PEBBLES IN THE POND: EVALUATION OF THE CAA CENTRE

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Abstract

This paper provides a summary of the evaluation of the Computer-assisted Assessment Centre TLTP project, which ran from September 1998 – October 2001. During it's three-year life the Centre undertook a range of activities including co-hosted the International Computer-assisted Assessment (CAA) conferences with Loughborough University, researching good practice, and providing a range of institutional and national staff development workshops. As part of this work the Centre conducted an extensive survey of current practice and perceptions of CAA and ran a series of pilot projects at consortium institutions. A web-based resource was developed to support the uptake of CAA ,a series of newsletters ,papers and the Blueprint for CAA were published to help to create a community of practitioners. Ultimately, the Centre provided a national support service for CAA activity in the higher education sector. This paper will consider the extent to which the project aims have been achieved – both from an internal and external perspective.

Throughout the project has been evaluated formatively by project members and practitioners. Formative evaluation activities have included: feedback from workshops; practitioner evaluation of the Blueprint for CAA; steering group meetings, surveys, interviews and focus groups. Between July 2001 and March 2002 the project has been evaluated summatively by an external evaluator. The focus of this evaluation has been to explore impact of the project on consortium institutions and the wider community. The evaluation has consisted of three main activities: analysis of project documentation; a focus group with project members, Management and Steering Groups; and a series of interviews with a range of staff at consortium and other institutions.

The outcomes of the evaluation indicate that the project has had considerable impact, beyond the field of CAA. The success and failures of the project will be discussed. The evaluation has revealed insights about the potential of CAA, as well as identifying a number of issues concerning the future development of CAA and role of funded projects. This paper reports on selected highlights from the evaluation and synthesises some emergent

themes. The conference presentation will compliment this and provide further in depth analysis of the results.

Introduction

In recent years developments in Information and Communication Technologies (ICT) have led to a growth in the range of Internet-tools which can be used for learning and research. Some have gained wide scale acceptance (for example, the ease with which email has been taken up), others seem to find either niche applications or are less pervasive than one might have first imagined (for example, video conferencing). Barnett et al. (Barnett, Brunne et al. 1997) provides a succinct introduction to learning technologies and their role within Higher Education. A more recent report, produced by the Association of Learning Technology (Seale and Rius-Riu 2001), provides a useful contextualisation of learning technology and technologies, an overview of the main tools and the ways in which they can be used.

This paper will describe the findings of an external evaluation of a project which aimed "to disseminate good practice, guidelines and models of implementation and evaluation" (Bull 2002) of one particular type of learning technology, namely computer-assisted assessment (CAA). In particular the evaluation explored the impact of integrating CAA within learning and teaching and the effect at both the local and the institutional level.

The CAA Centre project was funded under the third phase of the Teaching and Learning Technology Programme (TLTP) and consisted of a lead site (Luton) working in conjunction with three partner sites across the UK (Loughborough, Glasgow and Oxford Brookes). The project officially began in October 1998, with the primary aim to 'assist staff in higher education with the development and implementation of CAA'. Further details on the project are available from the initial project proposal and the project's site (*http://caacentre.ac.uk/*).

CAA encompasses a range of activities, including the delivery, marking and analysis of all or part of the student assessment process using standalone or networked computers and associated technologies. Previous research has shown that there are a range of motivations for implementing CAA within a course and it is often a combination of factors which result in CAA being used (Bull and McKenna 2001). Some of the key reasons frequently cited include:

- To increase the frequency of assessment, motivating students to learn and encouraging skills practice
- To broaden the range of knowledge assessed
- To increase feedback to students and lecturers
- To extend the range of assessment methods
- To increase objectivity and consistency
- To decrease marking loads
- To aid administrative efficiency

Research Methodology

A multi-faceted evaluation was carried out, following the philosophy of utilisation-focused evaluation (Patton, 1997). This consisted of the following components:

- An end of project focus group with the project's Steering Committee
- Selected semi-structured interviews with representatives from the four project institutions and two other institutions
- An analysis of the project Web site and associated materials
- A meta-evaluation and validation of the evaluation activities and outputs of the project internal evaluation processes

