

Chapter 2. Formative and Summative Evaluation of the Overall Project

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1. Introduction

It is very appropriate that a project focussing on the evaluation of technology-based teaching development projects should itself be evaluated. This chapter outlines the approach adopted for the evaluation of the overall project and presents the findings and conclusions of the evaluation in relation to both the implementation of the overall project and its intended outcomes.

Normally, the reporting of an evaluation study would commence with a detailed description of the project being evaluated in order to ensure there is a common understanding of the project and to provide an appropriate context for the remainder of the evaluation report. However, in this case, a comprehensive description of the project has already been provided in the preceding chapter. Furthermore, Chapter Three provides an overview of each individual technology-based teaching development project, followed by a comprehensive collection of the evaluation study reports. In addition, the project has produced eight research articles submitted for publication in a special issue of the Australian Journal of Educational Technology. Readers interested in learning more about these projects should consult this forthcoming publication. Finally, an overview of the project as it was originally planned and some information on its evolution is available on the project web site at <http://cleo.murdoch.edu.au/projects/cutsd99/>.

2. The Evaluation Strategy

The strategy for evaluating this project had the following two goals: to report on how well the project was implemented and to analyse the extent to which the stated outcomes of the project were achieved. The evaluation was undertaken through a mixed strategy of formative and summative evaluation. This strategy required a pre-ordinate and explicit plan in order to address the complex nature of the project which commenced with 20 projects

at eleven universities spread across five states and territories, with projects operating in a range of disciplines, involving a range of staff of differing experience, and assisted by eleven mentors with varying experience. In a somewhat ironic twist, this diversity presented similar challenges to those faced by university lecturers in the project who must address the varying needs of their increasingly diverse student population.

The formative component of the evaluation was designed to collect data throughout the term of the project and to encourage reflection by the various project participants including mentees, mentors, writers and the project coordinator team. Because of the distributed nature of the project, the bulk of the information was collected using the ASCILITE Virtual Conferencing System to facilitate online discussion between the various project participants, in a manner which enabled the whole group to share in all of the discussions. In addition, this facility enabled the online discussions to be retained in their original form for reflection, verifying the accuracy of decisions and analysis within the overall evaluation process. Each project team was expected to submit monthly progress reports, following the proforma provided in Appendix 2.1. A system of logging various project monitoring documents was also available within the online facility and was used to store both proformas and completed evaluation plans, status reports, draft and final project reports, feedback reports and potential journal articles, in all a total of over 1000 pages of text. Finally, although the online facility provided a synchronous chat facility available for online meetings of project participants, this was not used in the project.

The online facilities were used in conjunction with face to face meetings of the various project groups to enable feedback to be collected and analysed, and decisions to be made about revising the project implementation. A review of this material has shown that a number of revisions were made

based on information collected through the online network. In particular, changes were made to the format for the evaluation plans, to the content, format and use of the project handbook, to the structure of the overall project workshop held prior to the ASCILITE conference in December 2000, and finally, to the requirements for project reports and journal articles. The online facility was also used by participants to provide input into the development of the staff development manual, including feedback on its use in draft form. Finally, the review process used for the scholarly papers developed by each project was conducted online. Given the very distributed nature of the projects, it would be hard to see how this level of communication and discussion could have taken place within the project budget without the online conferencing facility.

In the summative component of the evaluation, a set of intended outcomes were identified in the original funding application to CUTSD. These comprised four participant outcomes and two products as shown below.

At the conclusion of this project, participants will have:

- gained transferable skills in conducting meaningful evaluation of CFL projects using high standards of practice;
- conducted a well-grounded evaluation of a CFL development project from the viewpoint of student learning outcomes;
- experienced the action inquiry process; and
- published a scholarly paper on the results of the evaluation study.

The project will also result in the following two deliverable products:

- a staff development guide which contains theoretical and practical aspects of evaluation in the form of a handbook and process aspects of the evaluation derived from the action inquiry process; and
- a volume of scholarly papers which details the results of the evaluation studies carried out as part of this project.

The summative evaluation of the project was designed to concentrate on these primary outcomes. However, the following set of five broader benefits to the whole higher education sector were also identified:

- the project will improve perceptions of the worth of the scholarship of teaching and learning;
- inter-institutional and inter-disciplinary collaboration and knowledge sharing will be fostered;
- an internet community of learners can serve as a model for future projects;
- the project will address wide-spread deficiencies in evaluation of CFL projects; and
- the project potentially enables the achievement of improved student learning outcomes.

Although it was not the original intention of the evaluation study to address these broader outcomes specifically, an analysis of the collected data shows that there is substantial evidence addressing them, so they are discussed at the end of this chapter.

A strategy to evaluate the extent to which each of the six project outcomes was achieved was provided to participants on the project website at:

http://cleo.murdoch.edu.au/projects/cutsd99/eval_str.htm. The strategy was kept relatively simple, where possible using project activities and information already produced as part of the project, including:

- Evaluation Plans
- Status Reports
- Project Papers
- Project Paper Reviews
- Feedback from participants and mentors on projects
- Feedback from participants and mentors on the Project Handbook
- Notes of the discussion at the workshop and feedback from independent observers.

This information was analysed by the Teaching and Learning Centre (TLC) at Murdoch University and is reported in this chapter. Individuals wishing to make confidential comments were directed to the evaluation team at the TLC, however, no separate confidential information was received.

