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Developing a Framework
for a Useable and
Useful Inventory of
Computer-facilitated Learning
and Support Materials in
Australian Universities

99/11

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Evaluations and Investigations Programme
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Abbreviations and acronyms

AARNet	Australian Academic Research Network
ADU	academic development unit
ANTA	Australian National Training Authority
ASCILITE	Australasian Society for Computers in Learning in Tertiary Education
ATN	Australian Technology Network (Queensland University of Technology, University of Technology Sydney, RMIT University, University of South Australia, Curtin University of Technology)
AVCC	Australian Vice-Chancellors Committee
CFL	computer-facilitated learning
CTI	Computers in Teaching Initiative
DETYA	Department of Education, Training and Youth Affairs
EdNA	Education Network Australia
HTML	Hyper Text Markup Language
IMM	interactive multimedia
IMS	Educom/ CAUSE Instructional Management System
IP	intellectual property
IT	information technology
ITS	Information Technology Services
TAFE	Technical And Further Education
URL	Universal Resource Locator
VET	Vocational and Educational Training

Universities that responded to the online survey

Bond	Bond University
CUT	Curtin University of Technology
Deakin	Deakin University
ECU	Edith Cowan Univesity
Flinders	Flinders University
Griffith	Griffith University
JCU	James Cook University
Macquarie	Macquarie University

MOC	Marcus Oldham College
Monash	Monash University
Murdoch	Murdoch University
NTU	Northern Territory University
QUT	Queensland University of Technology
RMIT	RMIT University
SCU	Southern Cross University
SC	Sunshine Coast
UniBall	University of Ballarat
UniMelb	University of Melbourne
UNE	University New England
UTS	University of Technology Sydney
Newcastle	Newcastle University
UQ	University of Queensland
UniSA	University of South Australia
USQ	University Southern Queensland
UTas	University of Tasmania
UWA	University Western Australia
Woll	University of Wollongong
VU	Victoria University

Executive summary

Focus of the report

There are two aspects to this report—general issues related to the adoption of computer-facilitated learning (CFL) resources, and specific issues relating to setting up a useful and usable inventory of CFL resources.

The project team began the project with the idea that we could develop a prototype national inventory using ‘snapshots’ obtained from institutional surveys, case studies and literature work. However, sufficient data about existing CFL resources is simply not yet available. The emphasis in this report evolved into the development of a framework about how a successful national inventory could be set up and maintained. As we outline later, we are recommending a system of distributed databases ‘held together’ by metadata standards.

The report relates to key themes which emerged from the five case studies conducted in this study. These themes are *Policy, Culture and Support*. We have woven these themes into the report because we have been convinced that Australian university teachers will look for and use existing CFL resources only when these policy, culture and support issues are addressed. Otherwise any national inventory system will be used only minimally (and then only by enthusiasts rather than those who might benefit most).

Background

Universities in Australia are currently in an environment of intense change. They are being required to educate more students, from an increasing variety of backgrounds, with decreasing government funding. Universities are required to compete vigorously for student enrolments and external sources of funding. In this environment, universities have had to reassess their fundamental business and the way they go about it. Information Technology (IT) is viewed as an important factor in streamlining their operations.

There has been a great deal of development of electronic educational resources in the last few years. This has occurred together with substantial development of IT systems and infrastructure in all Australian universities. However, there is little evidence of dissemination of these electronic resources

and practices. Greater collaboration and sharing of resources is becoming an increasingly urgent issue. There are several existing databases of CFL materials, but these databases do not appear to have significantly increased the take-up of CFL materials and strategies. In order to make the most of the valuable resources which exist, a range of educational, technological and management factors needs to be addressed.

The term computer-facilitated learning (CFL) materials is used to describe materials which use information technology in some way to facilitate teaching and learning, including: educational CD-Roms; online course content materials; and the use of software for computer-mediated communication within a course.

Methods used

The study used a multi-method approach, employing online surveys of institutional practice (28 Australian universities responded); a literature survey; and a case study of five universities at project, faculty and institutional levels. The data included survey results, interview transcripts, focus group transcripts, institutional documentation and short descriptions or vignettes.

