

TLTP85

Implementation and Evaluation of
Computer-assisted Assessment



Final Report

For the National Co-ordination Team,
Centre for Higher Education Practice,
Open University

Section 1

1.1 Contact Details

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1.2 Description of project and goals

Computer-assisted assessment (CAA) is the use of computers as part of the student assessment process. It can include the use of optical mark readers (OMR) and computer-based testing using PC, Mac or Web-based delivery systems. The use of a variety of innovative question types enables CAA to extend the skills and abilities tested beyond those of traditional multiple-choice questions. Reports and statistical analysis allow the immediate evaluation of the effectiveness of the assessment, introducing a level of rigour not commonly achieved in traditional assessment methods. The integration of CAA with student records systems can provide administrative efficiency gains.

The Implementation and Evaluation of Computer-assisted Assessment project (CAA Centre) set out to disseminate good practice guidelines and models of implementation and evaluation, to assist institutions to implement CAA strategically, achieving a rapid shift in institutional culture to embed CAA within teaching, learning and assessment strategies. A virtual and physical centre for CAA knowledge and expertise (the CAA Centre) has been created which provides advice and guidance to individuals, departments, faculties and institutions.

The specific objectives of the project were to:

1. Identify institutions, faculties, departments and subject areas which have successfully overcome the difficulties of implementing various types of CAA.
2. Identify the obstacles to embedding CAA at institutional, faculty and departmental levels.
3. Develop and pilot a range of models and guidelines which focus on the strategic implementation of CAA within departments, faculties and institutions.
4. Identify and develop good practice in the embedding of CAA within the curriculum.
5. Identify good practice concerning the quality assurance issues of CAA.
6. Identify and develop operational, organisational and technical good practice in embedding CAA.
7. Produce staff development and training materials to ensure dissemination and implementation of good practice.
8. Develop measures to evaluate the educational and cost effectiveness of different types of CAA.
9. Disseminate models of implementation and evaluation, good practice documentation and staff development materials throughout the HE sector.

Section 2

2.1 Deliverables

Original Project Goals	Actual deliverables and outcomes	Variations from original and reasons for change
Launch of project at CAA Annual Conference (June 1998)	Keynote announcing project. Approximately 80 participants.	
Article/report on literature review (November, 1999)	A full literature review is to be published in December 2001 as one of a series of 'Bluepapers' (specific reports on CAA topics and issues). This will be made available as a downloadable document from the web-site.	It was decided that a more extensive review would be of greater value, published at the end of the project to take into account developments in CAA during the life of the project. It was identified that shorter literature reviews already existed and duplication was unnecessary.
Publish bibliographic database (web-based) (November 1999)	User-friendly searchable bibliographic database published on website. Updated regularly from on-going literature review. (November, 1999)	
Article/report on national survey, detailing case studies and analysing current practice (September 2000)	5 papers presented reporting national survey findings (1999 – 2001, see Appendix A). In addition, a fuller report of the national survey is to be published as a Bluepaper in January 2001.	
Final version of bibliographic database (September 2001)	Final version updated and published. (Sept. 2001)	
Institutional staff development workshops from and to consortium members (April – July 1999)	12 staff development workshops conducted within the consortium.	
Pilot projects	Various CAA pilot projects were undertaken in each consortium institution. These included a range of activities for formative and summative assessment in a variety of disciplines and the use of standards and statistical analysis	

