creation and Delivery System (ACD) (2012), Walter Patterson and Bob Penrose.

per unit. One college calculated this as a saving of around £80 and another suggested savings amounted to around 300 hours per year. Centres also noted that they saved time and costs by not having to photocopy and store assessments. Cost savings were not huge, but when accumulated across learners and subjects they represented a significant proportion of a school's annual budget.

Most centres indicated that staff needed training in ICT skills in general and in e-learning and e-assessment in particular. Colleges recognised that teaching staff could benefit from training in using the VLE and the e-tools it provided. Schools suggested that having someone with the skills to help learners register for and access e-assessment systems would be enough.

Most centres did not focus on time and cost gains, but on the qualitative benefits of freeing staff to do more productive work, for example creating or improving learning, teaching and assessments resources.

## Benefits

Centres overwhelmingly agreed that the ability to provide learners with immediate feedback on their performance was a significant benefit of e-assessment. Respondents said that learners appreciated that they could complete the tests faster than equivalent written assessments, and welcomed the reduction (or removal) of writing. These features particularly benefitted learners with a history of low academic achievement. Where e-assessments offered enhanced question styles that promoted interactivity, or used multimedia, there was also evidence of increased learner engagement.

Centres also suggested that e-assessment is more in tune with expectations of young people for whom IT use is commonplace. It also offers learners:

- flexibility in re-assessment (learners can present when ready);
- opportunities to practice assessments at home and in their own time (formative assessments available through Solar Open Assess); and
- e-portfolios to capture a wide range of evidence and share evidence with assessors more efficiently.

Centres benefit because e-assessment makes internal verification easier to manage and requires less space for storing scripts and portfolios. Tutors using online tests were generally more confident that they were delivering valid and reliable assessments, because assessments and re-assessments were automatically marked and the awarding organisation had pre-verified them. Centres also said that immediate feedback to learners meant they spent less time on remediation. Centres saw the statistics on item, individual and group performance as helpful for reviewing teaching and learning approaches.

## Barriers

Respondents identified few technological barriers with e-assessment; the general view was that they could overcome perceived barriers by planning or with a reasonable level of investment. However, some tutors did have concerns about centre networks' resilience and connections to awarding organisations' servers. Some also expressed concern that, with randomised tests, learners might encounter technical terms or jargon that was unfamiliar. One centre observed that online assessment required learners to have 'a different kind of literacy' and asked whether enough was being done to prepare them for e-assessment.

Most centres reported that e-assessment use across subjects was 'patchy'. Some respondents thought this was because tutors did not know about e-assessment availability, and the potential for the courses they

delivered. Others thought that staff attitude was more of an issue. Few centres had specific policies on e-assessment, so the drivers for change may not have been strong.

One centre was unable to provide a secure e-assessment environment to the standard the awarding organisation required. Schools in PPP contracts had difficulty providing sufficient and suitable access to IT facilities. Schools were limited by the number of IT labs and PCs available: typically, seven labs with twenty PCs to serve 1200 pupils.

### **Actions to improve efficiencies in the use of e-assessment**

Most respondents said awarding organisations could do more to promote the availability and benefits of e-assessment, through subject networks and by providing clearer information on websites. Centres also suggested that if e-assessment was successfully implemented in one curricular area, it should be extended to related areas.

There was a view that awarding organisations could be more responsive to centres' needs, for example giving centres access to resources in the e-assessment bank to create re-assessments or reducing the bureaucracy around registration for e-assessment.

Respondents agreed centres' should encourage senior managers to promote the use of e-assessment more and support those who use it. Budgetary pressure has affected the amount of development time available to staff, so leadership in this area is more important than ever. Respondents suggested that senior managers should ensure e-assessment is considered when budgets are set. This would allow centres to accommodate new awarding organisations requirements such as electronic pads for learners' signatures. Managers should establish procedures to improve the management of e-assessment in their centres.

## Appendix IV

### Government policy and support for e-assessment in Northern Ireland

Responsibility for education in the N Ireland Executive is divided across two portfolios: the Department of Education (DE) oversees education provision for the primary and secondary sectors; the Department for Employment and Learning (DEL) is responsible for further and higher education. Both departments' e-assessment strategies are inextricably bound with their goals for e-learning. Therefore, neither department has a formal, individual strategy for e-assessment: it is included within their respective provisions for e-learning.

DE and DEL's formal strategies prioritise different elements of e-learning, approaching the issues from different perspectives. DE is mainly concerned with providing and developing e-learning in schools and its effectiveness as a tool for teaching and learning in the curriculum. DEL concentrates on developing skills through e-learning and e-assessment to benefit the learner and meet the demands of the labour market. Both policy documents have a series of goals and targets to be achieved.

### Department of Education

In 2002, DE established the Education Technology Strategy Management Group (ETSMG). Members include representatives of the Department (DE), the Education and Training Inspectorate (ETI), school management authorities, Becta (British Educational Communications and Technology Agency), sector bodies and schools. In 2003, ETSMG developed and launched a document called *EmPowering Schools Strategy in Northern Ireland: Transforming learning, teaching and leadership through education and technology change*. The strategy focused on developing a co-ordinated approach to e-learning across the entire school system, setting out a broad vision and strategy for action planning in schools up to 2008, within a broader context of transforming digital education by 2020<sup>45</sup>.

The *EmPowering Schools* objective aims to ensure: 'that all young people should be learning with, through and about the use of digital and online technologies'<sup>46</sup>. The strategy focuses on the continued investment and appropriate application of financial resources to expand the IT infrastructure. The strategy also emphasises:

- setting attainment targets for ICT literacy and proficiency by the end of Key Stages 2 and 3;
- encouraging the expansion of digital opportunities to learners outside the school environment;
- using a virtual learning environment; and
- ensuring that teachers and support staff are 'e-confident' and able to use e-learning effectively in the classroom.