3. Formative Evaluation of the Project Implementation

The rationale or logic behind the overall project is described in diagrammatic form in Figure 1.1. In brief, this project was intended

to guide a group of academics through the evaluation of a computer-facilitated learning (CFL) project by a process of action inquiry and mentoring. Participants were expected to learn to evaluate student learning resulting from the use of their own CFL project, through cycles of action inquiry in which they develop an evaluation plan, carry out the evaluation, analyse the data and disseminate the results. Each participant was to be supported in the action inquiry process by a mentor. A workshop was planned for project participants to consolidate their experiences as action researchers through the presentation and discussion of draft reports on their projects. It was intended that participants to develop these reports into articles to be published in a referred volume of scholarly papers. The formative evaluation process focused on collecting information about the extent to which the project was actually implemented as intended.

3.1 Summary of Projects

The overall project commenced with 20 university-based projects. Within several months, two projects had withdrawn leaving 18 projects which participated throughout the overall project. Table 1.1 summarises these projects by State and University. Although every effort was made to match mentees with mentors in the same state/territory, this was not possible for six of the projects. The difficulties this raised and the impact of distance on these projects are discussed later in this chapter.

3.2 Evaluation Plans

Each project produced an evaluation plan for their CFL innovation. In general, the evaluation plans followed a common format addressing the following items:

- Overview of the Project
- Objectives of the Technology-facilitated Learning Environment
- Objectives of the Evaluation
- Audiences/stakeholders for the evaluation study
- Available Resources
- Action Inquiry Cycle and Action Plan
- Data Collection and Analysis Methods
- Ethical considerations
- Budget

A review of these plans shows that they were generally well thought-out and realistic in their intended objectives. Budgets and timelines were clear and reasonable. Projects were allocated approximately \$2000 for expenses and were expected to fund the remainder of the project from their university's resources. The project budgets show that there was a considerable amount of resource in the form of funding, access to equipment and staff time provided by the home universities to support the projects. Feedback from the mentees and mentors indicates that the project grant and university funding was inadequate to cover the full costs of the evaluation studies. This is in line with the common experience of underestimating the cost of evaluation studies. It would have been a useful outcome of this project to have tracked the real costs of each of the evaluation studies to provide a basis for planning future evaluation studies of CFL projects.

3.3 Status Reports

The project participants were requested to submit monthly status reports and were provided with a proforma for electronic submission. If this had been done as originally planned over the period, April – October 2000, a total of $18 * 7 = 126$ reports would have been received. In practice, a number of the projects did not commence until semester 2, 2000, and most of the participants and mentors considered monthly reports to be too frequent. The participants submitted a total of 46 reports with many of these covering more than one month. In total, the status reports covered 65 project months. Feedback from both mentees and their mentors suggest that there were a number of reasons why progress reports were not more forthcoming, with workload and no new progress to report being the most common factors. Overall the reports received are a valuable source of information about how the projects were conducted, what challenges arose and the strategies used to overcome them.

3.4 Discussion Forums

As outlined in Chapter One, the project also provided for mentees to interact online through discussion forums. The mentors discussion forum produced over 100 printed pages of discussion involving all 11 mentors. This discussion focussed primarily on

administrative issues, editing of the Handbook and problems which arose in conducting mentoring with already very busy individuals and, in some cases, at a distance. It appears to have been a very useful forum for both resolving administrative issues, but also as support group for mentors when they were confronted with difficult challenges.

The discussion forum for the mentees was very extensive comprising over 225 printed pages. However, this forum was used primarily to provide information to the project coordinators, for example, administrative announcements, proformas for various activities and useful information collected on evaluation, as well as the means by which project coordinators submitted their status reports. Unfortunately, there was little discussion between the mentees. Feedback from them indicates that their high workload inhibited the time they had to spend on the project, leaving little, if any, to interact online.

3.5 Evaluation Study Reports/Journal Articles

The project also provided for participants to develop reports of each project to be published in this document, and, if interested, a journal article outlining the evaluation study and its results. These outcomes are discussed in the next section of this chapter.

3.6 Workshop

A workshop for all mentees and mentors was held on December 9, 2000 at Southern Cross University, Coffs Harbour, NSW, just prior to the 2000 ASCILITE Conference. This workshop was the primary opportunity for the project participants to meet face to face and discuss the evaluation projects, their progress and the issues, both past and present. The workshop was designed to provide practical assistance to mentees, but also to be a learning experience for both mentors and mentees.

The specific aims of the workshop for each team were:

- To present a draft version of a paper about the evaluation study for comment
- To receive assistance in the preparation of a research paper from peers

- To get feedback on the work done, to identify areas needing more work and obtain assistance from the group as a whole
- To receive affirmation from peers about the value of their work and their contribution to the project
- To reinforce learning about evaluation methods achieved through this project
- To summarise, review and reflect on the CUTSD project as a whole
- To identify material which needs to be included in the Staff Development Guide which will result from this project

The workshop consisted of the following six activities:

- A poster session to enable participants to obtain an overview of all the projects.
- A group session to report on projects.
- The development of a checklist, based on the experiences of the participants, for the teacher who is beginning to evaluate their teaching using a student-centred action inquiry approach.
- A critique of the Handbook using the following questions:
 - How appropriate was the handbook?
 - How easy was it to understand?
 - How could it be more clearly described?
 - What information was missing?
- How adaptable were these resources in terms of the action research cycle?
- What would you change? amend? augment? supplement?

Participants reflected on their learning in this project, to provide a guide as to what to place in an evaluation guide for practicing teachers:

- what they learnt about evaluation?
- what difficulties were experienced?
- what could be done differently?
- what are the key issues in evaluating a CFL project?