Report on models for CAA implementation and their evaluation (October 2000)	Incorporated into the Blueprint for Computer-assisted Assessment (See 2.1.1 below)	Early in the project it was identified that the models of implementation required substantive supporting documentation. Consortium member workshops identified the need for extensive research-based and practical knowledge to be made available prior to implementation. For the models to be effective a wide range of topics needed addressing, including pedagogical, operational, quality assurance, organisational and technical issues.
Article/report detailing pedagogic good practice and staff development and quality assurance issues (December 2000)	Comprehensive coverage in the Blueprint for Computer-assisted Assessment	It was decided that one complete and comprehensive document would be far more effective than a series of articles.
Article/report detailing operational, organisational and technical good practice (February 2001)	Comprehensive coverage in the Blueprint for Computer-assisted Assessment	Several drafts of the Blueprint were made prior to distribution of an evaluation copy. Over 1,000 copies were requested following limited circulation of availability.
Staff development and training materials (September 2001)	The Blueprint has been constructed to act as a support document for staff development programmes and materials, The structure of the chapters, extensive examples is designed to allow 1 or more chapters to be adapted for staff development sessions. In addition complementary presentation material has been made available on the website, along with a on-line guide to writing objective tests (over 2700 distributed via website). A workshop booklet introducing CAA and addressing pedagogical issues and good question design has been widely distributed at workshops, which participants have been encouraged to use to support subsequent workshops.	
Article/report on methodologies for measuring cost and learning effectiveness (April 2001)	On-going study being conducted at Luton. To be published in March 2002.	Delay due to difficulties in recruiting replacement Research Assistant and Project Officer.
Web-site (launched June 1998)	Web-site launched and substantially upgraded and redesigned in March 1999. Average monthly visitors – 2000 per month (based on downloads and contacts). Average monthly web page request - 60,000. Site traffic has more than trebled since redesign.	

Web-site text only	A text-based alternative was created in order to address some of the accessibility issues surrounding web based resources. Validated to Priority 2 WAI guidelines. Has informed instructional design of web-based assessment. Related published outcomes in Appendix A.	
Subject and generic workshops (Sept 2000 – March 2001)	Due to a high level of demand, workshop delivery began in Feb 1999. 40 staff development workshops have since been conducted. Topics: Question Design; Using Objective Tests for Assessment; Operational and Organisational Issues of CAA; Evaluation of CAA; Introduction to CAA. (See Appendix B for more details.)	
Key role and profile in 4 Annual CAA conferences (June, 1998 – 2001)	Very successful conferences, strongly associated with the project. Keynote address, plus workshop and other paper contributions at each project. Presentations by pilot project members. See: http://www.lboro.ac.uk/service/ltd/flicaa/conferences.html	
An end of project national conference (Sept, 2001)	One day end of project workshop for project members, including presentations by pilot participants and evaluation focus group.	It was decided that a national conference would duplicate the recently held 5 th International CAA Conference, at which CAA Centre findings were well disseminated
Contributions to other conferences and journals as appropriate.	Numerous articles, newsletter contributions have been published throughout the life of the project. See Appendix A for more details	
Student perspectives of CAA.	Survey carried. Published outcomes in Appendix A.	

2.1.2 Brief description of each major project activity

National Survey

The project conducted a large-scale national survey of CAA activity in 1999/2000. This enabled us to identify the critical success factors and obstacles of implementing CAA across the sector. It also provided an in-depth overview of the level and type of CAA activity, the experiences of practitioners, areas for future research and development, range of technologies and software being utilised and the activity within different subject areas. The initial suite of questionnaires (4 versions to capture the views of key stakeholders) were followed up with semi-structured interviews and focus groups to provide a complete picture of CAA activity and explore some of the deeper issues surrounding implementation and evaluation. The outcomes of the survey have been presented and published at various conferences and a substantive quantitative and qualitative analysis is currently being drafted as part of the forthcoming Blueprint series.

Publications

Attached as Appendix A is a full publications lists. Details are extensive, but a summary is provided here.

- **Blueprint for CAA**

The Blueprint is an extensive research-based good practice document that has been exceptionally well received in the sector (over 1,000 draft copies requested). Following collation of evaluative feedback the final version will be published at the end of November. Routledge have been approached to publish the Blueprint as a book and indications are that they are very positive. The Blueprint contains the following chapters: Overview of CAA; Why Use Objective Tests? Writing Questions; Designing Feedback and Scoring; Analysing and Improving Objective Test Questions; Constructing Tests; Range of Technologies; Use of Multimedia; Innovative Uses of CAA.; Student Support and Staff Development; Operational and Technical Issues; Risk Identification and Analysis; Wider Implementation of CAA; Evaluation; Managing Change.