This strategy document summarises this vision into four strategic priorities:<sup>47</sup>

- enhancing practice for learners;
- enhancing professional practice for teachers and school leaders;
- enhancing professional support in schools; and

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<sup>45</sup> *EmPowering Schools in Northern Ireland: Transforming learning, teaching and leadership through education and technology change*, available at: [www.deni.gov.uk](http://www.deni.gov.uk) (Accessed: August 2<sup>nd</sup> 2013)

<sup>46</sup> *Ibid.*, pg. 3

<sup>47</sup> *Ibid.*, pg. 7

- innovating with the infrastructure, the connectivity and the school estate.

On the subject of increasing learners' use of e-learning and its benefits, the strategy specifically refers to developing e-assessment. It proposes that assessment should use digital media to track and record learners' progress. This gives teachers, learners and parents a detailed diagnosis of need and enables teachers to develop personalised learner support<sup>48</sup>.

Using a virtual learning environment – Learning NI<sup>49</sup> – DE aimed to develop a curriculum and assessment system that would allow teachers to track each learner's progress. They could do this using online diagnostic testing, digital portfolios, the development of semi-automation for marking and moderation and interactive and adaptive tests for online use<sup>50</sup>. The Department concluded that the ability to develop these online assessment tools would bring life to the concept of 'assessment for learning'<sup>51</sup>.

The strategy expressed that the resources to fully implement its e-assessment – and more broadly e-learning – goals lay with teachers and support staff in schools. The strategy stressed the need for all school staff to develop appropriate ICT competences to support teaching and learning in the classroom. They should also be able to use online resources and tools through Learning NI to extend learning and assessment beyond traditional means<sup>52</sup>.

The strategy concludes that its successful implementation requires further significant investment to ensure that learners have 'enhanced learning experiences' to not only augment teaching and learning, but to transform education across the whole school.

DE issued a circular in November 2007 to update the school community on the use of ICT in schools<sup>53</sup>. The document confirms the same strategy goals as *EmPowering Schools*, and the important role e-assessment can play. It also confirmed that, since 2000, DE had invested £280 million in hardware and software for schools. Recent DE figures put the current investment at £507 million. DE is currently developing an updated Use of Digital Technologies Strategy to ensure a continued high level of ICT provision.

## Department for Employment and Learning

In March 2005, DEL published a pre-strategy consultation document called *E-Learning Strategy for Further Education Sector: A Learning Revolution*. The department developed a strategy to 'explore new ways of meeting the skills need of both employers and learners,'<sup>54</sup> and 'explore ways (DEL) can assist [Small and Medium Enterprises (SME)] to up-skill their workforces,'<sup>55</sup>. To do this, DEL examined the possibility of

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<sup>48</sup> Ibid., pg. 5

<sup>49</sup> See comments below in section 3 of this report

<sup>50</sup> Ibid., pg. 11

<sup>51</sup> Ibid., pg. 20

<sup>52</sup> Ibid., pg. 18

<sup>53</sup> Circular 2007/24: Use of Information and Communications Technology in Schools, available at: [www.deni.gov.uk/circular\\_2007.pdf](http://www.deni.gov.uk/circular_2007.pdf) (Accessed: August 5 2013)

<sup>54</sup> *E-Learning Strategy: For the Further Education Sector*, available at: [www.delni.gov.uk/elearning\\_strategy\\_for\\_fe\\_sector.pdf](http://www.delni.gov.uk/elearning_strategy_for_fe_sector.pdf) (Accessed: August 2<sup>nd</sup> 2013) pg. 4

<sup>55</sup> Ibid.



finding, 'alternative methods of delivery that are flexible and manageable and not constrained by traditional teaching methods and timetables'<sup>56</sup>.

Acknowledging the departments significant financial investment into ICT provision across the FE sector – £25.6 million by 2006 – the strategy aims to make full use of the resources already available in colleges to further encourage learning and assessment through a digital medium. Taking this as its point of departure, the strategy rests on four key areas for action:<sup>57</sup>

- Strategic Leadership and Management: to take a co-ordinated approach across the FE sector to ensure common and good practice;
- Quality Strands: to establish standards that will introduce a common approach to e-learning to continue to improve its use across the FE sector;
- Learner Support and Widening Participation: to ensure there is a blended approach to learning that balances e-learning with traditional teaching methods;
- Infrastructure and Support Services: to ensure the necessary infrastructure and support services are in place to support the use of e-learning.

Much of the strategy and these four areas for action deal directly with the provision for e-learning as a whole. The strategy integrates specific goals for e-assessment into these provisions, dealing with three key areas:

- qualifications provision;
- digital recording of assessment; and
- developing quality assurance principles to ensure commonality of practice across colleges.

The department outlined its commitment to working with all relevant authorities to ensure that they developed an e-assessment system, such as on-screen testing and the use of e-portfolios, to help with the assessment of qualifications<sup>58</sup>. Its ultimate goal was to see 'access to a curriculum that has been mapped to qualifications (or 'units of') that can be e-assessed or recorded'<sup>59</sup>.

DEL outlined its intention that e-assessment should not remain an independent tool to use only with qualifications. For the maximum benefit of the learner and the teacher, colleges should use e-learning systems to enhance the value of e-assessment by:

- developing a system to capture learner achievements;
- formatively assessing learner skills; and
- supporting tutors and lecturers to determine specific learning needs<sup>60</sup>.

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<sup>56</sup> Ibid.