The study explored issues which facilitated or mitigated against teachers being able to work in an environment which facilitates the adoption of CFL, in terms of:

- appropriate policies, infrastructure and supports within the institution;
- access to information about CFL resources; and
- being able to work collaboratively both within and across institutions.

What information exists about CFL resources at Australian universities

A substantial amount of data was accumulated from a range of sources about the resources which exist to support CFL at Australian universities. It is clear that many universities are actively engaged in producing CFL resources to enhance the educational offerings they have. There is also a clear commitment to developing appropriate infrastructure to support the use of technology. The diversity in universities' structural arrangements made it difficult to compare data across institutions. There is also a variation in the stage of adoption of new IT by universities. Precise information about CFL resources may not have been obtained from some universities because the

survey was not responded to by the person with most accurate knowledge, or because facilities were devolved and centralised data was not available. The rapid change in the area also means that information provided to the investigators may be soon out of date. Overall the information about existing CFL resources at Australian universities is patchy and incomplete. In particular, there is limited or no information across the sector in general about:

- the educational design of the CFL resources being produced;
- the incentives and support that exist for individuals to produce CFL resources;
- the technical design and access specifications for using these CFL resources;
- the experience of using the CFL resources in actual teaching contexts;
- evaluations carried out to determine how educationally effective these resources have been in practice;
- intellectual property and copyright issues which might affect the use by others; and
- how access can be obtained to these CFL resources from either colleagues in the same university or another institution.

What major issues emerged relating to adoption of CFL at Australian universities?

Three major themes emerged from the case study relating to adoption of CFL at Australian universities. These were *Policy*, *Culture* and *Support*. The considerable overlap between and within these themes is illustrated in figure 1. These major issues were selected from the case studies using three criteria:

- frequency of being mentioned;
- intensity of expression in the interview; and
- who articulated the idea, e.g. senior administration and/or teachers and support staff.

The *Policy* theme looked at specific institutional policies, such as equity and intellectual property, the alignment of policy throughout the organisation, the direction of policy change (bottom-up or top-down) and a number of strategic processes which flowed on from policies such as grant schemes.

Culture incorporated factors such as collaboration within institutions, and personal motivation of staff to use CFL, as well as particular aspects of

funding, staff rewards and time, leadership, teaching and learning models, and attitudes such as 'not invented here'.

Support incorporated a whole gamut of institutional issues including IT, library and administrative infrastructure, professional development for staff, student support, educational and instructional design support for academic staff, funding and grant schemes, and IT literacy.

Several universal factors in relation to widespread use of CFL were identified:

- coherence of policy across all levels of institutional operations and specific policies which impact on CFL within each institution;
- intellectual property, particularly the role of copyright in emerging online environments;
- leadership and institutional culture;
- staff issues and attitudes: namely, professional development and training, staff recognition and rewards, and motivation for individuals to use CFL; and
- specific resourcing issues related to funding for maintenance or updating of CFL materials and approaches, staff time release and support staff.

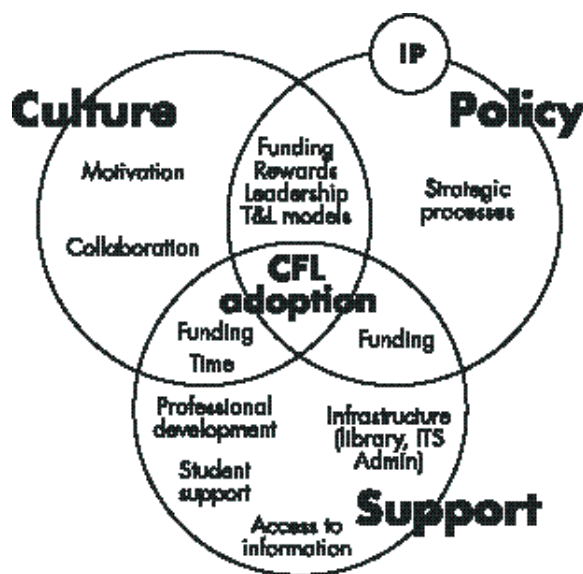


Figure 1 Themes and their relationships affecting the adoption of CFL

The tension between collaboration and competition is important. We argue that collaboration can assist healthy competition in higher education, but at present it seems there are few within institutions who are comfortable with or aware of this position.