- **Newsletters**

We have published 3 newsletters per year. They are typically between 5 – 8 pages in length, and are distributed electronically to a growing audience (last edition downloaded 2200 times in first six weeks). The newsletter has been referenced in conference proceedings and is contributed to by the academic community. It is worth noting that the distribution method ensures an accurate assessment of readership as it requires downloading.

- **Articles**

This includes journal articles, conference papers, newsletter and articles requested by LTSN's, other projects and organisations within the sector. Numerous articles, papers and news pieces have been published during the life of the project.

Conferences

4 International CAA Conferences have been held during the life of the project. The conferences have attracted a growing audience (increased participation by over 30% during the life of the project), with a steadily increasing participation from overseas colleagues. Conference proceedings are made available on-line (see <http://www.lboro.ac.uk/service/itd/flicaa/conferences.html> for further details). Evaluation of the conferences has revealed a high level of satisfaction, which is represented by repeat attendance by many colleagues. It is worth noting the quality of papers has increased in both depth and scope, which reflects the growing importance of this field.

Website – <http://caacentre.ac.uk>

The web site is has been a very important avenue for raising project awareness and dissemination. It provides an extensive resource for those working in the field and we have sought to update it regularly to ensure that it is **the** place to visit for CAA information. We have over 2,000 visitors a month (this data is not based on web page requests (in excess of 60,000 a month), but on downloads, contacts etc.). We are also aware that there are extensive links to the website from UK and overseas. The website structure is provided as Appendix C to give an overview of the extent and range of content.

Networking and knowledge brokerage

As a national centre we have felt that it is important to maintain a high level of awareness and contact with other projects, the LTSN's, and relevant initiatives. We have worked previously with the following LTSN's – Information and Computer Science, Engineering, Social Work and Social Policy, Geography Geology and Environmental Science. We maintain contact and exchange information with a wide range of colleagues researching and working in the field, nationally and internationally. We have acted both proactively and reactively to broker knowledge between groups, individuals and projects working in the field.

In addition we are currently involved with the following groups/initiatives:

- Association for Learning Technology, conference committee, institutional representative
- FDTL project, Engineering Assessment Network 3, Steering Group (University of Southampton)
- SHEFCE project Scottish Centre for Research in On-line Learning and Assessment, Advisory Group (Heriot-Watt University)
- JISC project on Managed Learning Environments, Steering Group (Loughborough University)
- Founding member, British Standards Institute working group on BS7988 (computer-based examinations)
- Member of CETIS special interest group, Question and Test Interoperability
- Consortium member, Graduate Learning on the Web, Fund for the Development of Teaching and Learning project, UMIST
- Scottish Computer-assisted Assessment Network
- European Social Fund project on students with dyslexia, (Luton University)

Workshops

We have delivered workshops to the sector on request and have delivered 40 during the life of the project. We tailor workshops to meet the needs of the audience and provide extensive supporting documents and on-line resources. A full list of workshop details, including topic and participant attendance is given in Appendix B. Evaluation of all workshops has been conducted and this has been used to modify content and structure as appropriate, however, the majority of evaluation questionnaires indicate that our workshops have been received very positively and have met the needs of a wide range of participants.

Pilot projects

At Oxford Brookes University five different CAA tools were used and offered the opportunity for academic staff to pilot CAA alongside the development of university's on-line learning environment. A variety of academic staff were involved from several faculties across the institution. The availability of a 'support person' specifically promoting and supporting CAA helped considerably to raise the profile and

At Luton the piloting of web-based assessment has helped to focus the future strategic direction of the existing computer-based assessment system and to raise further awareness of the benefits and pedagogical issues surrounding continued use of CAA. At Loughborough University the implementation of web-based assessment across the institution, supported centrally has been particularly successful, with for example, the development of a question bank of 1500 in languages. The focus of pilots in Glasgow was specifically upon the implementation of emerging standards in question and test design, item analysis and evaluation of the implementation models.

