

# **EVALUATION OF THE SCOTTISH PASS-IT ASSESSMENT PROJECT**

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## **Abstract**

The Pass-IT project brought together key players in Scottish education to research the use of CAA in Schools and Colleges across a range of National, Higher National subject areas. It focused on the applicability and suitability of different forms of technology to enhance the assessment process.

This paper reports on the findings of the external evaluation of the project, concentrating on the barriers and enablers to the use of CAA, lessons learned and the impact on student learning.

The evaluation consisted of two parts; a contextualising review of the computer-assisted assessment literature, which is reported in more detail elsewhere (Warburton and Conole, 2005), and a series of interviews with key stakeholders involved in the project, which is the subject of this paper. The focus was on the stakeholders' overall perceptions of the project, its value and how it relates to their own roles and within their own organisation, as well as consideration of potential future activities in this area including mainstreaming of the project and future areas of research exploration.

## **Introduction**

Assessment is widely regarded as the critical catalyst for student learning (eg Brown, Bull and Pendlebury, 1997) and there is considerable pressure on higher education institutions to measure more formally how learning outcomes have been met by students (TQEC Cooke Report quoted by Dearing 1997; Farrer 2002; Laurillard 2002). This has been interpreted as a demand for more frequent assessment as a way of better assuring the quality of learning while financial resources are seen to be static or dwindling. Computer-assisted assessment (CAA) has considerable potential both to ease the assessment load and to provide innovative and powerful modes of assessment (Brown et al., 1997; Bull and McKenna, 2004) and as the use of ICT increases there may be 'inherent difficulties in teaching and learning online and assessing on paper' (Bennett, 2002a; Bull, 2001). Recognising and acknowledging the increasing importance of CAA, the Pass-IT project adapted to carry out a detailed and rigorous research into the use of CAA

across Schools and Colleges and in particular a comparison of its use with paper-based assessment methods.

## **Methodology**

The main objectives of the evaluation were to carry out an examination of the project activities and outputs, and an analysis of the project methodology and approach and evaluate the effectiveness of the project's working practice and communication mechanisms; evaluate the success of the project against aims and objectives and to explore the potential for mainstreaming the work of the project and strategies for sustainability and make recommendations for future actions in relation to the outputs of the project and the findings of the evaluation study.

This was achieved through document and content analysis of project materials and the internal evaluation findings. In addition interviews will be carried out with the research team to assess their perceptions of the success of the research methodology and its strengths and weaknesses.

A multi-faceted evaluation was carried out, following the philosophy of utilization-focused evaluation outlined by Patton (1997). Interviews were carried out with key stakeholders for the project, including members of the project team, the advisory board and relevant institutional members from across the project consortium, project consultants and any identified third party organisational or individuals.

Semi-structured interviews included questions on their role within the project, relevance of the project to their own institutions, perceived aspirations and successes of the project, barriers and enablers and recommendation for future work.

## **Perceptions about Pass-IT**

The stakeholders identified a range of related key aims and aspirations about the Pass-IT project, which aligned with each of their organisations individual interests in this area. In particular the following were highlighted as important:

- Exploration of issues around the introduction of online assessment for national qualifications, with a particular focus on internal assessment within schools and colleges.
- Demonstration that online assessment was feasible and appropriate as an alternative to paper-based assessment and in particular that students were not being disadvantaged in any ways and feeding these findings back to the funders and policy makers, but also to demonstrate its value to schools, candidates and teachers as well as the public generally.
- Exploration of new and flexible ways of delivering assessment

- Consideration of how online assessment can be used formatively as well as summatively and in particular its role in terms of enhancing the learning process
- Exploration of how ICT can be used in the assessment process and in particular how it can be used to generate more flexible approaches to the delivery of assessment, how it can be used to motivate students and make their learning more engaging and recommendations on how assessment can be more closely integrated with teaching and learning. People
- Production of research evidence to demonstrate that this is a worthwhile area of development and to gather data to persuade professionals that this is worth investing in.
- Mechanisms for understanding how to assess pupils in the future and amass evidence to support this.