The purpose of this approach was partly to focus in on particular aspects of the evaluation through different data collection approaches, but also to triangulate between the data. In addition it was felt that with this approach it would be possible to gather responses from a greater number of participants. The evaluation centred on the following key questions:

- What are the key success factors of the project?
- What impact has it had at the levels of the i) sector ii) institution iii) individual?
- In what ways has the work changed/influence local (or sector) practice?
- What have been the key issues for the projects (educational, technical, strategic, etc)?
- What barriers to change or enablers for change has the project discovered?
- How visible is/was the work of the CAA centre and where is it most obvious?
- How well were the resources of the project used and which aspects were most cost effective?

The semi-structured interviews were primarily aimed to investigate the impact of CAA within each of the four institutions involved in the CAA project. For comparison interviews were carried out at two additional institutions, a pre-1992 university and a post-1992 university. Within each institution interviews were held with the following categories of staff: senior managers (deans or pro VCs), support staff (technical and learning technologies), and academics, with a total of 4-6 staff per site. The interviews were intended to help provide an impression of the culture within each institution and their respective attitudes to learning and teaching and, specifically, the implementation of learning technologies. In addition, for the institutions involved in the project team, the interviews will explore the team's experience of the project and its implementation within their institutions.

The focus group with members of the project, Management and Steering Groups, centred around the following themes: impact on staff and students, outcomes and resources, institutional and strategic issues, dissemination and collaboration, research questions, efficiency gains, personal benefits, changing practice, and barriers and key issues.

Discussion

The outcomes from the focus group, interviews and evaluation of project documentation are used to inform a discussion of the key evaluation themes outlined above. The key evaluation themes have been grouped together to reflect the overlap which exists between them.

Key Success Factors

The focus group identified the Blueprint for CAA in particular as a major resource and outcome for the project. The conference was also highlighted as a key success factor – providing the opportunity for a research focus to CAA development work and a chance for all types of practioners to meet and exchange good practice. The increasing popularity of the conference with overseas participants demonstrates it's success in the field. Networking and its value in projects of this kind, both in terms of support and access to expertise, appeared across many of the themes

In terms of perceived benefits the focus group felt that the opportunity to work across a consortium of different institutions was valuable. Individuals also cited their own personal gains by being involved in the project.

In addition discussion on assessment offered the opportunity to dicuss wider learning and teaching practices. Consideration of the potential of CAA and its integration with other learning and teaching activities also enable academics to consider the role of assessment and to relook at general assessment practices and policies within departments.

Impact on Sector and Changing Practices

Overall feeback from the focus group was very positive about the centre and its work and felt that it had had a real impact both institutionally and nationally. Networking and its value in projects of this kind, both in terms of support and access to expertise, appeared across many of the themes. As has been reported for other learning technologies, consideration of CAA issues acted as a catalyst for discussing more generic learning and teaching issues. It was also reported that the project was timely within individual institutions and that the project helped to drive forward other agendas and institutional initiatives, as the following quote illustrates.

> *"Institutional acceptance for me has been a big issue, being involved in this project as a member I can really drive things forward at [Institution's name] from a central level and we've got a couple of very large projects out of this and a large scale implementation of a central web; it really did coalesce a series of initiatives which were happening around the same time and switched a lot of interest on to CAA but it enabled us to make a decision which would have to be taken about how to support computer assisted assessment. And we made a decision as a result of being involved in this project to have a virtual learning environment which I think has borne fruit."*

Similarly, the same participant later stated the following.

"...CAA came at the right time from the point of view of what to do about standardising around the modular programme and the resource based learning materials that had been expensively generated in support of these programmes at [Institution's name]. And so one of the strategic issues was well what could computers do, what can they contribute to the more effective use of these materials? Certainly the CAA project has been a means to coalesce interest in computers around the area of assessment and ..... at the same time,.... gave the university the chance to give some answers, present some answers to that question. So that was a very big strategic issue in [Institution's name] at the time. A lot of money had been invested in resource based learning."