Presentations

Numerous presentations have been made by the project at a range of events including, conferences, workshops, and seminars on a local, regional, national and international level. A list of presentations is attached as Appendix B.

2.2 Products available beyond the life of the project

1. Blueprint for Computer-assisted Assessment
2. 4 International Computer-assisted Assessment Conference proceedings
3. Web site
4. Staff Development materials
5. Articles and other published outcomes

Section 3 - Dissemination

The project dissemination strategy identified a wide range of individuals and departments at all levels of HE institutions for whom project outcomes would be of interest. The outcomes of the project are generic at strategic, operational, organisational and technical levels and both generic and subject-specific at pedagogic levels. Many of the difficulties associated with the implementation and evaluation of CAA are organisational as well as discipline specific. Models of implementation and evaluation developed are relevant to a wide range of subjects and the outcomes of the project are relevant to the majority of individuals, departments, faculties and institutions.

Against this potentially huge audience we identified the following groups as being our target audience:

- Academics
- Staff Developers
- Quality Assurance staff
- Educational Technologists

The national survey was successful in identifying nearly 1000 individuals within the sector who had an interest in CAA. We also identified senior managers as critical in the dissemination process, and while some success has been achieved in disseminating project outcomes to them (mainly through invited presentations, workshops and conference papers as well as through networking and knowledge brokerage) they have proved a difficult target to reach. We suspect this may be due to time constraints and lack of understanding of the issues.

We have disseminated widely through our dissemination partners such as the Association for Learning Technology and the LTSNs, Humanities and Arts Network and Royal Geographical Society. We have also made significant impact with individual institutions through our workshops and into particular disciplines through involvement in other projects (for example the Graduate Learning on the Web FDTL project in the Sciences and Engineering) and generic initiatives (such as the CETIS special interest group). The conference has reached all of the groups mentioned above on both a national and international scale. Participation in this conference has risen by approximately 30% each year.

In addition we have disseminated to individuals through answering specific queries, to LTSN's in response to requests for CAA knowledge about activity in their area and to Teaching and Learning Technology groups, staff development units and to educational development teams. We have made good use of the Centre's mailing list, given numerous presentations when requested at specific events (eg. LTSN, ALT, JISC, individual institutions etc.)

There have been a number of news items and other media publications about the project, including a front page article in the Times Higher, features in the Guardian and appearances on the BBC News.

In summary the project has disseminated widely, through:

- web-site;
- newsletters (3 pa, readership approx. 2000);
- 3 International CAA Conferences (held June/July in Loughborough);
- many presentations at conferences and workshops (70)
- articles (37);
- news & other media publications about the project (9);
- and steering/advisory group involvement in 7 other national projects.

In essence, the dissemination strategy has been founded upon the establishment of '3 pillars of CAA'. These comprise: the Blueprint, as practical, research based good practice document to support and encourage uptake; the Centre as a physical and virtual focus for activity, support and guidance; and the Conference as mechanism for promoting and sustaining further development and research within the growing CAA community.

Section 4 – Evaluation

4.1 Quality of products and deliverables

During a focus group at the end of project workshop a member of the Advisory Group who works at a national level within the sector stated that the CAA Centre was known for producing '*not only useful but also high quality*' outcomes.

The 'Blueprint for CAA' presents 3 models of implementation and substantive research based good practice which addresses the pedagogical, operational, strategic, support and evaluation issues of implementing CAA. The Blueprint was not an original project outcome but was developed to meet a rapidly identified need for a coherent and comprehensive resource which could be used by all those involved in implementing CAA. This has meant that it has to appeal to a wide audience, including academics, educational technologists, heads of department and staff developers. Within the consortium there is widespread appreciation of the value of the Blueprint for CAA as a persuasive staff development tool and as an excellent starting point due to it's coverage of a wide range of topics and issues relevant to CAA. Outside the consortium there has been at times an overwhelmingly positive reaction to the Blueprint. The number of evaluation forms returned was disappointing, but with very few exceptions they were positive, comments included:

'An excellent resource which attained the project aims with commendable accuracy – a document of really high quality – thank you!'