<sup>57</sup> Ibid., pg. 8

<sup>58</sup> Ibid., pg. 11

<sup>59</sup> Ibid., pg. 13

<sup>60</sup> Ibid., pg. 12

To achieve this, the department aims to work with QCA NI<sup>61</sup> and CCEA Accreditation to develop regulatory principles to promote confidence in using e-assessment in vocational education. It will also develop protocols and guidance on using e-portfolios more widely in vocational education<sup>62</sup>.

The 2005 DEL's e-learning strategy provided a policy co-ordinated focus for the different stakeholder groups and the thirteen colleges in N Ireland. In 2007, the thirteen colleges merged to create six colleges. Each of these large institutions has developed an ILT strategy and processes according to the needs of their local area, learners and wider provision through 'virtual college' provision. To meet these targets, DEL pledged to continue to support the technical and human IT infrastructure in the FE sector. It emphasises the importance of an IT competent workforce. DEL has also pledged to support the continued development of a common Management Information System: Northern Ireland Colleges Information System (NICIS). All FE colleges use this to aid administration and management and maintain close working relationships with JISC. By supporting NICIS, DEL ensures that N Ireland's FE sector infrastructure and e-learning needs align with the rest of the United Kingdom and all other partners.<sup>63</sup>

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<sup>61</sup> The Qualifications and Curriculum Agency (QCA) was created in 1997. With the creation of Ofqual as the independent regulator of qualifications in 2007, it was renamed the Qualifications and Curriculum Development Agency (QCDA). It has ceased to be operational since March 2012.

<sup>62</sup> Ibid., pg. 12

<sup>63</sup> Ibid., pg. 14

## Appendix V

### Outcomes from Primary Research

We carried out primary research in schools and colleges in N Ireland and Wales. CCEA Research and Statistics developed and administered an online consultation questionnaire to explore centre readiness for using e-assessment in qualifications for 14–19 year olds. You can find a full report on the methods and findings of this research in Appendix V. These findings are based on 65 responses to the questionnaire. Most of these responses come from N Ireland centres representing around a quarter of post-primary centres in N Ireland. It should be noted that the number of survey responses from centres in Wales is small. The replies from Welsh centres, although not wholly representative, may represent a fair balance of views in Wales.

It was important to gauge centres' general opinions and experiences of e-assessment to understand their readiness to use it. This information provides a baseline measure of experiences. Around a third of the responses to the questionnaire came from centres with experience of using e-assessment in a range of 14–19 qualifications. Half of these centres recorded a positive experience, citing the ease of administering assessments. This highlights that the experiences of using e-assessments are not all positive. Longitudinal research may be required to look at trends to better understand these opinions. Most respondents with e-assessment experience recorded that learners had a positive experience of e-assessment and enjoyed engaging with the technology. Learner engagement continues to be a particularly positive feature of using e-assessment. Respondents indicated that learners had the skills to engage with the method of e-assessment, but they did not consider it accessible for all types of learners. The survey results suggest that learners' experience is more positive than that of administrators, but there remains room for improvement. Although respondents believe learners have high levels of skill in using e-assessment, they felt staff confidence in using e-assessment was not as high. Accessibility in using e-assessment appears to be reasonably well regarded, but the survey results do not provide a consistent message.

Reliability and speed of broadband presents particular problems in rural schools and colleges in general, particularly in areas of Wales and N Ireland. The research shows that, although most respondents indicated that broadband service is reliable for running e-assessments, there were still problems with speed of connectivity. This was particularly evident in schools in N Ireland using the C2K network. The Welsh Government has been working to improve digital access. This survey took place during a period of significant changes to the digital infrastructure and education ICT services in Wales. The Learning in Digital Wales (LiDW) initiative should have brought a minimum 100 Mb high-speed broadband connection to all secondary schools in Wales by the end of summer 2014.

Although organisations and centres are creating flexible ways to provide increased capacity for data storage, nearly half of the respondents found there was insufficient data storage space to facilitate e-assessment adequately. They also stated that they usually need shared spaces for teaching and learning resources. The report discusses the variability of ICT provision, server and storage capacity in centres and in nationally provided networks. The responses suggest that server and systems storage capacities remain an issue in some centres. Most respondents preferred using desktop computers for e-assessments, rather than laptops or tablets. After the survey, some anecdotal evidence emerged that showed an increasing demand for additional rooms and computers or systems for assessment. These additional demands increase the strain on centres' finite resources, and may lead to potential issues with connectivity and data storage.

Staff development is a key consideration in centre readiness for the use of e-assessment. This report has looked at staff or professional development from the point of view of support agencies and internal training and support. Most respondents considered that staff needed more training in using e-assessment, particularly before centres begin to use it. The questionnaire responses reflect that centres support their

staff to undertake e-assessment, with some respondents noting that they would like more technical support. The Welsh Government funds the Wales Centre Support Team (WCST), which is run by WJEC and provides information, support and training to examinations officers in schools, FE colleges and work-based learning providers.

E-Assessment does not feature as a significant issue in the WCST support log, possibly because few centres currently use e-assessment as often as traditional assessments.

Some respondents are becoming increasingly aware of the benefits of using e-assessment compared to traditional methods. The efficiencies and advantages of using an e-assessment process cited were:

- immediacy of reporting results; and
- ease of administration.

Others recorded wider benefits such as effective storage and less environmental impact. Some of this is offset against the perceived lack of time, lack of staff ICT competency and financial constraints as potential barriers to e-assessment development.

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## Centre Readiness for e-assessment

March 2014

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# 1.0 Executive Summary

## Rationale

The Council for the Curriculum, Examinations and Assessment (CCEA), Scottish Qualifications Authority (SQA) and the Welsh Government are working together to investigate whether centres are prepared for the use of e-assessment in schools and colleges. As part of this work, primary research was carried out to gather centres views and experiences of e-assessment and to explore their readiness for using e-assessment in 14-19 qualifications in N Ireland and Wales. Feedback from this research will be used to inform regulatory advice and guidance and to support innovation within qualifications development.