It is clear from the analysis of the semi-structured interviews that a range of strategies are used by staff when trying to implement and integrate CAA into existing learning and teaching programmes. This mirrors other research findings of the use and intragration of ICT (Davis, Oliver et al. 2001; Harvey and Oliver 2001). Some interviewees doubted the impact of institutional strategy at ground level and commented that innovation in learning and teaching was left primarily to the individual. However, a number of key strategies and drivers did emerge for getting staff started in and then continuing to use CAA. One interviewee mentioned the importance of peer support and the role of colleagues in terms of providing advice and support. She commented that in her case she worked very closely with a work colleague and used him to 'bounce ideas off', going on to say that in a sense he acted as a driving force. Another pointed to discussions within a committee about the increased problems of plagiarism helped her to make a mental note of thinking how she might use CAA in her own practice to reduce the dangers. Personal motivation and interest was also cited, and were clearly a major factor for many of those interviewed, particularly the enthusiasts. Institutional support was cited as critical and one interviewee commented that the perceived lack of support for CAA within his institution was demoralising. Institutional support was seen as including explicit tie-ins to relevant university strategies (such as the learning and teaching strategy), resource allocation (in terms of adequate equipment, software purchase and technical support), as well as investment in the support mechanisms, staff development and training.

Managers interviewed felt that there had been a shift in the sector in recent years and that staff in general were more susceptible to using learning technologies to support their teaching. They cited a range of tensions and, in particular, that between the increased drive to do research alongside the increasing quality demands for teaching, as problematic. However, there appeared to be a move towards more cohesive strategic thinking and many cited the importance of the recent learning and teaching strategies as helping them to enable and increase innovations in learning and teaching. One manager cited the importance of champions to encourage innovation and stated that the characteristics of these champions was important, someone

with a missionary zeal for technology for example was not necessarily most appropriate, this mirrors findings from a recent national survey in this area (Beetham, 2001). Disappointly few felt that the project had had a major impact within their institutions, although one dean did counter this with the following quote:

'[impact] *Not much yet – but I think it could'*

Senior managers interviewed had a sense that the cumulative impact of an aggregate of projects of this kind within institutions was resulting in a shift in practice. The follow quote reflects this, in terms of the increasingly rich formal teaching and learning structures which are now being established within institutions to support encourage and take forward innovation.

"We have a (most important) learning and teaching forum which is really design to span all the main central learning and teaching support activities - but the main focus of our work is around L & T but we have reps from staff dev. Corporate info services and computing services and engineering and academic registry. But it is mainly a steering group for the L&T group. We have a separate group that monitors the distance learning project. Then [name] has a user for a….. Those are all extras. The more formal mechanism is down from senate, [and] learning and teaching committee - any formal L&T or strategy goes through that. … All these different agencies do have a distinctive role."

Key Issues

The focus group participants felt that the project afforded the opportunity to consider underlying theoretical questions about the nature and role of CAA and its use. It provided a snapshot of where institutions were at a given moment in time both in terms of CAA and other learning technology developments, which could then be used both as a historical record and a benchmark against which to contrast future developments. More generally it raised issues about the relationship between teaching, learning and assessment and existing practices.

The focus group also identified that during the lifespan of the project that there has been a shift in the perception and role of CAA and there was evidence that staff were beginning to think not just about CAA, but about assessment more generally and the nature of their own professional practice.

It was evident from the interviews that staff recognised that students are becoming increasingly proficient in the use of technology to support learning, but that equally they were critical of the use of technology for its own sake and looked to see evidence of the enhanced benefits for learning. Interviewees were also sensitive to student needs and stressed the importance of having an understanding of the student perspective towards new technologies, as well as the need to ensure equality of access to technologies. In particular, one lecturer stressed that if students did not have access off site, then it was questionable how much should be used in the course.

Interviewees demonstrated the crucial issue of the perception of pedagogical research as somewhat secondary and inferior to 'mainstream' research and a perception – even by the innovators – that papers in this area do not count in terms of research standing.