'This is an excellent handbook for me as an educational technologist supporting the implementation of CAA'

'Thank you for producing such a comprehensive resource. I will certainly point interested parties to the CAA Centre and the Blueprint.'

When asked what changes people would make to the Blueprint, comments included:

'more information on the advantages' 'item analysis needs revisiting' 'shorter – its too daunting' 'deeper technological issues'.

See Appendix D for a more detailed analysis of the Blueprint evaluations.

As noted earlier in the report, a large number of staff development workshops were run at consortium member and other institutions. Evaluations of the workshops indicate that they were well received and of high quality, requests for repeat workshops confirms this as well as subsequent contacts from participants through the website, mailing list or specific email/telephone queries. Because workshop evaluation forms were usually institutionally provided it is not possible to provide a composite analysis. However, the workshops overall were rated as 'very good/highly satisfactory' and presentation and facilitation skills were highly rated, Comments included: *'Speakers were very interesting and knowledgeable: A first class inspirational workshop'* and *'The best thing was the opportunity to ask questions of the presenter and learn of others experiences'*. Negative feedback was infrequent and usually referred to the timing of the event and requirement for more detail on specific topics such as statistical analysis and specific discipline focused information. The provision of a high quality booklet, associated presentation material and supporting tailored web pages have been highly praised – where requested we have given permission for staff developers to use the materials subsequently to run their own workshops.

The conference has been well received and during the life of the project the conference has built on it's reputation as the focal point for UK CAA activity, extending beyond the higher education sector and attracting contributions from further education, businesses and training organisations. The quality and range of papers submitted has improved noticeably during the life of the project effecting its growing reputation both in the UK and overseas.

In addition, our tri-annual newsletter, *Testing Times*, has proved very popular. The quality of content, and visual design are of a consistently high standard and we have been successful in establishing it as a mechanism for regular networking and dissemination for the CAA community as a whole by encouraging contributions from the sector.

The website is an extensive resource providing information, good practice, advice and linkages. We are frequently commended on the design and content of the site. We also have a text version of the site which is one of few which can guarantee WAI priority level 2.

4.2 Extent of take-up and use of products and deliverables

The opportunity to pilot different types of CAA has been valuable in consortium institutions where implementation or further development of CAA was the aim. Each of the institutions in the consortium were at a different point on a scale of CAA take up prior to the project. Luton had a very well established university-wide CBA system and hence further take up during the life of the project has not been significant, however, in terms of raising pedagogic, strategic and organisational issues the project has made an impact through piloting different types of CAA. Loughborough had an existing OMR system which has now migrated to a large scale web-based system. This has resulted in an increase in central staff to support CAA. Oxford Brookes had some localised CAA activity and the availability of dedicated support provided by the project at an institutional level made a noticeable difference to the level and type of activity undertaken. Some technical difficulties, such as lack of suitable hardware and potential cost of supporting software after the project, negated against take-up of some CAA software for pilots. However, other pilot projects were successful and have been integrated with institutional activity in virtual learning. CAA helped raise the profile of the use of technology to support and deliver teaching and learning generally.

Attendance at workshops varied, depending on the institution and in particular timing as well as local promotion. Many however, did lead participants to further investigate CAA and in some cases to implement. It is difficult to know the extent to which implementation followed workshop attendance as project members were at times overwhelmed with requests to deliver workshops and often did not have the opportunity to follow-up participants. However from the number of participants who subsequently joined the mailing list or submitted a query, approximately 20% started using some form of CAA following workshop attendance. There could of course be a greater level of take-up as the workshop may have been sufficient to encourage take up with no further support.

The Blueprint has been widely used within the consortium and externally. Over a 1000 evaluation copies were requested and distributed following a limited announcement of availability. Demand continued at a high level and outstripped the project's ability to monitor distribution and collect subsequent evaluation data. The project also sold several copies to overseas universities, training organisations and businesses.