What key features are needed in a national inventory of CFL resources?

Dissemination of information about CFL resources, and the location of CFL resources via databases are fundamental parts of this study. A framework for the development of a national inventory system is proposed whereby the development of national metadata standards will enable teachers and lecturers to search across a distributed set of interest-group-based databases. A number of features were identified which could characterise a well-designed teaching and learning database. The database should:

- have a distributed nature;
- be maintained in an ongoing sense;
- be owned by academics and professional staff;
- contain contextual information about the resource, including a full description of the product; the rationale behind its development; its unique characteristics; the pedagogical approach used; intellectual property details, and how it might be obtained; and evaluation data;
- contain a range of experiential information on how the resource was used in a real-life teaching context, both by the developer and others; and
- return the appropriate level of information to the queries submitted by users.

A key factor was the access to information:

- The data submission and retrieval process should be straightforward.
- Resources should be submitted by people with expertise in CFL and knowledge of the discipline, following a scholarly review process.
- Resource submission should not be by the developer of the resource.
- Resources successfully submitted to the database should attract scholarly recognition.

The size of the Australian education sector does not allow the continual re-invention of the wheel. A collaborative approach is needed towards the development of national metadata standards and web-based search strategies. Only through this synergy will competitive use be able to be made of CFL resources developed at great expense within the sector.

Major recommendations of this report

This study found that the issues surrounding the adoption of CFL at university are complex, and no single factor will result in adoption. Instead, there is a range of factors, all of which must be addressed.

Policy	<p>Universities need to have a clearly articulated vision of the changes to teaching and learning that technology brings.</p> <ul style="list-style-type: none"> • This vision should have ownership and commitment from all levels of management. • The Dean or Head of Department/ School should lead and support moves into CFL. • Vision needs to be supported by policy and institutional culture. • There needs to be a mixture of top-down and bottom-up policy direction. • Equity of access to IT for all students needs to be considered, e.g. by safety-net policies.
Institutional culture	<p>For CFL adoption to become widespread, staff must be rewarded, whether tangibly or intangibly, for their efforts. Motivation is an essential driver to innovation.</p> <ul style="list-style-type: none"> • Appropriate criteria for teaching performance need to be developed in order to provide an effective incentive for academic staff to adopt CFL materials and practices. These should apply to promotion and selection processes. • Schemes to recognise and reward technical staff, e.g. through qualification routes, are needed in order to retain expertise.
Infrastructure and support	<p>Adoption of CFL needs to be underpinned by funding mechanisms, infrastructure, staff development and technical support.</p> <ul style="list-style-type: none"> • All of these are expensive. Funding mechanisms for the sector need to provide incentives to universities to manage these costs. • Funding schemes need to monitor the progress of initiatives and learn from earlier experiences. Adequate reporting should be built into funding mechanisms. • Project-based funding is not necessarily effective once the early adopter phase has been reached. More comprehensive models are needed. • Professional development and training is a complex and multi-faceted area. There is a need for high quality staff developers, for flexible support programs, for using mentors, and allowing adequate time for staff to engage in staff development. Incentives should be given to universities to show demonstrable support services.

Intellectual property	<p>Intellectual property (IP) issues, and copyright in particular, are of crucial importance, specifically in terms of:</p> <ul style="list-style-type: none">• dissemination of information about IP• access to practical support on IP and licensing issues• recognising the rightful owner of copyright materials, whether in monetary terms or in kind.• Universities should have a public IP policy and report on its implementation.
Collaboration	<p>There is a synergy between collaboration and competition. Collaboration can assist healthy competition in higher education because the efficient use of resources can allow institutions to develop their own specialities more effectively.</p> <ul style="list-style-type: none">• Mechanisms which support collaboration, e.g inter-institutional grant schemes, should be favoured.
Databases	<p>Databases of CFL resources are potentially important mechanisms for supporting adoption, once several issues are addressed:</p> <ul style="list-style-type: none">• Databases need to be well-designed and maintained.• Database owners need to collaborate on the development of metadata standards so that an expanded market for collaboration and competition is created.• The development of a unified, Australia-wide collaborative framework for interoperable online databases depends on policy support from DETYA.• Intellectual property issues associated with the emergent use of metadata and metadata standards need to be researched at a national level.