There was a range of motivations cited by interviewees for using CAA. For some it was the interest in exploring new innovations and new ways of enhancing learning for their students. Others were driven by the prospect of potential resource savings in using CAA, particularly in terms of marking large student cohort exam scripts or in re-use of materials for different purposes. Some cynically observe that there had been an institutional three-line whip to increase the amount of CAA within courses. Interviewees also recognised that the sector had changed significantly in the last five years: increased student numbers and associated workloads, and an increasing emphasis on quality audit and control were but two examples of changes which impacted directly on the increased interest in and uptake of learning technologies like CAA. A number of interviewees also commented on the changing technological profile and in particular the increase ICT literacy of the computer games generation of children and the increased presence of technology in the home:

> *"Kids are learning in front of technology all the time, … TV, Videos, that is where things are coming from. They are also communicating all the time via computer. My daughter uses it to learn and talk on the computer, she doesn't use the phone. Kids are learning now to communicate with each other online, and with staff. You can always get someone by email."*

Related research on the use of computers in the home supports this and importantly highlights the engaging, active and contextualised nature of the types of learning which take place with childrens use of computers in the home (Sutherland, Facer et al. 2000).

One interviewee expressed concern that CAA was not properly integrated with learning and teaching and felt that until this was adequately addressed, it would be very much of an add-on to the learning experience. It was evident that those who had explored the use of CAA had gained personal satisfaction and felt that it had improved their own practice generally. In particular, as has been found more generally with learning technologies, consideration of the use of CAA made staff stop and think about their general approach to learning and teaching and the nature of their practice per se. There was also a concern that standard good practice should not be lost, as one interview commented

> *"There are times when it [the use of innovation] is appropriate but there are other times when it is not appropriate'*

Enablers and Barriers

As might be expected, the focus group identified barriers which included a lack of staff time, technical difficulties - standardisation and interoperability in particular, innovation overload and a preconceived and narrow notion of what CAA is and what it can do.

One of the key benefits of using CAA cited by interviewees was the speed of marking and speed of providing results and feedback. Some felt that CAA was 'more objective' than marking by hand, particularly with large student cohorts. Interestingly, one lecturer related that a student of his, whilst disappointed with a mark he had got, was more inclined to accept this final result because he felt the mark produced by CAA was more accurate than if it has been marked directly by the tutor.

The interviews also revealed a number of barriers to larger uptake of CAA within institutions. A number of other studies have also reported on some of the barriers to use of ICT more generally which reflect these findings (Squires, Conole et al. 2000; Conole 2001) Some related to technical difficulties and in particular that the functionality of existing CAA software is still improving. Many were frustrated by the limited functionality available and some felt that therefore CAA was not appropriate for teaching their subject area. The cost of software and, more importantly, the hidden cost of staff time in developing and implementing CAA were cited as barriers to some extent. Others included the lack of appropriate equipment and resources, and institutions varied in the extent to which they provided additional staff support and training. Not surprisingly the tension between time spent on research versus teaching was a recurrent issue, particularly cited by those staff in the more research-led institutions as the following quote from a very keen and innovative teacher, illustrates:

> "I am more concerned about my other research [ie main subject-based research] at the moment….[The department/RAE does] Not count my teaching research - I've had 3 papers on CAA and 2 on handsets and none will go into [main subject area philosophy]…. … the teaching research is an interesting aside. I don't see it as rigorous. Don't know where to put research. There is alot of nonsense written. I can understand why main stream departments won't consider it"

The type and form of support varied significantly across the institutions. A national audit of learning technologists and their locations within institutions (Beetham, Jones et al. 2001) also reveals significant differences, which may be a consequence of a new and emerging roles within institutions lacking full organisational integration. Some interviewees had well established and branded central or faculty support mechanism and named individuals that staff were aware of, others relied on word of mouth or peer support at the local level. Many of the interviewees classified themselves as average in terms of their expertise in using learning technologies. For this group it was stressed that help is needed in terms of getting started in using CAA, in terms of support to introduce them to the possible ways in which it can be used and how it can support learning and teaching. Many commented that when this

type of structured advice and support was not available, there tended to be low take-up.