The website has been used to disseminated over 15,000 documents (for example, Designing Objective Tests Tutorial) during the life of the project. It is linked to extensively throughout the UK and overseas both within educational and training sectors. It is recognised as an excellent resource and has over 2000 visitors a month, (this figure is based on downloads and contacts not requested pages). The Centre has a mailing list with over 700 members – this is double the size of equivalent JISC mail lists relating to computerised or web-based assessment. The text site has proved a popular resource, with interest being expressed in the construction and design issues from individuals, LTSN's and other groups. *Testing Times* is accessed and downloaded by a wide audience, with over 2000 copies distributed per edition.

The conferences held by at Loughborough have been particularly successful, attracting a growing body of national and international participants both returning and new participants. Overseas participants who have increasingly scheduled study trips which include visiting each consortium partner and attending the conference. On a national level the attendance has broadened to include academics, staff developers, educational technologists, web programmers and developers and administrative staff.

4.3 Effectiveness and impact of take-up and use (subject nationally, institutions, depts, teachers and students)

As CAA is a generic issue its take-up must be measured across all subject disciplines. We feel that we have made a significant impact on the profile, awareness and take-up of CAA across the sector. A comment at a recent evaluation focus group indicated that we had achieved as high and in some cases a higher level of awareness that many of the LTSN's, who are significantly better resourced. It is encouraging to see that during the life of the project further CAA related projects have been funded in a number of disciplines (for example the FDTL EAN3 project in Engineering). In addition, based on our reputation the Centre and consortium partners have been invited to participate in a number of CAA and related funding bids, both from within and outside the sector. Where additional funding has been secured it has added great value to the project, fostering a greater awareness of wider issues and extending our network and linkages within the CAA community as a whole.

We have generally seen increased activity within LTSN's, with many of them attending CAA Conferences. In addition, the Centre has responded to several hundred queries from individual academics, heads of departments, administrators, technicians and other projects concerning the implementation and evaluation of CAA. These queries range from the simple 'is there CAA activity in my discipline?' to more complex issues

concerning particular technological solutions, pedagogical and operational good practice, and requests for pointers to relevant literature and research. They indicate a growing level of activity in CAA being generated both bottom-up and top-down throughout the sector.

The sometimes unmeetable number of requests for presentations, seminar contributions, workshops and consultancy type activities indicates that there is beginning to be a ground-swell of activity within the sector. While not all disciplines are active in this area, our survey noted a growing level of activity in social science and humanities subjects, and this has been borne out by requests and contacts from these subject areas. The traditionally strong CAA subjects have continued to generate a growing level of CAA activity in both old and new universities.

The uptake of the conference, Blueprint, newsletter, workshops and website suggests that the project has helped to foster a growing CAA community which is promoting effective and pedagogically sound uptake of CAA across the sector. It is clear however that this is just the starting point, there is a real need for generic CAA support at a national, strategic level in order to continue to develop what is effectively an emerging field of activity.

Within the consortium, evidence from the pilot projects shows that, student learning has been improved as a result of the introduction of CAA. At both Loughborough and Glasgow student grades improved following the implementation of formative CAA. At Brookes the appointment of a specific member of staff for the project was extremely valuable in encouraging and supporting take-up, though mechanisms such as a regular discussion group. Also at Brookes, involvement in the CAA Centre project and EFFECTS project contributed to the adoption of an institutional virtual learning environment. The pilot projects have shown that implementation of CAA can reduce staff marking time and has elicited positive feedback from students.

Uptake and impact would have been further enhanced if supporting funds could have been made available for pilot project members, in order to release time for writing questions, which is often more problematic than anticipated.

4.4 Main Achievements

Other than achieving and in some areas exceeding the original project objectives as detailed above our main achievements have been to respond effectively to the scale of demand for input from the sector while keeping our sanity.

We have produced high quality products with a high level of sectoral impact whilst garnering an international reputation for excellence, proving that the capacity of UK HE for CAA research and development equals that of other recognised centres of excellence.