Meta-analysis of the major issues arising from implementation of the projects, leading to a statement/summary of "outcomes achieved"; i.e.

- feedback on writing a paper for publication
- knowledge/skills in conducting evaluation procedures
- integration of evaluation with teaching processes
- applying the action inquiry cycle

The results of the discussions held at the workshop were recorded by group scribes, generally against the following questions:

- What are the key issues about evaluating a CFL project?
- What barriers/difficulties were experienced in this project?
- What was learned about evaluating a CFL project?
- What were the benefits/drawbacks of the Action Inquiry nature of the project?
- What would I do differently if I evaluated another CFL project?

A total of 37 project participants attended the workshop - 27 mentees and 10 mentors. In addition, the following four independent observers were invited to the workshop to provide an external view of the overall project and its outcomes.

Steve Draper, University of Glasgow, Scotland
David Kennedy, Monash University
Russ Pennell, University of Wollongong
Cathy Gunn, University of Auckland, New Zealand

The role of the independent observers was both to interact with the workshop participants and to provide written comments of their perceptions of what had been learned in the evaluation studies. The outcomes of the workshop are presented in the next section of this chapter under the relevant project outcomes.

3.7 Conclusion

As is the case for all complex projects, changes to the original plan are inevitable when the project is actually implemented. In fact, it is usually desirable for a project to have sufficient flexibility to enable changes to be made in response to changing circumstances and lessons learned during the implementation process. This project has, by and large, been implemented as planned. Where changes have been made, e.g. in the design of the Handbook, or in the withdrawal of projects, they have generally been done in response to changed circumstances. This flexibility is a desirable characteristic of a project. One of the most significant changes was to expand the original intention of producing a volume of scholarly papers to the production of a special issue of the Australian Journal of Educational Technology, containing papers from eight of the projects. In addition, this report contains

papers from 16 of the 18 projects which were completed. In this way, the project added a new outcome, to the benefit of the participants whose papers were selected for inclusion in the special issue of AJET.

4. Summative Evaluation of Project Outcomes

Evaluation is one of the key aspects of the action inquiry approach, being used to inform further action at each stage of the cycle. The strategy for evaluating each of the six main project outcomes is outlined in Table 2.1 detailing the process to be used to provide information on each of the project outcomes and the product(s) which were produced.

4.1 Outcome 1. Gain Transferable Skills in Conducting a Meaningful Evaluation of CFL Projects Using High Standards of Practice

The action inquiry process was focussed on the participants in each evaluation study gaining skills in how to evaluate a CFL activity and practising these skills in a project of their choice. As described in Chapter One, the action inquiry process involved participants in a formal staff development process comprising the following steps:

- developing a plan for the evaluation of CFL activity;
- access to an evaluation handbook developed specifically for this project, including an evaluation framework tailored to CFL projects (the LCE Framework described in Chapter 1);
- conducting the evaluation under the guidance of an experienced mentor;
- reflecting on the evaluation process through discussions with the mentor, the production of progress reports, and the use of an online discussion forum with participants in other projects;
- involvement in a one day workshop to reflect and discuss the projects; and
- the production and review of a paper describing the evaluation of the project.

The mentees provided valuable insight into their increased knowledge of project evaluation in comments provided in their status reports, project reports and the online discussion forum. Many of these comments reflected on the participants' acknowledgement of the evaluation process as one which involves the stakeholders of the

Table 2.1. Key Elements of Evaluation Strategy for the Overall Project.

Project Outcome	Evaluation Process	Evaluation Product
Project participants gained transferable skills in conducting meaningful evaluation of CFL projects using high standards of practice.	Participants will develop evaluation plans and the implementation of these plans will be monitored by monthly reports. The reports will be produced by the participants in collaboration with the mentor.	Standardised reports for each project able to be analysed by project or by stage of project.
Project participants will have conducted a well-grounded evaluation of a CFL development project from the viewpoint of student learning outcomes.	Participant reflection on process of developing and implementing the evaluation plan. Final project reports submitted and analysed by evaluation team.	A three part document describing the participant's reflection on the evaluation process at three points in time. These will be comparable across projects to identify recurring and unique issues for improving the staff development guide.
Project participants will have experienced the action inquiry process.	Negotiate with the mentor how to record their experiences, i.e. keep a journal during the project.	Journals from some of the participants.
Project participants will have published a scholarly paper on the results of their evaluation study.	Papers will be developed by participants and initial draft discussed at workshop in December 2000. A process of reviewing papers on each of the projects will undertaken.	Paper accepted for publication. As this is likely to be after the project is completed, submission of the paper will be used as an interim measure.
Refinement of staff development guide.	Analyse effectiveness of the guide through feedback sheets, participant reports and journals, group discussion on guide at end of year workshops.	Agreed revisions of guide. Revised guide available on the web.
Volume of project papers	Criteria for publication will be developed and implemented.	The accepted papers will be published in a collected volume.

project and is integrated into the project but which takes an independent and reflective perspective. For example:

"I learnt that evaluation had to be an integral part of my teaching practice and it is not only a summative process conducted at the end of the semester as is usually done or simply focussed on the project. It emphasised that evaluation had to be continuous and situated in the total learning experience of the students. Thus, learning-centred evaluation was not just evaluation of the educational media but of my teaching practice, the learning environment created to facilitate student learning and the process that students engaged in while interacting with the learning environment."