1 Introduction and key issues

1.1 Setting the scene

All universities in Australia at present are engaged in a rapid process of change, where terms like 'niche market' and 'productivity' jostle alongside concerns about 'generic graduate attributes' and 'professional competence'. Quantity and quality are both important considerations in the universities of the 21st century as they seek to maintain important intellectual and physical spaces for their staff to pursue creative research and development, while at the same time needing to provide teaching for escalating numbers of students in all courses in order to shore up funding. These student cohorts have become increasingly diverse (McInnis, James & McNaught 1995) with more part-time students, and students from a greater variety of backgrounds.

Flexible modes of delivery have been widely viewed as the prime way of meeting the challenges posed by this diversity. There has been a fair amount of naive equating of flexible delivery with production of online materials ('plug them into the web') and insufficient attention to the relationship between flexible modes of operation for students, the use of communication and information technologies and the design of educationally sound learning environments (Kennedy & McNaught 1997; Reeves & Reeves 1997). This is true of all levels in the system. There is pressure on universities to become more 'efficient', often to the exclusion of educational effectiveness, and this has translated in too many cases to the placing of text-based materials on the web and a reduction in face-to-face teaching. However, there is no doubt that communication and information technologies will be a major part of future university planning, as several recent reports make clear (e.g. Yetton et al. 1997; McCann, Christmass, Nicholson & Stuparich 1998).

There has been a great deal of development of electronic educational resources in the last few years. This has occurred together with substantial development of IT systems and infrastructure in all Australian universities. However, the evidence is that there is little dissemination of these electronic resources and practices. Greater collaboration and sharing of resources is becoming an increasingly urgent issue. There are several existing databases of computer-facilitated learning (CFL) materials but these databases do not appear to have increased the take-up of CFL materials and strategies a great deal. It is clear that we need to investigate educational, technological and

management issues in designing ways in which more value can be obtained from the expensive resources that exist.

A key issue for this study is that there is a low take-up of CFL in universities in ways which maximise efficiencies and effectiveness. In recent years, innovation in higher education involving the use of communication and information technologies has proceeded through the framing of projects, devised by enthusiastic individuals, often working in isolation from their colleagues. Funding is for short-term products and evaluation limited to the requirements of a project report produced in a relatively short time frame. Alexander, McKenzie and Geissinger (1998) reviewed 104 of the 173 information technology projects which received funding from the Committee for the Advancement of University Teaching (CAUT) in 1994 or 1995. Their major recommendation is that information technology projects need to be developed in a more scholarly and professional manner. This echoes the recommendations of Hayden and Speedy (1995) who evaluated the 1993 CAUT grants and voiced concern that there were few projects where there were clearly described evaluation techniques and actual measurement of outcomes.

This isolated development of CFL resources is compounded by the lack of any systematic procedure by which comprehensive and authenticated information about CFL materials can be obtained. Conference proceedings are often the best way to find out about CFL innovations in Australia, but only recently have a significant number of these become openly available on the web, and even then, proceedings are not normally associated with search engines; searching is usually done by title of the paper, and the paper is usually a self-reporting process that is not externally validated. Some disciplinary initiatives exist which attempt to bring rigour into the reporting of information on CFL resources; for example, Nunes Vaz (1998) suggests a model of peer reviewing of CFL resources, based on practice in the field of marine biology.

New models are emerging about global initiatives in education. For example, Cunningham (1998) has developed a model of 'borderless education' which shows the interplay between the '5Ps' of practical issues, pedagogical issues, policy issues, philosophical issues and personal issues. Information has become the 'glue' which holds global initiatives together. Indeed, Davies (1999) describes information as a possible unifying metaphor for understanding nature and consciousness. Access to accurate, useful information about existing CFL resources and strategies is the key to developing the best global and local education offerings for Australian students. This is a key focus of this report.