Within the consortium the work of the project has contributed to improvements in student learning, through enhanced feedback and formative assessment as well as reducing the assessment burden on academic staff. However, it is important to note that savings in staff time are transferred elsewhere in an institution or department, frequently to support staff. The trialling of different software tools has led to a better understanding of the challenges involved in introducing on-line education generally, and assessment in particular. At Oxford Brookes the establishment of a Media Workshop and adoption of WebCT is expected to have an impact on decisions academics make in relation to CAA. Staff developers at Brookes also continue to have specific duties for promoting the use of communications and information technology in teaching, learning and assessment. On a wider scale we have effectively promoted new approaches to assessment particularly through staff development and training activities.

The effective operation of the project, is also a major achievement - 4 distinctly different institutions have worked together efficiently and effectively to create a very successful project. This has acted a springboard to future funding, has generated extensive linkages to other projects and the creation of a CAA community within the UK HE sector. Good project management, clear aims and a clearly focused and dedicated team with commitment to the ethos of the original bid have also been major achievements.

We have established the CAA Centre as a 'brand' creating a real identity, physically and virtually, integral to this brand is the international conference and Blueprint for CAA. As mentioned previously, these three features create a unique mechanism for promoting the uptake of CAA across the sector and support the growing CAA community.

We have been flexible enough to adapt the project aims where necessary to meet the needs of the sector and have continually updated our resources, evaluated our progress and activities and adapted and enhanced

as necessary. The project has been very successful at disseminating - raising awareness and promoting understanding of CAA as a pedagogical tool.

4.5 Lessons learnt

The key lessons the project has learnt are:

1. There was great benefit in involving project members with previous TLTP project experience.
2. Early meetings, project planning sessions and regular day long meetings at consortium sites are important to create ownership and common understanding of the aims and objectives.
3. Working with other projects can be profitable but is problematic. It is time consuming, funding is not allocated to such activity, and project remits and objectives often are at odds, clear mechanisms for working together are not explained or fostered strategically. Such activity should be co-ordinated more effectively at a national level, where there is an overview of the remit and aims of all projects.
4. The organisational and pedagogical issues and challenges surrounding the take-up of CAA often outweigh the technical limitations of software and hardware.
5. Introducing technology into assessment practices requires a lot of perseverance, dedication and resilience. The lack of understanding of the pedagogy of assessment generally, hinders this effort.
6. Retooling is a challenge which impacts on research and development, requiring a high level of resourcing for academic and support staff in order to maintain pace with technological and software developments.
7. There is a real need for more funding and research in this area. As on-line learning becomes increasingly common individual institutions do not have the know-how or the resources to progress the pedagogy or the technology to the level at which it will be required. We also perceive that in the future there will be inherent difficulties in teaching and learning on-line and assessing on paper.
8. Further work should include co-ordination with commercial software suppliers, or better support and long term funding should be available to HE CAA developers, to secure the pedagogical and interoperable foundations and accessibility of software.
9. More investigation of the cost and time effectiveness of CAA is needed in order to realise the full potential. In addition, integration of CAA with other systems is in early stages and is likely to be where the greatest efficiency gains can be made.
10. There are political and cultural barriers to implementing CAA which vary between subject areas.
11. Assessment remains an afterthought in HEFCE funding and research policies for teaching and learning. This verges on naive, given the importance of this activity to the sector, and it's potential for legal action.
12. The NCT was effective in the first eighteen months of TLTP3; latterly its role seems to have diminished considerably in anything other than a monitoring role. This is one of the reasons why there is little cross project collaboration. While individual co-ordinators have been helpful and supportive, as a project we have had at least 4. There needs to more continuity of co-ordinators for them to effectively support and guide projects.
13. Across the sector there is a distinct lack of clarity of the strategic direction and co-ordination of funded activities for teaching and learning. There is no well-established mechanism to ensure that work undertaken by funded projects is maintained or developed further in a coherent and strategic manner. TLTP3 differed from previous phases in that it created mechanisms for implementation and evaluation, rather than resources. It seems remiss that no mechanisms were established to identify those which were successful and secure the real potential and outcomes of these projects across the sector on a long term basis.