The following report is a summary of feedback gathered during the consultation process. This includes feedback from N Ireland and Welsh centres, SQA choosing not to take part in this section of the project having recently carried out similar survey work with Scottish centres. The majority of respondents were from N Ireland (n=58) with the remainder (n=7) coming from Wales.

## Key Findings

Twenty-four out of 65 respondents indicated that their centre has had experience of using e-assessment. Half of those with experience (12 out of 24) rated their experience as either good or very good, ten rated it as ok.

Nine respondents with experience of e-assessment found administering them as either easy or very easy. A further nine respondents felt it was okay whilst the remainder (n=5) found administering e-assessments in their centre difficult.

Half of the respondents (12 out of 24) with experience of e-assessment rated their learners' overall experience as either good or very good with some stating that pupils enjoy engaging with technology (n=2). Six respondents rated their learners' overall experience as okay. Four respondents rated their learners' experience as poor.

The majority of respondents (18 out of 24) with experience of e-assessment believed that their learners have the necessary skills to competently use e-assessment. Just over half of those (14 out of 24) with experience of e-assessment believed it is accessible for all students.

The majority of respondents (n=53) indicated that their broadband service is reliable and therefore is capable of running e-assessments. A smaller number (n=10) felt their broadband is unreliable, stating problems with the speed (n=6) and citing problems with the C2K network (in N Ireland) (n=4).

Just under half of the respondents (n=29) felt there is sufficient and appropriate storage at their centre to securely save data from e-assessments. Seventeen respondents indicated there is not sufficient and appropriate storage at their centre to securely save data from e-assessments. Those who felt there is not enough storage explained that shared spaces

are often too full to save basic teaching and learning materials (n=2) and commented that the storage is not fit for purpose (n=3).

The majority of respondents (n=53) felt there is a need for further relevant training in the use of e-assessment. Such respondents commented that this needs to take place before e-assessment is implemented within a centre (n=4) whilst others called for the training to be extensive to ensure staff are adequately prepared (n=2).

Just under half of the respondents said that support for e-assessment is evident across some parts of the centre (n=30) whilst a similar number believed it is only evident in localised parts of the centre (n=21). A smaller number stated that it is either evident across the centre (n=3), across most but not the entire centre (n=3), or absent (n=8).

Just over half of the respondents (n=33) felt there is sufficient technical support in their centre to facilitate e-assessment. Such respondents praised the capability and expertise of their staff. However, 23 respondents felt there is not enough sufficient technical support in their centre to facilitate e-assessment. Five respondents said they were unsure.

Respondents identified a number of benefits from using e-assessment. The most frequent response was the efficiency of the system (n=11), instant release of results (n=11) and ease of administration (n=7) compared to the traditional method. A smaller number of respondents said it provides effective storage (n=6) and is more environmentally friendly through reducing the usage of paper (n=6).

Potential barriers to any (further) development of processes to promote and support e-assessment was lack of time in centres (n=36), limited staff ICT competency (n=35), financial constraints and availability of e-assessment in qualifications offered (n=33).

## Recommendations

The research suggests a number of recommendations, set out below that CCEA and the Welsh Government should consider to help promote effective e-assessment usage.

- Provide a practical guide detailing the steps involved in creating and maintaining an e-assessment system;
- Draft common guidelines for the quality assurance of e-assessments;
- Disseminate good practice in meeting educational needs for e-assessment, possibly subject based; and
- Create accessibility and user interface guidelines for deploying e-assessment.



## 2.0 Introduction

E-assessment is used in around 2017 qualifications and by 66 awarding organisations (including 260 General/Other General qualifications) in England, N Ireland and Wales on the Register of Accredited Qualifications (October 2013)<sup>64</sup>. In Scotland, e-assessment is used across a range of qualification types from National Qualifications through to Scottish Vocational Qualifications and sector specific qualifications (such as Streetworks). The type of assessment differs for a variety of qualifications, for example, multiple choice assessments using basic e-testing applications or wholly e-assessed qualifications using specially developed software packages for e-portfolio and e-testing. Schools and colleges use a range of general and vocational qualifications that include e-assessment components.

E-assessment in qualifications has been available for many years in schools and colleges, with uptake increasing over the last number of years as more qualifications using e-assessment become available.

Awarding organisations have implemented extensive use of e-assessment in qualifications offered in schools and colleges, and have modernisation and development projects in place to introduce further developments in qualifications assessment over the next few years. It is timely to understand centre readiness for e-assessment in the light of potential and current developments in qualifications assessment, including high-stakes qualifications such as GCSEs and Scottish Standard Grade qualifications.

The OECD's Programme for International Student Assessment (PISA) makes it possible to regularly and directly compare the quality of educational outcomes across education systems. PISA believes that Computer-based assessments have the potential to interactively adapt to the skill potential of students and thus provide an effective and engaging assessment experience. In 2006, the PISA assessment of science included for the first time a computer-based test.<sup>65</sup>

The Council for the Curriculum, Examinations and Assessment (CCEA), SQA and the Welsh Government are working together to research and investigate the use of e-assessment in schools and colleges. The research aimed to gather centres views and experiences of e-assessment and to explore their readiness for using e-assessment in 14-19 qualifications.

E-assessment in this research is defined as 'The end-to-end electronic assessment processes where ICT is used for the presentation of assessment activity and the recording of responses.' (JISC, 2007)<sup>66</sup>. For example, candidates read the questions and make their responses on screen, or record evidence in an electronic portfolio. Feedback from this research will be used to inform regulatory advice and guidance to support innovation within qualifications development.