"In this project I have felt the excitement of assisting to make practical and effective, a genuinely innovative teaching development. In addition, my own learning - about the complexities of the interaction between

teacher, learning environments and students – has maintained my interest and sense of fulfilment through the project. I cannot see any joint project between educational designer and lecturer being successful if learning is not equally the focus of both parties."

"It confirmed my understanding that computer-facilitated learning was very different to traditional teaching practices and that it was well integrated into the total student learning experiences. It provided useful insight into learning centred evaluation and how key questions need to address students approach to learning, the educational principles underpinning the educational activity and how they engage with the learning activity to make sense of their learning experience and professional knowledge."

"These experiences point to the value of independent contributors as participants in complex teaching

development projects, though ultimately, in lacking the content knowledge, they can only help from the side. A partnership of trust and respect in a solid working relationship is crucial for a project of this kind as we must quickly move into students' perceptions of the teaching and deep into the content. Only then can I, as an educational designer or mentor, feel free enough to probe students' views of the teaching and into the lecturer's knowledge (necessary to keep the focus on the key ideas)."

As outlined in the Formative Evaluation section of this chapter, a workshop for mentees and mentors was held in December 2000 to review individual evaluation studies, collect feedback on the overall project and to assist in the production of the evaluation study reports. At this workshop, project participants reflected on their experiences in undertaking their evaluation studies and commented on what they would do differently in evaluations of future development projects. There was a strong sense of emerging confidence in their comments having now been through a full evaluation process with useful support from their mentors and colleagues. A common perspective on evaluation was developed at the workshop comprising the following elements:

- Evaluation has to explicitly build on the educational ideas underpinning the teaching development. This requires a very clear explanation of the CFL project and the learning environment which is being constructed.
- Evaluation is inherently a collaborative venture, but it is very difficult to manage the collaboration process. A related problem is how to get lecturers to be involved and use resources when they have not designed/developed the evaluation materials.
- Difficulty of use and comprehension of Action Inquiry and how it fits with what we want to evaluate.
- There is no definitive method to determine learning outcomes, and it may be difficult if not impossible to quantify all of these. However, it must remain an aim of the evaluation study to uncover how students experience learning.
- The most useful results come from using several methods and sources for data collection in the evaluation study.

In particular, mentees highlighted a number of key elements of high quality evaluation of which the most commonly mentioned are the need:

- for proper planning
- to ask the right questions to focus the evaluation
- to ensure sufficient resources for evaluation, especially time
- to carefully choose methodology and analysis methods
- to recognise that evaluation is continuous and must be flexible to adapt to changing course priorities
- to integrate evaluation within the course and ground it in the course pedagogy and learning outcomes
- to continuously reflect on the evaluation process and data in order to keep evaluation on track and relevant
- to recognise assumptions of stakeholders
- to remain motivated throughout the study and to motivate and involve students in the evaluation process

The mentors who attended this workshop provided similar comments on what they felt were the key elements of high quality evaluation:

- Need to be clear on reasons for evaluation
- Need for proper planning
- Asking the right questions/focusing the evaluation
- Need to focus on student learning not technology
- Need to carefully choose methodology and analysis methods
- Need to integrate evaluation within the course and ground it in the course pedagogy and learning outcomes
- Ethical issues

Together the mentees and mentors identified what they would do differently if they evaluated another CFL project:

- Set more realistic timeframe
- Imbed evaluation more clearly in broader context and within overall course
- Limit the scope of the evaluation
- Limit the amount of data collection
- Develop a clearer focus for the evaluation study
- Seek more external assistance
- Manage collaboration of project team more carefully
- Provide more explicit feedback, particularly to students

- Use technology more to collect data
- Ensure lecturers are more committed
- Ensure resources are adequate

Most mentees had not previously conducted a formal evaluation study and many had not been exposed to action inquiry processes. It was a very challenging experience for a number of them to take on both of these new activities on an innovation in one of their own courses. However, to their considerable credit, nearly all persevered and completed their evaluation studies. Judging from their feedback, and that of their mentors, as well as the high quality of the evaluation plans and reports, the mentees found the experience very rewarding and gained a range of skills in evaluation which they will be able to transfer to future situations.

4.2 Outcome 2. Conducted a Well-grounded Evaluation of a CFL Development Project from the Viewpoint of Student Learning Outcomes

An analysis of the status reports, workshop feedback and final project reports shows that a number of the participants struggled with the evaluation process but felt they had gained valuable insights into project evaluation. The main difficulties experienced by mentees were (ordered by the frequency by which they were raised by mentees) :

- Insufficient resources for evaluation, especially time and difficulty with coordinating evaluation activities with other work
- Difficulty choosing appropriate data collection and analysis processes
- Inexperience in evaluation
- Low level of motivation and participation by students and other lecturers
- Difficulty coordinating aspects of evaluation particularly in large or distributed projects
- Difficulty sorting out goals and competing priorities
- Heavy workload impeded evaluation activities
- Difficulty asking the right questions in the evaluation study
- Lack of access or guidance from mentor when needed.