4.6 External evaluation

Dr Grainne Conole, Director of the Institute for Learning and Research Technology, University of Bristol has been appointed as the project's external evaluator. It was decided at a Management Group meeting (June, 2001) that the external evaluation would be conducted during the last four months of the project and for a further four months. This is to allow an evaluation of impact of the project once the project has ceased to operate.

Some external evaluation activities have already taken place. These include a review of project documentation, meeting with Management Group members to discuss the evaluation and explore some issues relevant to the project and a focus group with members of the project team, pilot project members, members of the Management and Advisory Groups.

A full evaluation report will be available to the National Co-ordination Team in January 2002.

Section 5 - Continuation Strategy and Associated Activities

The project has been successful in securing continuation funding. This is being used to:

- deliver 3 regional workshops for heads of department;
- write and disseminate a heads of department briefing paper about implementing CAA;
- write and disseminate a series of 'Bluepapers' – specific reports addressing key issues in CAA which have not already been explored through other CAA publications.

The outcomes of the continuation activities will be distributed electronically through the CAA Centre website and specifically to LTSN's.

Further efforts to secure additional funding have been investigated. These included: responding to calls for funding proposals issued by JISC and HEFCE and negotiating with the Generic Centre and Technologies Centre who initially expressed a substantial interest in supporting the funding but after a year were unable to offer any viable funding options.

The CAA Centre website will remain available to the community for the foreseeable future, although the format may change slightly to reflect the need to maintain it with minimal staff resources. The Centre is currently discussing the possibility of publishing the Blueprint for CAA with a book publisher. Further funding to develop integrated CAA and management information systems has been achieved by Loughborough University from the Joint Information System Committee. Loughborough will also continue to run the international CAA conference, as a commercial venture. Members of the project will continue to be involved where possible, time and resources permitting, with other projects and initiatives in the field of CAA.

End users will be able to access project products through the website. Access to project expertise will be negotiated on an individual basis with particular project members.

Those using the products will be able to use the website to gain further information where appropriate or contact individual project members with queries. The Centre will encourage mailing list members to join existing JISC mail lists on CAA in order to share knowledge and information with the CAA community.

6 – Final Financial Report

Project No	85
Project Title:	The Implementation and Evaluation of Computer-assisted Assessment (CAA Centre)
Project Start	1 October 1988
Project Finish	30 September 2001
Total Project Funding	228,000

ORIGINAL BUDGET	Year 1	Year 2	Year 3	Total
Period of funding	1998-99 (Oct – July)	1999-00 (Aug – July)	2000-01 (Aug – Sept)	
Staff	35,606	35,839	41,055	112,500
Travel & subsistence	6,000	5,500	5,000	16,500
Dissemination	1,000	3,500	6,000	10,500
Equipment	8,500	2,500	1,500	12,500
Evaluation	1,500	2,000	2,500	6,000
Other costs (Please detail) Institutional Support	19,000	27,000	24,000	70,000
Total	71,606	76,339	80,055	228,000

ACTUAL BUDGET	Year 1	Year 2	Year 3	Total
Period of funding	1998-99	1999-00	2000-01	
Staff	32,061	36,373	36,811*	105,245
Travel & subsistence	3,821	2,418	5,300	11,539
Dissemination	1,033	3,336	5,100*	9,469
Equipment	8,602	2,708	1,600	12,910
Evaluation	1,940	2,989	5,500	10,429
Other costs (Please detail) Institutional Costs	17,692	27,000	24,200	68,892
Total	65,149	74,824	78,511	218,484

*Salaries committed to end December 2001 amount to £6,207 and are not included in this figure.

* Production and distribution costs of the Blueprint for Computer-assisted Assessment amount to £2000
Total expenditure December 2001 – 226,691

Declaration

I certify on behalf of the lead institution that the attached financial report and the information contained therein is correct, and that the funds allocated have been applied to the purpose for which they were made available.

Project Name:

Project Number:

Head of Institution or Nominated Deputy

Name (print)

Signed

Date

Project Director

Name (print)

Signed

Date