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<sup>64</sup> <http://register.ofqual.gov.uk/>

<sup>65</sup> PISA Computer-Based Assessment of Student Skills in Science [http://www.oecd-ilibrary.org/education/pisa-computer-based-assessment-of-student-skills-in-science\\_9789264082038-en](http://www.oecd-ilibrary.org/education/pisa-computer-based-assessment-of-student-skills-in-science_9789264082038-en)

<sup>66</sup> JISC (2007) <http://www.jisc.ac.uk/media/documents/themes/elearning/effpraceassess.pdf>

## Limitations

As is the case with any research, the presented findings need to be felt within the context of limitations. The research process was conducted in a busy time of year for schools and this meant there was a limited response rate, particularly in Wales. Readers should therefore approach the current findings and conclusions with caution. In addition, interpretation of results should be limited to the groups examined at the time of this research.

## **3.0 Method**

### **3.1.1 Online Questionnaire**

CCEA Research and Statistics Unit developed an online consultation questionnaire that sought the views of centres views and experiences of e-assessment and explored their readiness for using e-assessment in 14-19 qualifications. The questionnaire was available between 18<sup>th</sup> November 2013 and 10<sup>th</sup> January 2014. Institutions in Wales were offered the option of completing their questionnaire in Welsh. There were 65 respondents to questionnaire with one of these responses in the medium of Welsh.

### **3.1.2 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. As the overall response was fewer than 100 number rather than percentages are used in the report.

### **3.1.3 Analysis of Data**

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

## 4.0 Results

This section presents the results for each question from the centre readiness for e-assessment questionnaire. Results are based on completed questionnaires from 65 respondents. Results relate to the number of respondents who answered each question, which may be fewer than the overall total of 65. 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

Two fifths of respondents (n=26) were Middle Management, e.g. Head of Department/Head of School/Curriculum Lead. Table 1 below presents respondent type by number.

**Table 1. Respondent type.**

<b>Respondent type</b>	<b>No. of respondents</b>
Senior Management, e.g. Principal/Vice Principal/Director	(n=17)
Middle Management, e.g. Head of Department/Head of School/Curriculum Lead	(n=26)
Teacher/Lecturer	(n=22)
ICT Coordinator	(n=15)
Examinations Officer	(n=10)
<b>Total</b>	<b>90</b>

\*Respondents were able to select multiple respondent types

**Table 2. Centre Type.**

<b>Centre type</b>	<b>No. of respondents</b>
Grammar	(n=26)
Secondary	(n=24)
Comprehensive	(n=2)
FE College	(n=5)
<b>Total</b>	<b>57</b>

**Table 3. Centre Size.**

<b>Centre size</b>	<b>No. of respondents</b>
Small (<200 learners)	(n=3)
Medium (200-800 learners)	(n=35)
Large (>800 learners)	(n=26)
<b>Total</b>	<b>64</b>

The majority of respondents (n=41) indicated that their centre is in an urban setting.

### Experience using e-Assessment

The majority of respondents were from N Ireland (n=58) with the remainder (n=7) from Welsh centres.

Twenty-four respondents indicated that their centre has had experience of using e-assessment. These respondents were asked which subject/s and what level/s have they used (or are currently using) and for how many learners in a typical year. The list below displays the frequency of respondents and range of learners per subject. It must be noted that some respondents did not provide the level.

### **(N Ireland Responses)**

- GCSE ICT (n=7; 20-130 learners);
  - GCSE Applied ICT (n=3; 2-50 learners);
  - GCE ICT (n=1; 20 learners);
  - Key Stage 3 ICT (n=1; 360 learners);
- ICT (n=4; 40 learners);
- Key Stage 3 ICT (n=1; 360 learners);
- Modern Foreign Languages (n=2; n=145);
- GCSE English Literature (n=1; 130 learners);
- GCSE Moving Image Arts (n=5; 6-20 learners);
- Yellis (n=3; 120-157 learners);
- Midyis (n=2; 40-150 learners);
- Clait (n=1; 157 learners)
  - Clait+ (n=1; 157 learners)
- GCSE Business Studies (n=1; 15 learners);
- GCSE Technology (n=1; 20 learners);
- GCSE Geography (n=1; 10 learners);
- GCSE French (n=1; 10 learners);
- Business and Communication (n=1; 20 learners);
- Essential Skills (n=1; 90 learners);
- Progress in Maths (n=1; 150 learners);
- Progress in English (n=1; 150 learners); and
- CIDA (GCSE equivalent) (n=1; 20 learners).

### **(Wales Responses)**

- Level 1-3 Hairdressing (n=3; 20-150 learners);
- Level 1-3 Beauty (n=3; 25-120 learners);
- A Level Applied ICT (n=2; 20-27 learners);
- AAT Level 1-4 (n=1; 200 learners);
- GCSE Electronics (n=1; 20 learners);
- IFS Level 1-3 (n=1; 60 learners);
- EAL Level 1-4 (n=1; 150 learners);
- A Level Business (n=1; 20 learners);
- GCE Business (n=1; 16 learners);
- City and Guilds Level 1-4 (n=1; 300 learners); and
- Plumbing Level 2-3 (n=1; 200 learners).

**Table 4.**

<b>Please rate your overall experience of using e-Assessment.</b>			
<b>Very Good</b>	<b>Good</b>	<b>Ok</b>	<b>Poor</b>
(n=5)	(n=7)	(n=10)	(n=2)

The qualitative themes identified by those who have experience with e-Assessment were consistent for both N Ireland and Welsh respondents. Half of those with experience (12 out of 24) of using e-Assessment rated their experience as either good or very good. Ten rated their experience as ok with some commenting that the experience was dependent on the system being used. The remainder (n=2) felt their experience was poor. Such respondents stated that OCR's Clait system needs improvement.