The mentors involved in the evaluation studies highlighted the following issues (ordered by

the frequency by which they were raised by mentors):

- Insufficient resources for evaluation, especially time, and difficulty with coordinating evaluation activities with other work
- Difficulty developing relationship with mentees.
- Difficulty mentoring over distance
- Difficulty coordinating aspects of evaluation, particularly in large or distributed projects
- Need for proper planning
- Asking the right questions/focusing the evaluation
- Recognising that evaluation is continuous and must be flexible to adapt to changing course priorities
- Need to carefully choose methodology and analysis methods
- Ethical issues
- Need to be clear on reasons for evaluation

Clearly, the resources required to conduct a high-quality evaluation study were often underestimated. In addition, the management of the evaluation process, particularly where it is collaborative in nature, requires considerable skill and resource. Furthermore, the need for careful planning of an evaluation, particularly the care required in framing the key evaluation questions, is critical if the study is to run smoothly and to produce information useful to the study stakeholders/audiences. Several comments made by study teams (mentees and mentors) provide a rich picture of their perspectives.

“It is crucial to select the evaluation approach, methods and analysis explicitly based on the perspective on learning and teaching which informed the development of the learning experience. If your underlying view of teaching and learning is Diana Laurillard’s conversational framework and its related assumptions, they will help you design the evaluation and should be a key reference point in your analysis. The whole integrated process of design, development and evaluation becomes an absorbing and fulfilling experience of learning in more ways than one.”

“In the context of diminishing resources at universities, rigorous

evaluations of technology-based learning tools are costly, both in terms of the required academic time investment and the required additional resources to appropriately conduct and analyse questionnaires, surveys, interviews, etc. Currently university teachers are not rewarded if they engage in such rigorous evaluation activities and university management has generally no structure in place to support such activities. One issue which was of great value to the project mentees was the introduction to a large range of evaluation instruments and the subsequent discussion on their merits. The mentees believe that, in particular, academics in the physical sciences would benefit from better dissemination of the availability of a wide range of evaluation instruments and their accepted use according to current educational theory. Physical scientists come from quite a different background in conducting research and require considerable familiarisation with educational research techniques. To the mentees of this project, the most valuable part of the resources available was the mentor-mentee arrangement, in particular with the advantage of this being undertaken in the one physical location which allowed for frequent face-to-face meetings.”

“The pilot evaluation provided a rich set of data that can be used to plan for changes to the workshops within the PEW. It also highlighted ways in which we can develop strategies to engage students with the material and to produce learning environments that encourage students to actively participate. Although time and labour intensive, there are considerable benefits to employing an evaluation plan of this kind which includes observation of the student while using the package. Some elements of the observation, such as the order in which students work through the topics, what activities they complete, the time spent on each topic, etc., can be automated. However, the presence of an academic to ask students questions is essential

to be able to appreciate the learning process from the student's view point.”

The main findings of the evaluation have given the teaching team an insight into how effectively computer conferencing has been incorporated into the postgraduate units and how well students are learning this way. The involvement in the CUTSD evaluation project was an impetus and support for our team in evaluating and researching our computer conferencing in a rigorous and detailed way. The multiple methods of evaluation meant that we were able to triangulate student's individually expressed perspectives with content analysis and frequency statistics. A final summative discussion of results confirmed the results gathered which gave us a great deal of insight into how effectively computer conferencing had been incorporated into our courses and the ways these differing uses were affecting student learning. The role of the teacher in structuring and establishing cognitive and social presence of students studying online was defined more clearly and the cognitive and social strategies students use to learn online are already impacting on the way we are revising and writing new courses in our postgraduate program.”

“Finally, this project in itself has afforded unexpected new ways of looking at learning and how it is achieved. The reflective analysis which this study has awakened provides a new range of reference points and possibilities to consider in the process of future instructional design.”

As mentioned above, many of the mentees found this experience to be very challenging. That they completed their studies with minimal resources and high workload, indicates they were highly motivated. Feedback from the mentors and independent observers indicates that the evaluation studies were of a high quality. The extent to which the evaluation studies focused on student learning is addressed in Chapter Three.

4.3 Outcome 3. Mentees Experienced the Action Inquiry Process

There was considerable variation in how mentees and mentors conducted the action inquiry process. In all cases, however, it was a negotiated arrangement between the mentors and mentees. Most mentees found the process both enlightening and very beneficial to the conduct of their evaluation. In particular, they found the action inquiry nature of the project had the following benefits:

- improved their practice and clarified future issues by reflecting on past experience and evidence;
- made them a more reflective practitioner of teaching; and
- provided invaluable support by mentors and the wider network of mentees.

Of particular significance for developmental projects, mentees found that the flexibility and iterative nature of the action inquiry approach allowed project staff to identify mistakes or weaknesses in the project in time to make improvements to the project. Mentors made similar insights but added that the regular reporting and reflection encouraged collaboration between mentees and with mentors, and that the iterative nature of action inquiry fits well with the process of ongoing evaluation.

However, there were areas in which both mentees and mentors were critical of the action inquiry approach to evaluating CFL projects. In particular, a number felt that the full cycle of the action inquiry process was too long to fit within their project timeline and more generally within the timeframe of course improvement which exists in universities. This suggests that lecturers might feel more comfortable with an abbreviated or more narrowly focused action learning process for use in course design and continuous improvement.

A number of mentees also commented on the difficulty they faced in bringing the mentees and mentor together, often due to high workload and timetabling conflicts. This was particularly noticeable in these projects where the mentors were located at a distance from the project site. These sites found that they experienced the same difficulties as other projects, such as a shortage of available time, and a short time line in which to conduct a full

evaluation study, but also found it difficult to maintain an ongoing relationship with their mentor. In some cases, mentors travelled interstate to meet with the project participants and where this occurred it was found to be very beneficial. This underlines the importance of regular and preferably face to face contact between mentor and mentees.