The general consensus from the project team is that Pass-IT is a cutting edge project in terms of research online assessment which has generated considerable interest from others involved in this area both nationally and internationally. Of particular note was the work Pass-IT had done in testing the comparability of paper-based and online assessment, understanding around associated special educational needs and exploration of appropriate mechanisms for marking more open ended questions.

## **Collaborations**

A number of tangential collaborations have arisen as a result of the partners' involvement in Pass-IT. Within SQA for example, Pass-IT has helped in terms of forcing the agenda about the development of appropriate guidelines for centres on implementing online assessment. Findings from Pass-IT have also raised questions and issues for people involved in quality assurance and issues about the training they provide for moderators. It has also raised questions about the impact of online assessment on SQA's procedures and current established practices and procedures.

Pass-IT aligns well with other activities which SQA is currently involved with, as they have become increasingly involved in CAA projects in recent years. One project which is parallel to Pass-IT is exploring item banking for assessment intermediate one. This is using a different approach to the development of questions but uses the same software. SQA has recently got a project funded by SFEC on summative online assessments for higher national qualifications. They are also engaged increasingly on work on marking and online support and are using the web site to put up marking instructions and principles, along with detailed instructions on marking particular questions based on the marking schemes. This gives practitioners the opportunity to test and apply these and then to compare their results with the definitive SQA marking of candidates questions, so that they can see if they are marking in line with national standards.

As a result of involvement with the project, there are now much closely links between the SQA and SCROLLA, providing a valuable mechanism for translation of research findings into real practice. There is a close synergy between the two organisations, SCROLLA in terms of their research expertise and SQA in terms of practical implementation. The stakeholders recognised that it was important to build on this type of collaboration. Pass-IT has enabled them to develop a good working practice which can be taken forward in future collaborations between the two organisation and more generally gives SQA an understanding of how they as a qualifications body can work with and benefit from the research community. The project has also enabled the partners to develop a partnership with the organisation Intelligent Assessment and given them an insight into the innovative work that they are doing in terms of free text automatic marking, which is a growing and important area of research in online assessment.

Closer links have also been forged with other awarding bodies. In general links have been strengthened with other awarding bodies working in this area, as well as with the CAA research and development community and companies with an expertise in development specialised CAA tools and services.

The BBC has welcomed forging collaborations between itself and the research community, providing a forum for exchange of ideas and in particular for producers and developers to gain an understanding of the findings which are emerging from projects like Pass-IT so that it can inform their future developments.

The timing of the project relative to each organisations own work was perceived as good. Also nationally, as Scotland are developing the Scottish schools digital network. It was also considered good more generally in terms of other national activities of this kind and the use of ICT in schools, where there has been major progress and increase use and interest in e-learning in recent years. Although difficult to measure directly there was also a perception that Pass-IT has acted as somewhat of a catalyst for activities of this kind nationally and that this is reflected in the increased interest in this area at policy level and in the types of activities funding bodies is now investing in.

For LT Scotland there is a close alignment of the outputs from Pass-IT with a related initiative they are involved with 'Assessment for learning'. In terms of collaborations a closer association has been made with the BRITE project about assistive technologies.

For the BBC the project informs its development of interactive materials. In particular they are developing their interest in the role of gaming to support learning and exploration of the ways in which children interact with games which now have complex and multi-faceted interfaces with information displayed in a variety of formats and via the inherent and often sophisticated feedback loops which are built into games. They recognise that gaming is an important way in which children are using technology and want to develop

understanding of how this experience can be translated into generating more engaging learning interactions.