**Table 5.**

<b>Please how you found administering e-Assessment in your centre.</b>				
<b>Very Easy</b>	<b>Easy</b>	<b>Ok</b>	<b>Difficult</b>	<b>N/A</b>
(n=2)	(n=7)	(n=9)	(n=5)	(n=1)

Nine respondents with experience of e-assessment found administering them as easy or very easy. A further nine respondents felt the administration was ok whilst the remainder (n=5) found administering e-assessments in their centre difficult.

Sixteen respondents indicated that they experienced challenges in implementing e-assessment. These included:

- access to computers (n=3);
  - securing ICT suites for the A Level Unit 2 (NI) exam paper (n=1);
- problems logging all pupils on at once (n=2);
- problems with software (n=2);
- the amount of organisation required to keep pupil's work in a secure and convenient location on the network (n=1);
- assessing open ended questions (n=1);
- vague assessment criteria (n=1);
- links to software packages no longer working when copied to folders (n=1);
- the speed of internet connection (n=1);
- issues during CCEA Applied ICT exam, students had to log off and then on one hour into the exam (n=1);
- the initial cost of investment in e-assessment local server (n=1); and
- difficulties accommodating learners with access arrangements (n=1).

A small number of respondents identified assessments that they had problems with. Such respondents experienced issues with the system used for Moving Image Arts (n=1) finding it difficult to set up network and stating that the software did not work on all machines (n=1). A further respondent found the OCR Clait system very difficult and time consuming for staff to use.

Respondents were asked to comment on the impact of e-assessment on their workload. Certain teachers indicated that e-assessment has reduced their workload (n=4) and the amount of administration (n=4) normally associated with traditional assessment. Twelve respondents felt that e-assessment has significantly increased their workload with

teachers explaining that it can be time consuming setting up and managing the assessments (n=4).

## Learners

**Table 6.**

<b>Please rate your overall experience of using e-assessment</b>					
<b>Very Good</b>	<b>Good</b>	<b>Ok</b>	<b>Poor</b>	<b>Very Poor</b>	<b>Don't Know</b>
(n=4)	(n=8)	(n=6)	(n=3)	(n=1)	(n=2)

Half of the respondents (12 out of 24) with experience of e-assessment rated their learners' overall experience as either good or very good with some stating that pupils enjoy engaging with technology (n=2). Six respondents rated their learners' overall experience as okay. Four respondents rated their learners' experience as poor. There were no qualitative comments provided to explain these views.

**Table 7.**

<b>Do your learners have the necessary skills to competently use e-assessment?</b>		
<b>Yes</b>	<b>No</b>	<b>Don't Know</b>
(n=18)	(n=3)	(n=3)

The majority of respondents (18 out of 24) with experience of e-assessment believed that their learners have the necessary skills to use e-assessment. Just over half of those (14 out of 24) with experience of e-assessment believed it is accessible for all students. Certain respondents felt that e-assessment is sometimes not available to all students or subjects (n=1) nor suited to certain subjects (n=1). Lack of available computers were again cited as a major restriction within centres (n=4). Other respondents believed a major benefit of e-assessment is the ability to collate results (n=1) and instantly analyse the responses to questions. N Ireland respondents identified problems with the C2K server (n=1) and technical difficulties with the Applied ICT examination (June 2013) (n=1).

Thirteen (out of 24) respondents who have experience of e-assessment said the assessment they used included a practice opportunity for learners. Only a small number of such respondents specified the assessments and they included:

- CAT (n=1);
- Progress in Maths (PIM) (n=1);
- Moving Image Arts (n=1); and
- Clait (n=1).

## Computer Hardware and Practical Issues

Respondents were split when asked if there is sufficient space in their centre to carry out e-Assessments. Thirty three respondents indicated that there is sufficient space in their centre to carry out e-assessments with the remainder (n=32) stating the opposite.

Respondents were asked to provide an estimate of the computer-learner ratio in their centre to carry out e-Assessment (for students aged 14-19). The breakdown is listed below:

- 1:20 (n=8);
- 1:10 (n=15);
- 1:5 (n=17);
- 1:3 (n=9);
- 1:2 (n=2); and
- 1:1 (n=4).

Ten respondents said they were unsure of the ratio.

**Table 8.**

Which type of electronic device do you currently use when carrying out e-assessment?	No. of respondents
Desktop computer	40 (8 also selected 'laptop', 3 also selected 'tablet')
Laptop Computer	12
Tablet	3
<b>Total</b>	<b>55</b>

The majority of respondents (n=40) said they currently use desktop computers to carry out e-assessment. This finding does not match the earlier finding of only 24 respondents who indicated their centre had experience of using e-assessment. However, it must be noted that respondents were allowed to select more than one option for this question. A smaller number stated that they use laptops (n=12) and tablet devices (n=3) for carrying out e-assessment.

**Table 9.**

What is your preferred electronic device for carrying out e-Assessment?	No. of respondents
Desktop computer	47
Laptop Computer	7
Tablet	5
<b>Total</b>	<b>59</b>

Respondents were then asked what would be their preferred electronic device for carrying out e-assessment. Respondents were only allowed to select one option for this question. This question drew a similar response with the majority favouring a desktop computer (n=47) and the remainder preferring a laptop (n=7) or tablet device (n=5). Those favouring the use of a desktop computer believed this was a more reliable (n=3), secure (n=1) and accessible (n=1) method of assessment.