1.2 Purpose and scope of this study

The project team began the project with the idea that we could develop a prototype national inventory using ‘snapshots’ obtained from a range of data sources. However, insufficient data about CFL resources is available. The emphasis in this report evolved into the development of a framework about how a successful national inventory could be set up and maintained. As we outline later, we are recommending a system of distributed databases ‘held together’ by metadata standards.

The project team investigated the extent of use of computer-facilitated learning (CFL) materials across the higher education sector. The framework for an updated national inventory of such materials was developed in the context of developing a strategy which could lead to a greater adoption of CFL materials in Australian higher education. This project will assist a range of bodies—universities, DETYA, government, AVCC—in an analysis of the strengths and weaknesses of the higher education sector’s use of CFL materials.

For the purposes of the project, computer-facilitated learning (CFL) materials covers a wide range of uses of computing technology in teaching and learning. CFL materials include:

- stand-alone resources, such as educational CD-Roms, either produced in-house or obtained from elsewhere;
- online course information and support material;
- online course content material;
- the use of software for computer-mediated communication within a course;
- the use of a suite of distributed learning environment tools (either an integrated commercial product such as WebCT or TopClass, or a set of tools developed in-house) within a course;
- materials produced by students as part of their course of study;
- databases (e.g. of visual or case study materials) used in courses; and
- assessment resources, etc.

For the purposes of the project, a computer support system includes:

- network and hardware facilities;
- IT help desk support for staff and students;
- a system for student management, including web-based student enrolments;
- university library services; and
- IT literacy courses, etc.

This project builds on other recent EIP studies about the use of educational technology in higher education. Back in 1996, Hesketh, Gosper, Andrews and Sabaz (1996) studied the use of computer-mediated communication in university teaching. They noted, at that time, that information technology applications had not penetrated university teaching at more than a superficial level. They had a sense that 'universities are waiting for information technology to infiltrate their teaching; there is a degree of passivity expecting that the inevitable will happen' (p. xv). In this study we look at the 1999 level of investment in and use of communication and information technologies. We also study the barriers to the uptake of these new technologies, to gain a clear picture of what needs to now be done to assist universities in becoming more pro-active.

Taylor, Lopez and Quadrelli (1996) carried out case studies at Griffith University and the Queensland University of Technology of academics' views about flexible modes of delivery. They found an increasing support for flexible modes of delivery from educational and professional perspectives. However, they noted that issues of work load, few opportunities for collaboration and a lack of focus on educational benefits in the use of technology need to be addressed. This study focuses especially on ways to foster collaboration and sharing of resources.

As noted above, Yetton et al. (1997) make it clear that communication and information technologies will be a major part of future university planning. His research team examined 20 universities' management of IT. They noted that an organisation's performance is a function of fit among five factors: strategy, roles and skills, management processes, structure and technology. They noted the need to change terms and conditions of employment in universities and the need for rationalisation. 'There will be winners and losers' (p. xiii). In this study we aim to suggest ways in which universities' internal policy development and their approaches to collaborative ventures might maximise their chances of being 'winners'.

Fraser and Deane (1998) investigated the use of open learning strategies in the development of life-long learning competencies in undergraduate science students. They interviewed 36 staff (a mixture of National Teaching Development Grant recipients and distance education staff) and gave questionnaires to 50 students at Charles Sturt University and Monash University. The National Teaching Development Grant recipients used a greater diversity of teaching strategies and elicited higher student satisfaction. Fraser and Deane identified both peer and institutional support as critical factors in the successful implementation of effective open learning strategies; they advocate more support (including academic staff development) for a range of flexible teaching/ learning strategies and more evaluation of

educational effectiveness of subjects and courses. In this study the model of the interdependence of policy, culture and support extends the recommendations made by Fraser and Deane.