4.4 Outcome 4. Publish a Scholarly Paper on the Results of the Evaluation Study

At the time of publication of this report, eight of the projects have submitted papers for inclusion in a special issue of the Australian Journal of Educational Technology (AJET), to be edited by Professor John Bain. These are currently undergoing the journal's double-blind, peer refereeing process. It is expected that the special edition of AJET will not be published prior to publication of this report.

The paper review and feedback process has been described in Chapter 1, and the achievement rates have been summarised in Table 1.4. Seventeen of the original twenty projects are represented in this report. Ten of the project teams chose to enter the second round of the review and feedback process. The others have chosen not to submit a scholarly paper for a number of reasons relating primarily to workload, changes in employment or personal commitments.

Each project had the opportunity of going through a rigorous two-stage review process. In the first review stage, fourteen criteria (see Table 2.2) were used to assess the papers and the papers were reviewed by a subset of mentors, (generally by a single reviewer, although two papers were reviewed by two reviewers) who provided comments and suggestions on how the papers might be improved. The feedback from these reviews was made available to the authors of the papers to guide revisions in preparation for the second review stage. The project participants submitted revised papers which were again reviewed by a subset of mentors.

Of the twelve papers, five had average or better ratings on the 14 criteria. The remaining seven papers were ranked as unacceptable in their current form. The major strengths in the papers were that most had appropriate methodologies in the evaluation studies, had clear research questions, had clear descriptions

Table 2.2. Criteria For Reviewing Evaluation Study Papers.

Use in review process	Criterion
1	How obvious is the reflective cycle?
1	How visible is the Bain Alexander Hedberg evaluation framework?
1	How well was the context in which the evaluation study was carried out been described?
1	To what extent has the paper been informed by literature, research and practice?
1&2	How well have the intentions of the CFL project been described?
1&2	How well have the intentions and context of the evaluation study been described? (combined with the previous criteria in Stage 1)
1&2	How well-described is the evaluation framework or model used in the study?
1&2	How is the evaluation framework or model applied, within the context of the study?
1&2	How clear are the research question(s)?
1&2	How appropriate is the methodology employed in the study (given its aims)?
1&2	Was the relationship between the researcher and respondent described?
1&2	Were the criteria used to determine the respondents described and justifiable?
1&2	How appropriate was the analysis of data given the nature of the data?
1&2	How well have the results of the evaluation been described?
2	How adequate and appropriate were the data collection techniques used in the evaluation
2	How clearly and coherently have the results of the evaluation been analyzed and presented?
2	Have the implications of the evaluation results for the various stakeholders been discussed?
2	Extent to which the design/use of the CFL has been informed by literature, research and practice.
2	Extent to which the study has been informed by literature, research and practice in evaluation.

of the CFL project, the intentions of the evaluation study, and the context in which the study was conducted, and appropriate data analysis given the type of data collected. The major areas of weakness in these draft papers were poor descriptions of the relationship between the researcher and the respondent, poor reconciliation of the results of the evaluation study with its intentions, and poor description of the criteria used to determine who were appropriate respondents for the data collection activities. A common reason for poor reviews was lack of time to adequately analyse data by the required deadline.

In the second review stage, fifteen criteria were used, of which ten were the same as in the first stage review. A total of eight papers were submitted for review. Seven of the papers were reviewed by two reviewers, and one by three reviewers. None of the second stage reviewers reviewed the same papers that they had covered in the first stage review.

An analysis of the improvement in the papers from the first stage to the second stage was carried out by the TLC. This was done by assigning a score to the rating given by the review on each of the criteria, ranging from 4 points for Very Good to 0 points for Not At All. This resulted in a maximum number of possible points in the first round of 56 points and 60 points for the second round. The score for each review was then converted to a common scale of 100 points. This allowed changes in scores to be compared across rounds, in order to show the extent to which the papers had improved or deteriorated. The scores for the first round varied from 30% to 60%, and for the second round from 59% to 76%. Each of the 8 papers reviewed in the second round showed an improvement of at least 19 percentage points, but up to a maximum of 37 percentage points. Not surprisingly, those that scored lowest in the first round showed the largest improvement, although not necessarily the highest score in the second round. The average score on each of the criteria improved from the first round to

the second round and the criteria on which the papers improved the most were:

- How well have the results of the evaluation been described?
- Were the criteria used to determine the respondents described and justified?
- Was the relationship between the researcher and respondent described?

The consistent findings that the reviewers rated the papers higher in the second round suggests that the authors responded positively to the suggestions made in the first round of reviews and as a result the papers which were submitted for the second round had improved substantially.

4.5 Deliverable 1. Staff development guide which contains theoretical and practical aspects of evaluation in the form of a handbook; and process aspects of the evaluation derived from the action inquiry process

As mentioned in Chapter One and above, an evaluation handbook (entitled *Handbook for Learning-Centred Evaluation of Computer Facilitated Learning Projects in Higher Education*) was developed by members of the Project Team to assist mentees and mentors to plan conduct and report their evaluation study. The Handbook comprised background information on project evaluation and action inquiry, a framework for conducting an evaluation study of a CFL project, information on the processes to be followed in the studies included in this project and some more advanced information and links on project evaluation. Each team was provided with a copy of the Handbook and it was also available on the project website. The Handbook is being revised based on the experiences and feedback from the mentees and mentors into a Staff Development Guide for evaluating CFL projects, to be published separately in 2002.

A separate feedback sheet was developed to collect the comments of mentees and mentors as they worked through the Handbook. Unfortunately, no comment sheets were returned by participants. However, a wide range of comments about the Handbook were made in progress reports and the online discussions which took place throughout the project, as well as at the Workshop held in December 2000.