The majority of respondents (n=53) indicated that their broadband service is reliable. A smaller number (n=10) felt it is unreliable stating problems with the speed (n=6) and citing



problems with the C2K network (n=4). A Welsh respondent said the service is poor in the borough of Rhondda Cynon Taf.

Just under half of the respondents (n=29) felt there is sufficient and appropriate storage at their centre to securely save data from e-assessments. Seventeen respondents indicated there is not sufficient and appropriate storage at their centre to securely save data from e-assessments. Those who felt there is not enough storage explained that shared spaces are often too full to save basic teaching and learning materials (n=2) and commented that the storage is not fit for purpose (n=3). One Welsh respondent stated that they do not have a budget to update the equipment. A further teacher remarked that ‘legacy servers are already working to capacity’.

Nineteen respondents were unsure whether there is sufficient and appropriate storage at their centre to securely save data from e-assessments. One teacher stated that C2K set the storage capacity in N Ireland. A further N Ireland respondent stated that there is sufficient and appropriate physical storage but not sufficient electronic storage in their centre. A Welsh respondent said they have invested in a local server as the Rhondda Cynon Taf broadband supply is not reliable enough for GCSE/GCE examinations.

Respondents were asked how frequently their learners use technology as an integrated part of their learning. The breakdown can be seen below:

- Daily (n=32);
- Weekly (n=28); and
- Monthly (n=3).

### **Staff Experience and Training**

**Table 10.**

<b>Do the relevant staff in your centre have the necessary skills to competently support and deliver e-assessment?</b>		
<b>Yes</b>	<b>No</b>	<b>Don't Know</b>
(n=22)	(n=24)	(n=19)

Respondents were asked whether the relevant staff in their centre have the necessary skills to competently support and deliver e-assessment. Twenty-two respondents indicated that relevant staff in their centre has the necessary skills. Such respondents explained that these relevant staff are ICT and support staff.

Twenty four respondents felt the relevant staff in their centre do not have the necessary skills to competently support and deliver e-assessment. Certain teachers indicated that their staff have varying levels of skills (n=3) and recommended further training to ensure all are at a competent level (n=3). One respondent commented that many teachers are under pressure from other aspects of school life and felt it would be unreasonable to expect high levels of engagement with ‘up-skilling’. One teacher indicated that there is an audit of staff competency currently being carried out in their centre. A further respondent noted the difficulties of ensuring teachers ICT skills are kept up to date.

A small number of respondents (n=7) indicated that their staff received training on e-assessment. Those from N Ireland centres said they have attended:

- CCEA support events (n=1);
- training for folder-maker for GCSE ICT (n=1);
- training for MIDYIS (n=1); and
- training for YELLIS (n=1).

A small number of Welsh respondents (n=3) said they had received internal training on e-assessment but did not provide any further information.

Six respondents felt there is a need for further training, especially for those in other departments who do not have proficient ICT skills (n=3).

Nineteen respondents were unsure if the relevant staff in their centre has the necessary skills to competently support and deliver e-assessment.

The majority of respondents (n=53) felt there is a need for relevant training. Such respondents commented that this needs to take place before e-assessment is implemented within a centre (n=4) whilst others called for the training to be extensive to ensure staff are adequately prepared (n=2). One such respondent believes there is insufficient support provided to centres adapting to e-assessment. It was also stated that the success of training will depend on the efficient transfer of data between awarding bodies and centres (n=1).

### **Support for e-Assessment**

Respondents were asked the reasons for implementing e-assessment in their centre. Some explained that it was because of examination board requirements (n=6), required for Key Stage 3 assessments (n=2) and as part of baseline testing (n=2). Four teachers indicated that it is a requirement for certain subjects. Other reasons included:

- reduction of administration (n=2);
- ability to collate results and instantly provide analysis to questions (n=1);
- ease of submitting work to CCEA (n=1);
- being part of a CCEA pilot (n=1);
- to facilitate courses with multimedia content (n=1);
- speed and efficiency of e-assessments (n=1); and
- reliability of e-assessments (n=1).

**Table 11.**

<b>Does your centre have any strategies/policies that inform the development of e-assessment in your centre?</b>		
<b>Yes</b>	<b>No</b>	<b>Don't Know</b>
(n=11)	(n=36)	(n=18)

Eleven respondents indicated that they have strategies/policies that inform the development of e-assessment in their centre. However, only a small number of respondents commented on this. One teacher said they have a clear strategy of slowly

building the e-portfolio during the two years of GCSE so that the majority of work is completed in a manageable timeframe. Another respondent commented that the governance of ICT in the school is in a transitional period.

The majority of respondents disagreed with the statements that meeting and development time is allocated to e-assessment planning (n=41) and that e-assessment is felt in curriculum planning (n=50). Similarly, the majority disagreed that teachers/lecturers are encouraged to consider the use of e-assessment in the qualifications they deliver (n=46) and develop their competence/confidence in delivering programmes including e-assessment (n=42).

Responses were more split when asked if their centre embraces innovative assessment methods (incl. e-testing and e-portfolio) in qualifications. Thirty-three respondents agreed with this statement whilst 31 did not. Respondents were also split whether staff are provided with opportunities to develop confidence through training courses. Thirty-one respondents agreed that staff are provided with opportunities to develop confidence through training courses. However, 33 respondents did not think there are enough opportunities for staff to develop confidence through training courses.

The majority of respondents (n=46) indicated that their centre are supportive in the use of e-assessment.

**Table 12.**

<b>Would you say support for e-assessment is:</b>				
<b>Evident across the centre</b>	<b>Evident across most but not all of the centre</b>	<b>Evident across some parts of the centre</b>	<b>Only evident in localised parts of the centre</b>	<b>Absent</b>
(n=3)	(n=3)	(n=30)	(n=21)	(n=8)

Table 12 shows that just under half of respondents indicated that support for e-assessment is evident across some parts of the centre (n=30) whilst a similar number believed it is only evident in localised parts of the centre (n=21). A smaller number stated that it is either evident across the centre (n=3), across most but not the entire centre (n=3) or else absent (n=8).