Cunningham, Tapsall, Ryan, Stedman, Bagdon & Flew (1998) emphasise the need for a global perspective. They argue that Australian universities may face competition from international well-resourced media corporations with a good understanding of client markets. The final recommendation is that strategic alliances within the higher education sector and between the sector and communication networks are needed in order to coordinate the development and evaluation of computer-based materials, and to develop databases of such material. The model of a national inventory as a collection of distributed databases, proposed in this study, provides a strategy to enact this recommendation of Cunningham et al.

1.3 Outcomes of this project

There are three aspects of this report:

1. An analysis of data that currently exists on the nature of CFL materials and computer support systems in the higher education sector.
2. An exploration of issues which facilitate or mitigate against teachers being able to work in an environment which facilitates the adoption of CFL, in terms of:
 - appropriate policies, infrastructure and supports within the institution;
 - access to information about CFL resources; and
 - being able to work collaboratively both within and across institutions.
3. An investigation into suitable requirements in a model for a national inventory system. The report also highlights ways in which a national inventory system might be made accessible to the higher education sector.

In chapter 2, the research methods used will be outlined. Chapter 3 focuses on what resources exist to support CFL at Australian universities and how difficult it is to find out precise information about CFL resources. In chapter 4 we examine the five case studies used in this project and describe the themes that have emerged. These themes are institutional policy (chapter 5), culture (chapter 6), and institutional support (chapter 7). In chapter 8 we focus on how collaborative work can foster a greater adoption of CFL. It will be argued that staff will use technology in their teaching when culture, policy and support structures are congruent. In chapter 9 we return to the mechanism by which better information about CFL materials and practices may be made available to university staff; a national system of distributed databases will be

described. The report thus proposes that a national inventory system is important for the Australian higher education sector, but also highlights the fact that unless the environment in which Australian university teachers work supports the adoption and use of CFL, there will be little use made of any national inventory of CFL resources.

2 Research methods used

2.1 Overview

The project team are members of the Australasian Society for Computers in Learning in Tertiary Education (ASCILITE). ASCILITE is a professional organisation which has membership across the Australasian higher education sector. The members have a substantial collective experience about the design and use of CFL in universities. This experience was utilised in each of the research methods used. The network of ASCILITE members, especially the 72 campus representatives, was used to facilitate the collection of data.

The study used a multi-method approach (Brewer & Hunter 1989) employing both quantitative and qualitative methods: online surveys, a literature survey, case studies and a series of vignettes. The project objectives informed the process of identifying topics and issues which were used as the basis for devising the questions used in the surveys and in the case study.

The data, collected from multiple sources including surveys, interviews, focus groups, institutional documentation and short descriptions or vignettes, enabled the project team to clarify potential inconsistencies in the information and validate the converging lines of inquiry. The documentation provided included reports, policies, regulations, background papers and statistics which directly related to or offered contextual information about the computer-facilitated learning (CFL) projects or initiatives studied.

Participant verification also proved to be an important phase of this study as some of the findings revealed potentially contentious issues related to the widespread adoption of CFL approaches across the sector. The process of clarification and resolution of these issues was a useful aspect of the research process, revealing further insights into the complexities of some of these issues and also adding weight to the significance of the overall findings.

Analysis was carried out on each set of data sources (e.g. surveys and case studies) and circulated for comment among the project team and other project stakeholders. The final analysis phase combined data from all sources using a refined themes framework, which included the addition of additional sub-themes.

2.2 Online surveys

Two surveys were conducted—an institutional survey of Australian universities and an individual survey of ASCILITE members. The purpose of the surveys was to gain quantitative data about the structures, policies and resources of Australian universities which might impact on the extent of use and dissemination of CFL within the institution and across the higher education sector. In addition, in order to explore more fully the issues and trends which the project team had identified at the outset of the study, qualitative data was collected about the perceived efficacy of some of these measures from an institutional and individual perspective, and examples of innovation and good practice were also sought.

2.2.1 Survey of Australian universities

A comprehensive survey was developed to seek information about institutional policy and expertise in computer-facilitated learning and support materials (Appendix D.1). In particular, the survey sought to identify any cross-institutional collaborations, determine the use of online information for student administration and record systems, and the use of library and other information databases. The survey consisted of four sections (Table 2.1).