The views of mentees and mentors on the usefulness of the Handbook were mixed. This is partly due to the varied background of the individuals involved in the evaluation studies. As mentioned previously, there was considerable variation in the range of prior experience mentees had with CFL, action inquiry and project evaluation. As a result, the level of use of the Handbook, particularly specific sections, varied considerably and likewise its usefulness varied considerably.

Overall, the Handbook was seen to provide a good description of evaluation process/issues and was very helpful in providing ideas when writing the evaluation study report. However, a number of individuals commented that the language used was not friendly, it was difficult to read and contained too much jargon. Furthermore, there was concern that the Handbook focused too much on one way to evaluate (the LCE Framework) and would have benefited from the inclusion of some case studies.

The action inquiry section of the Handbook was used by the majority of mentees and was seen to be particularly useful as background information for individuals who had not previously been exposed to this process. The section of the Handbook containing what was then called the Bain Alexander Hedberg Evaluation Framework was used by the majority of mentees who generally found it easy to understand and useful for their particular study. The minority of mentees who commented critically on the Framework suggested that it was not easy to apply to their specific problem, was too limited and linear as a general guide for evaluation, and was not sufficiently linked to the project development cycle and action inquiry cycle. It appears that those mentees with the least experience in project evaluation found the Handbook the most useful. This indicates it will be important to clearly identify the target audience when developing the final staff development guide for wider distribution.

Similarly, the section on the Pragmatic Processes of Evaluation was found to be appropriate and useful (as an overview) by about half of the mentees. However, the remainder found it not particularly appropriate, filled with too much jargon, too general and not sufficiently practical. They also felt it would benefit from the inclusion of some

checklists and proformas, a critical path diagram and some examples of different approaches to data analysis

Finally, the level of use and comments reported on the usefulness of the Evaluation Cookbook and Flashlight sections of the Handbook were also varied. Some saw it as just right for their needs and others felt it was too complex and not applicable to their particular evaluation study.

The mixed feedback on the Handbook indicates both the varied background experience of staff venturing into CFL, but also the different learning needs and styles of teaching staff. The Handbook was acknowledged by the writing team to be incomplete at the time of publication, but distribution could not be delayed any longer. The authors of the Staff Development Guide will need to take account of this diversity both in content and presentation.

4.6 Deliverable 2. Volume of Scholarly Papers which Details the Results of the Evaluation Studies Carried out as Part of this Project.

These papers are provided in the final section of this report. Seventeen of the eighteen projects which completed their evaluations have submitted reports. The reports provide a summary of the educational development project and the evaluation study of that project. In addition, the reports provide evidence of the impact of the educational development on student learning and the teaching practice of the lecturers involved. Finally, the reports provide a very interesting insight into the process of reflection on their teaching undertaken by the participants. In many ways, the reports provide a wealth of information on each of the projects and are well worth reading through.

5. Broader Benefits of the Project

The evaluation of the project concentrated on the six outcomes discussed above. However, it was recognised that there are also potential broader benefits to the higher education sector, in particular the following:

5.1 Broader Benefit 1 Improved perceptions of the worth of the scholarship of teaching and learning

One of the broader outcomes of the project was that by participating in a collegial, action inquiry activity on a project of their choice, individuals would have a positive reflective learning experience about teaching. If this was the case, then their perceptions of the worth of the scholarship of teaching and learning would be enhanced. Feedback from mentees and mentors supported this view very strongly. Although individuals experienced difficulties and challenges in completing their evaluation studies, they were very positive about what they had experienced in terms of reflecting on their teaching and the learning of students. They also commented positively on the benefits they gained from the mentoring process and the collegial nature of the overall project. One group provided a particularly succinct picture of this in the following comment:

“The main implication for our teaching which we see resulting from this evaluation is to have a good look at all our teaching resources and to improve linkages between the different components. Students should not perceive the multimedia material as an additional study resource but as an essential part of their learning opportunities. What we also have to realise is that highly academically skilled students will have no problems to learn in any given environment but this is not true for the majority of our student cohort. We have to match learning opportunities better with the level of motivation, skill, and prior knowledge of our particular student cohort. This could mean that we have to make it very explicit to the students how and when to make use of the multimedia resources in their learning. We will also expand our interactive question database to allow students more opportunities of self evaluation. For our students, we have to associate a small percentage of the course grade with this formative assessment activity to sufficiently entice them to undertake it in the first instance. Obviously, it is a much easier task to foster independent learning in highly academically skilled students.”

5.2 Broader Benefit 2 Inter-institutional and inter-disciplinary collaboration and knowledge sharing will be fostered

A distributed project such as this one, involving staff from a range of universities in a range of disciplines has the potential to create a valuable inter-institutional and inter-disciplinary learning community during the term of the project. There is also the potential that this community or at least part of it will continue to exist after the project is completed. A number of the mentees, but particularly the mentors, commented on the considerable value they placed on dialogue with the others in the project. The considerable volume of the ongoing discussion forums gives some indication that a learning community of sorts was operating during the project. The extent to which this continues on after the project is finished is difficult to predict.