### **Identified drivers and barriers**

Drivers identified include:

- The increased use of ICT to support learning and teaching
- The fact that children are becoming increasingly used to using ICT generally as part of their every day learning and therefore there is increasing expectations from the students to be able to also use ICT for assessment.
- Enhancing the assessment process and make it more consistent and integrated with learning and teaching processes, so that assessment becomes invisible to students
- The opportunities online assessment offer in terms of providing more flexibility
- Students valued the instant feedback available from online assessments and the way in which the randomisation facility allowed them to re-practice a particular topic.
- Increased student motivation through the use of more engaging and interactive materials and the potential for instant feedback on their progress.
- Making the usefulness of assessment to the learner more explicit and in particular closer examination of the formative use of assessment and the processes students go through in terms of how they learn and how they use feedback

Barriers identified include the following:

- There is still a strong scepticism about using online assessment, with a variety of perceptions from those who are technophobic through to those who are fairly ambivalent about it.
- A key issue and constraint is the degree of resources need to effectively scale up the use of online assessment.
- There are still a significant number of technical issues associated with online assessment which need to be addressed, in terms of having reliable and robust software.
- Schools and colleges still have relative poor technical infrastructures. Many school have old computers and room layouts are inappropriate for delivery of online assessment, with computers often clustered close together, increasing the chances of cheating to occur
- The practical aspects of getting online assessments set up and delivered were also cited as problematic. In particular the fact that online assessment means there is a need to heavily rely on technology

and hence the associated issue of back up strategies needed such as the value of having a technician on side.

- Students had some concerns about the technical robustness of the system and in particular when they were doing assessments where the marks counted towards their final mark.
- Despite the rhetoric around the potential benefits of the use of online assessment, public perception is still a barrier, as there is still an inherent scepticism about online assessment and a natural conservatism against its use. There is greater concern about the use of assessment for summative purposes because of the greater importance of summative assessment and the inherent associated risks.
- The capacity to rate more complex responses is still relatively rudimentary, particularly open-ended questions and is an area for future development
- The amount of information which can be generated for teachers is impressive but daunting, we need to better understand how to make best use of this information and provide appropriate training and support for teachers.

A number of lessons about how to move to mainstreaming online assessment and in terms of a national roll out have emerged from the project findings. There are significant lessons for SQA in terms of how to work with centres to deliver assessments and how it impacts on their own developments. SQA now have a clearer understanding of the quality assurances aspects which are needed for online assessment, what processes need to put in place and how they differ from existing ones. There is also now a better understanding of the types of skills which will be needed by staff involved in developing and implementing online assessment. In particular there needs staff need training and support either via in-service events or through their CPD training. Indeed it was stressed that activities of this kind could not work without these specialists and that initiatives of this kind need to be genuinely collaborative. Pupils need to be able to practice tests before doing them for real, so that they can get comfortable with in using technology.

Many of the stakeholders felt that it was important to phase in online assessment along side existing paper-based assessments and that it was important to use adopt a mixed mode approach, using online assessment where it was appropriate and in subject areas which lend themselves to its use. It has been clear from the work of Pass-IT that assessment of more open ended questions is still a relatively young area and the current tools being used as still fairly restrictive. Partnerships with companies like intelligent assessment will be important in taking this forward. Another important lesson is that materials must be fit for purpose and timely.

### **Impact on student learning**

Stakeholders felt that the use of steps was a benefit in terms of assisting students in their learning by providing them with guidance on how to answer



the question and the processes involved. The opportunity to practice different types of questions was also cited as beneficial. Online assessments also allow richer feedback to be made available to students, teachers and managers about understanding the learning process, which students can use to improve their learning strategies, teachers can use for evaluating and adapting their teaching strategies and managers can use to address institutional and support needs for effective delivery of online assessments.

Although many children nowadays are fairly ICT literate in some respects because they use computers at home to play games, they do not necessarily have the right kinds of ICT skills for effective learning. Indeed the fast pace of many computer games and the high visual content and use of multimedia can mitigate against developing effective learners, encouraging students instead to adopt a surface approach, with low concentration and boredom thresholds. There is therefore a need to consider ways in which online assessment can be used to encourage students to reflect more on their own learning process and learning strategies.

## **Research findings**

The project partners felt that the findings from Pass-IT can now be used to make some broad brush statements in terms of changing from paper-based to online assessment and in terms of reassuring people that it doesn't have a major negative impact on student attainment compared to paper-based assessment. Through the work of Pass-IT, the team now have a strong body of research evidence to support this assertion and the organisations involved in the project can therefore point to this evidence when making a case for more wide scale use of online assessment. This aligns well with the central ethos of the newly established HE academy which has as part of its central mission the importance of utilisation of evidence-based research to drive developments in the sector and with many of the statements made in the Government's 'Towards an e-learning strategy' which makes explicit reference to the increasing importance of greater innovation in the use of online assessment to support learning and teaching across schools, colleges and universities.