Table 2.1 Focuses of the Institutional Online Survey

Section of the university	Central administration	Information technology services	University library	Academic development unit
Focus of the section survey	To learn about: <ul style="list-style-type: none"> • how universities are developing policy to support CFL, especially online learning; • the process of establishing priorities; and • the nature of university investments in CFL. 	To learn about how universities are developing IT infrastructure systems to support teaching and learning, in particular which technologies are being used and supported.	To learn about how university libraries are assisting staff to search and retrieve CFL resources to use in or support the courses they teach.	To learn about how university academic development units support university staff in activities relating to the use of technology in teaching and learning.

The development of the survey was a consultative process involving the project team, the Advisory Committee, CAUL (Committee of Australian University Librarians) and CAUDIT (Committee of Australian University Directors of Information Technology). Several drafts were produced and the penultimate draft was given to a focus group, consisting of eight university

teachers with varying degrees of experience in the use of technology in teaching. Further comment was sought from this group.

All Australian higher education institutions were invited to participate, with project team members and ASCILITE members coordinating the process on a regional basis. Each institution was given the URL for the online survey, but the sections were designed to be completed separately by the most appropriate university organisational unit or area.

There were responses from 28 universities to the survey; 18 answered all sections and the remaining 10 provided partial responses. The universities who responded covered all types of Australian universities. Table 2.2 provides numbers who answered each section.

Table 2.2 Response Numbers to the Institutional Online Survey

Section of the university	Central administration	Information technology services	University library	Academic development unit
Number of replies	25	25	24	25

2.2.2 Survey of ASCILITE members

A short online survey (Appendix D.2) was developed to assess individuals' perspective on:

- the effectiveness of a range of staff support activities and programs related to the use of CFL, and
- the degree of adoption of CFL resources within individuals' own institutions.

There were 73 responses to this survey, from participants at 24 universities.

2.3 Case studies

A multiple case study design was adopted to allow an in-depth exploration of the issues identified at the outset of the project. Semi-structured interviews and focus group sessions enabled identification and examination of additional unforeseen issues by the project team.

Five universities, one from each of the mainland Australian states, were selected as the 'host' environment for the five cases investigated. (Originally six universities were approached, but the sixth was later unable to

participate.) The selection of host environments was based on the following organisational characteristics:

- age;
- location (urban, regional);
- size;
- number of campuses (single or multi-site campus);
- affiliations with other universities (e.g. ATN network);
- amalgamated (university status acquired at, or about, the time of amalgamation with other tertiary institutes, colleges, etc.); and
- strategic orientation (e.g. distance education, offshore focus, research, industry or professional links, vocational emphasis).

The five cases can be described as:

- three faculty-based examples (medicine, law, medical science). These were at universities described as Established University, Multi-campus University of Technology, and Single-campus University of Technology.
- one 'project'-based example (projects chosen from different schools within the university but with common themes—innovation, collaboration, offshore online initiatives). This was at a university described as Urban Distance Education University.
- one 'institutional'-based example (university-wide online initiative). This was at a university described as Regional Distance Education University.

The selection of these cases was based on the type of CFL activities and the access the project team was given to the relevant stakeholders within the timeframe parameters set by the overall study.

Prior to carrying out the interviews and focus groups, 'stakeholder' categories were devised which would represent the diverse range of experience and views of those involved in the use of CFL approaches. The aim was to collect opinions from all those who might influence the degree of adoption or take-up of CFL within the higher education sector, rather than just the views of innovators or those in positions of formal authority. This process drew on the well-established body of literature (Rogers 1995) but adapted Rogers' 'adopter' classification to the particular needs of this study. The two key dimensions were the attitude towards (or degree of adoption of) a new technology, and the nature or degree of influence an individual might possess in relation to its widespread use. These are illustrated in table 2.3.