5.3 Broader Benefit 3 An internet community of learners can serve as a model for future projects

As identified in the overview of the overall project in Chapter 1, an online learning community was established among all the individuals involved in the projects, including the project participants, mentors, writers and project management and evaluation team. This was established using the ASCILITE Virtual Conferencing System developed by Netspot, and was intended to provide a convenient and flexible means for communicating and sharing ideas and materials across the diverse and distributed project members. The internet site worked well technically. It was used extensively as a discussion forum by the mentors, whereas, the mentees used it more for receiving information on project administration and as a means for submitting status reports. Mentees indicated they seldom used it for discussion purposes because they had:

- High workload demands
- Few common issues among mentees
- Not felt 'safe' enough to contribute.

The online facility was certainly a critical element in the efficient operation of the project.

5.4 Broader Benefit 4 Address widespread deficiencies in evaluation of CFL projects

One of the reasons for undertaking this project was that an earlier CUTSD report indicated that there were widespread deficiencies in the evaluation studies of the CFL development projects (Alexander & McKenzie, 1998). The feedback from the mentees, mentors and independent observers involved in the project were generally consistent that a number of deficiencies had been addressed. For example, a number of mentees stated that they had underestimated how challenging it was to conduct a high quality evaluation study of their teaching innovation and the cost in time and funding which was required. Several mentees also mentioned that they found a number ideas/tools provided to them in the project to be very useful, for example:

- the value of developing an explicit evaluation plan, with a very clear focus for the study.
- a matrix to plot the evaluation objectives against the evaluation methods was instrumental in not only devising the evaluation plan, but in putting everything into perspective. This matrix was once again instrumental in writing up the findings, as it acted as a framework from which to report. "By the way, the matrix was not set in concrete at the start, it evolved though lots of reading and discussion with the mentor."
- the use of online survey forms to reduce data input requirements.
- exposure to a wide range of data collection and analysis tools, particularly for qualitative information.
- the value of a clear outline for reporting the results of the evaluation study.
- the need for evaluators to have a range of skills including project management.
- the value, but also difficulty, in using a collaborative approach to evaluation.

If these, and other ideas can be addressed in the Staff Development Guide and staff development units in Australian universities can be encouraged to use it, there should be a marked improvement in the quality of evaluation of CFL projects and then hopefully, the quality of CFL activities as well.

5.5 Broader Benefit 5 Potentially enables the achievement of improved student learning outcomes

This broader benefit is addressed in the overview to the evaluation study reports in Chapter Three by Dr Rob Phillips and the introduction to the special issue of AJET by Dr John Bain.

6. Unexpected Outcomes of the Project

As in many projects, there are outcomes which are unintended or unexpected, and a properly conducted evaluation study should be open to these and report them where they occur. In this evaluation study, two such outcomes arose and they are briefly described below.

6.1 Unexpected Outcome 1. Mentor Role

The role of mentor is critical within the action inquiry process. However, it is not always an easy role to play particularly with one's peers. There is a fine a balance between providing support and being too intrusive in the inquiry process being undertaken by the mentees. The difficulty of this role was a major topic of discussion among the mentors, and clearly caused them some concern and sometimes discomfort. Some of the difficulties revolved around the problem of how much of a supervisory role to take where a specific activity must be completed within tight resource constraints. A further problem was faced by the mentors who were not located close to their mentees. Although the online communications system was sophisticated and both mentors and mentees had the necessary skills to use the facility, the tyranny of distance was seen to be a clear disadvantage in developing a close working relationship between mentees and mentors. A number of the mentors felt that they struggled with this role. However, mentees were very appreciative of the assistance provided by their mentors, stating that the guidance they received was invaluable and often provided the necessary encouragement to carry on with the project. Clearly, the role of mentor, including the differing expectations of mentors and mentees, needs to be explicitly addressed in the staff development guide still to be completed in this project.

6.2 Unexpected Outcome 2. Time Commitment

Both mentors and mentees commented on the very large amount of time required to conduct an evaluation study, particularly using an action inquiry approach. Problems mentioned in particular included the difficulty of bringing the team members and mentor together on a regular basis, the time consuming planning and reflection process in the action inquiry cycle, the problems of developing and administering appropriate data collection tools, and the lengthy process of analysing the data collected, particularly if it is qualitative information. Mentees and mentors were not being critical of the action inquiry process, which many found to be very useful, but rather they felt they had underestimated the amount of time this approach would entail. It is clear from this feedback, that the staff development guide needs to emphasise the time consuming nature of action inquiry so that individuals commence the process with realistic expectations.

7. Summary and Conclusion

This project was a complex undertaking both in scope and process. It required careful planning, constant monitoring and large measures of goodwill and perseverance by the participants. Fortunately, it had a great deal of all three. The planning was ambitious but collegial, and provided a clear but flexible plan for the overall project. The monitoring of the project again required careful planning and appropriate communications technology to enable the widely distributed participants to have efficient and effective two way communication. Finally, the participants, acting both as study teams (teams of mentees and mentors conducting a specific evaluation study) and as project groups (mentees as a group and mentors as a distinct group) showed considerable ingenuity and goodwill to participate as fully as they did in the project, given their other responsibilities and heavy workload. Given the ambitious and complex project, the project has been largely implemented as planned and has achieved its outcomes to a considerable measure. The Staff Development Guide, when published, will provide an additional beneficial outcome, with application to the vast majority of teaching staff in universities in Australia and overseas.

8. References

Alexander, S. & McKenzie, J. (1998). *An Evaluation of Information Technology Projects for University Learning*. Canberra, Australia: Committee for University Teaching and Staff Development and the Department of Employment, Education, Training and Youth Affairs.

9. Appendices

To conserve paper, the Appendices to this report are only available at

<http://cleo.murdoch.edu.au/projects/cutsd99>