Visability of Centre and Use of Resources

The CAA Centre actively disseminated outcomes and good practice through a number of mechanisms. The Blueprint for CAA was exceptionally well received with over 1,000 draft copies requested following release in February 2001. The Centre published three electronic newsletters a year, which were, on average, downloaded from the project website over 2,000 times per edition. Numerous news articles, conference and journal papers have been published throughout the life of the project. The International CAA Conferences have attracted a steadily growing audience with participation increasing by 30% during the life of the project. The project website was an important avenue for raising awareness and dissemination and during the life of the project attracted over 2,000 visitors a month (page requests were approximately 60,000 per month). The website disseminated over 15,000 documents and is linked to extensively throughout the UK and overseas and the associated mailing list attracted 700 members.

The project also became involved in a number of other relevant organisations and initatives including Fund for the Development of Teaching and Learning Projects, JISC managed learning environment projects and the British Standards Institute working group BS7988. Over 40 institutional workshops on CAA were delivered during the life of the project at universities throughout the UK.

The focus group participants identified both the conferences and the Blueprint for CAA as a major resource and source of visabiltity for the project. This was reflected partly in the interviews, although the degree of visability did differ significantly in different institutions. The conference appears to be of most benefit to the CAA specialists and provides an opportunity to share practice and experiences.

Recommendations for future support

Technical and pedagogical support on an institutional level was identified by both focus group and interviewees as being a critical factor in successful implementation of CAA. Also identified as important is the environment in which assessment practices can be reviewed strategically prior to implementing CAA. The implementation of CAA within a strategic context strategies, particularly in the context of increasing use of technology for teaching and learning is likely to require support and development for policy and resource decision makers, a clearer understanding of the potential and limitations of CAA at a senior and national level will help institutions to implement effectively.

In general interviewees did not feel that there was a need for a national centre dedicated solely to CAA. However there was strong support for continuation of this type of activity alongside other support for generic learning and teaching tied to relevant national bodies, as the following quotes illustrate:

'There is a need for co-ordination so that good practice is shared around'

'Not convinced about that [ie the need for a national CAA centre]. Perhaps the Generic LTSN should do something and have a brief – yes, but not separate.'

Conclusion

Overall it is clear that the project has been successful in a number of ways: through the professionalism of the centre and associated staff, through the outputs and materials produced, with the development of a network of expertise at institutional and at a national level through alignment of the CAA initiative with relevant institutional strategies.

The impact of the project on the sector has been significant at some levels. It has clearly not reached senior managers, or made widespread change throughout instititutions. However it has fostered a growing community of practioners, developed and implemented new practice in the four consortium institutions and raised awareness and increased understanding in many more where workshops, and presentations have been given. In addition a wealth of information has been disseminated through the website, associated documentation and mailing list nationally and internationally. The outcomes of the interviews and focus group indicated that practices have changed as a result of the project, always in the manner originally anticipated, but the project has promoted a re-thinking of assessment practices and a reconsideration of the value of learning technologies.

A failing of the project was the inability to secure further funding. Although additional funding was sought from various sources none was forthcoming. To some extent the project in creating a national centre evolved beyond the tradtional remit of a short-term funded project. The unavailablity of further funding is partly a reflection of the funding strategies or politics of the time. However it may also reflect a lack of understanding on the part of funding agencies about the nature of assessment and CAA. There is no well established mechanism to ensure work undertaken by funded projects is maintained, marketed or developed further in a coherant strategic manner. Assessment, a critical activity for all universities, is rarely a topic around which funding is specifically invited. Projects which seek to address generic issues and their implementation and evaluation may require different funding models to those which seek to develop a particular product or solution.

Further work is needed to research the cost and time effectiveness of CAA, integration with virtual learning environments and the potential for CAA in different disciplines.

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