One concern voiced was how much it is possible to extrapolate from a small scale project like Pass-IT which is only covering a small range of subjects and whether therefore it is possible to extrapolate or generalise the findings. However counterbalancing this is the fact that Pass-IT adopted a research approach with a strong and rigorous research methodology. The team perceived that this was important because it offers assurances to senior managers and policy makers in terms of the validity of the research finding and in terms of them then being able to act on these findings.

One of the findings which have emerged is that it is important not just to directly translate paper-based assessments into online assessments, but to revisit the whole issue of how to formulate and develop questions and what the questions are intended to test. The process of creating CAA questions

therefore raised fundamental issues about the nature of paper-based questions as well. The use of steps for some kinds of questions has also proved valuable in terms of enabling teachers and researchers to get a better understanding of the student learning experience and how they tackle questions. This has raised important issues also about how the software records and reports on student interactions. The reporting mechanisms available provide richer data and information about the students than were available from paper-based assessments. So a key outcome from Pass-IT is that the development of online assessments and dialogue about the process has important pedagogical implications and gives us a better understanding of the learning process.

One important factor which has emerged is the knowledge the Pass-IT project has given us in terms of understanding how learners and teachers have been involved in project and how their practices have changed as a result. One benefit for students has been that the use of online assessment enables them to repeat assessments and to do more practice sessions. Teachers have access to more in-depth information about how the students are attempting questions and are able to use this to inform their own practice and methods of teaching. Use of online assessment has caused teachers to reflect on the role of assessment in learning and enabled them to develop a better understanding of the assessment process.

### **Support needs**

As anticipated, the project team found that practitioners involved in the pilots needed a high level of support. As a result of this they have learnt that it is important not to make assumptions about users' basic level of skills and not to make assumptions. The Pass-IT project inevitably involved practitioners who have an interest in the use of ICT, the enthusiasts, whereas once these kinds of activities are scaled up it is likely that it will involve others with less experience of using ICT. Therefore it will be important to make the transition as non-threatening as possible and not to set expectations too high in terms of the technical advice and support which can be provided in centres. Support will also be needed to enable both students and teachers to make best use of the rich information available within online assessment systems in terms of student performance. Teachers will need guidance in how to shift their focus from creating and marking assessment to interpreting the results available and adapting their teaching strategies as a result.

The team felt that a range of different support mechanisms will be needed to achieve this from making guidelines and support available on the web, but also by providing paper guidance. A number of the interviewees stressed the importance of providing face-to-face and telephone support and the need for this to be on a needs basis. The Pass-IT workshops were cited as very effective, including the induction days held for the specialist at the beginning of each phase. The induction days were important in terms of helping to set the tone for the project and providing a valuable means of getting the teachers

together with ICT specialists such as the learning technologists and the SCROLLA research staff.

Involvement in Pass-IT has highlighted the importance of online assessment specialists and learning technologists in terms of supporting initiatives of this kind, both in question developments and guidance on implementation.

## **Conclusion**

The clear value of the research approach adopted in Pass-IT was that it was a rigorous and controlled scientific approach, with a clear set of research questions and comparative studies. This was supported by some qualitative data such as data gathered through questionnaires, focus groups and interviews. This qualitative data, although not the primary focus of the project was important in terms of giving some indication of the context within which the project occurred and some indication of the wider socio-cultural factors (perceptions, barriers and enablers, etc).

At the start of Pass-IT there was a view that there was a need for a rigorous comparison of mode effect between paper based and online assessments. Thinking had shifted significantly now – most studies showing little mode effect or an understanding of the strategies which can be used if there is a mode effect. Fits with wider understanding now of the inevitable increased use of ICT and its impact on practice. Research has shifted now to more of a focus on the potential for learning and extraction of innovative assessment practices as well as richer analysis of the student interactions with the computer and better methods of reporting this to researchers, teachers and students.

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