Just over half of the respondents (n=33) felt there is sufficient technical support in their centre to facilitate e-assessment. Such respondents praised the capability and expertise of their staff. One respondent said e-assessment requires time set aside by the technician and the exams officer to ensure work is appropriately collected. However, 23 respondents felt there is not enough sufficient technical support in their centre to facilitate e-assessment. Five respondents said they were unsure.

Only a small number of respondents (n=5) have evaluated the impact of e-assessment on the students' experience.

These respondents were split when asked if the introduction of e-assessment has been viewed positively by students. The breakdown can be seen below:

- Yes by most students (n=1);
- Yes by some students (n=1);
- No (n=2); and
- Don't know (n=1).

### **Benefits and Barriers**

Respondents identified a number of benefits from using e-assessment. The most frequent response was the instant availability of results (n=11), and the efficiency of the system (n=8), and ease of administration (n=5) when compared to the traditional method. Eight respondents felt students are motivated using e-assessment. A smaller number of respondents said e-assessment is more environmentally friendly due to a reduction in paper usage (n=6) and provides effective storage (n=3). Other comments included:

- Allows objective marking and reduces human error (n=2);
- It develops students ICT skills (n=1);
- Accessible for SEN learners (n=1);
  - It is less stressful for students with Moderate Learning Difficulties (MLD) (n=1);
- It is appealing for students with poor handwriting (n=1);
- Pupils engage more readily with ICT based tasks (n=1); and
- Allows for sharing of data (n=1).

Respondents were asked which subjects are more suited to e-assessment than paper-based assessment. The most frequent responses were for ICT (n=18) and Mathematics (n=10). Four respondents believed that a wide range of subjects are suited to e-assessment. Other subjects included:

- Computing (n=4);
  - Computer Science (n=1);
- Sciences (n=4);
- Business (n=2);
- Languages (n=2);
- Physics (n=1);
- Electronics (n=1)
- Humanities subjects (n=1);
- Moving Image Arts (n=1)
- Technology (n=1);
- Literacy (n=1);
- Music (n=1);
- YELLIS (n=1); and
- Progress in Maths (PIMs) (n=1).

Respondents were also asked to specify the subjects they felt less suited to e-assessment than paper-based assessment. Certain teachers commented that English (n=9), History (n=6), Science (n=4) and Drama (n=3) are not suited to e-assessment. A further three respondents felt that 'practical subjects' are not suited to e-assessment. Other responses included:

- Mathematics (n=4);
- Art (n=3);
- Sociology (n=2);
- Music (n=2);
- Psychology (n=1);
- Subjects with coursework (n=1);
- ICT (n=1);
- Physical Education (n=1);
- Oral examinations (n=1);
- Technology (n=1);
- Religious Studies (n=1);
- Vocational/Occupational subjects (n=1);
- Home Economics (n=1);
- Modern Languages (n=1); and
- Vocational/Occupational subjects (n=1).

Respondents were asked to comment on potential barriers to any (further) development of processes to promote and support e-assessment in their centre. The responses are listed below:

- Lack of time (n=36);
- Limited staff ICT competency (n=35);
- Financial constraints (n=33);
- Availability of e-assessment in qualifications offered (n=33);
- Potential risk of using e-assessment for high stakes qualifications (n=30);
- Departmental culture (n=20);
- Learners' reluctance to embrace e-assessment (n=12); and
- School/college culture (n=9).

Other potential barriers identified included limited access to ICT availability (n=6) and lack of training (n=2). Three respondents said e-assessment requires ICT resources that are not available in most schools. Such respondents believed it requires extensive training (n=1) and adequate hardware/software provision (n=1). One teacher commented that adding new technologies and processes is a learning curve for staff which is difficult to accommodate in an already packed schedule.

## 5.0 Conclusion

The feedback demonstrates that there is a need for further research to investigate whether centres are prepared for the use of e-assessment in schools and colleges. Although there is a trend towards e-assessment in some centres, it can be concluded that the complexity of issues affecting some centres increases with the use of e-assessment technology. However, it would be a wrong conclusion to draw a negative picture on the real benefits of e-assessments and therefore, it would be a wrong consequence to stop further activities due to the complexity of challenges to overcome and variety of problems to solve. The research suggests that the potential benefits may outweigh the problems experienced. For example, respondents identified a number of benefits from using e-assessment. The most frequent response was the efficiency of the system, instant release of results and ease of administration compared to the traditional method.

Uptake of e-Assessment is increasing over the last number of years as more qualifications using e-assessment become available. However, this research has demonstrated that some centres are not following this trend as they do not have the systems in place, staff expertise or culture to carry this forward.

The research undertaken shows that there is varying usage of e-assessment from those responding. Ways of increasing this usage include promoting the benefits of e-assessment to centres, enriching the testing experience and making the test results more useful for teachers and students. More focused assessments with more relevant results and assessments which are more relevant for the needs of the future and rapidly changing needs is something that will be of benefit to all.

### Recommendations

The primary research has suggested a number of recommendations that CCEA and the Welsh Government should consider to help promote effective e-assessment usage, these are set out below.

- Provide a practical guide detailing the steps involved in creating and maintaining an e-assessment system;
- Draft common guidelines for the quality assurance of e-assessments;
- Disseminate good practice in meeting educational needs for e-assessment, possibly subject based; and
- Create accessibility and user interface guidelines for deploying e-assessment.