Table 2.3 Case study stakeholder categories

Nature of authority	Case stakeholders	Degree of adoption
Formal authority	• Pro-Vice-Chancellors	Innovators and early adopters
	• Deans, Registrars	Mainstream and later adopters
	• Heads of School or Units, Project Directors (or other senior positions which oversee the use and development of CFL)	
Informal influence	• Mentors and well respected members of academic staff	Innovators and early adopters
	• Disenfranchised staff	Mainstream and later adopters
	• Professional support staff with specialist expertise	
	• External providers/consultants	

Individuals who participated included senior academic and administrative staff, managers, academic staff (representing all three ‘adoption’ categories shown in table 2.3), librarians, technical and administrative staff, educational developers and staff with professional expertise in instructional and graphic design, evaluation consultants, computer programmers, outside providers and other consultants. The stakeholders associated with each case thus represented a broad range of university staff and individuals associated with the use of CFL within universities. Eighty-one participants were involved in this phase of data collection (table 2.4).

It was not possible to incorporate all stakeholders and issues within a single case; indeed, each case represented a unique example. However, the validity and reliability of the data collected was maintained through the appropriateness of the selection process. The cases, taken together, provide a comprehensive and balanced coverage of the essential issues. The details of each case are indicated in table 2.4.

One case was conducted as a pilot and, based on the feedback and preliminary examination of these findings, minor modifications were made to the methodology of the remaining cases.

Table 2.4 Summary of the five case study institutions

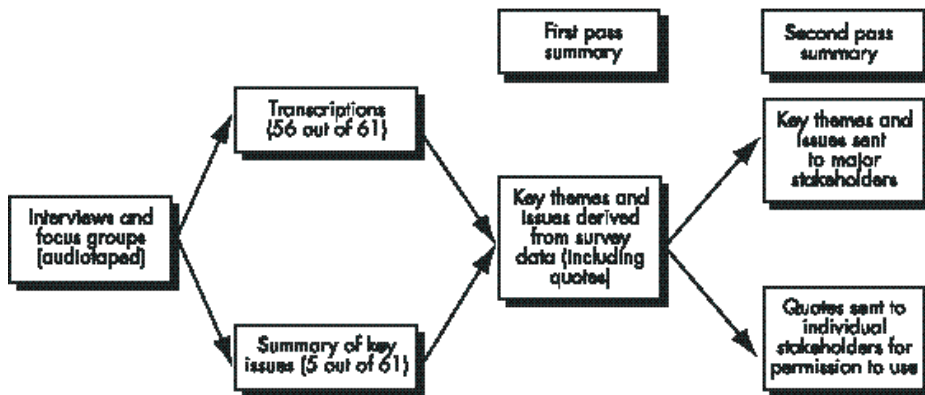
	Established university	Multi-campus university of technology	Regional distance education university	Urban distance education university	Single-campus university of education
Age	>50 years	5–10 years	>10 years	<10 years	>10 years
Location (primary)	City	City	Regional	City	Suburban
Size	<25,000 EFTSUs	<25,000 EFTSUs	<25,000 EFTSUs	<25,000 EFTSUs	~25,000 EFTSUs
No. campuses (primarily)	single	multi	multi	multi	single
Affiliations	Group of eight	ATN*	Distance education	ATN*	ATN*
Amalgamated	No	Yes	Yes	Yes	Yes
Orientation	<ul style="list-style-type: none"> • Established • Research excellence • Teaching excellence—IT used to value-add on-campus 	<ul style="list-style-type: none"> • University of Technology • Strong local/state professional & industry links 	<ul style="list-style-type: none"> • bIT Focus to support learning at a distance (high percentage DE enrolments) • Strong national regional presence 	<ul style="list-style-type: none"> • University of Technology • Strategic use of IT, e.g. to serve offshore and entrepreneurial initiatives. • Equity 	<ul style="list-style-type: none"> • University of Technology • Offshore
Case definition	Faculty-based	Faculty-based	Institutional-based	Project-based	Faculty-based
CFL activities	Strength in development and use of IMM programs	Eclectic use of CFL, including online and computer-based approaches	Institutional standardised online approach—volume delivery	Standardised online approach as well as specific innovative and collaborative offshore online initiatives	Innovative computer-based learning programs
Number of interviewees	17	24	19	14	7
Number of sessions	17	17	13	12	2

*ATN—Australian Technology Network

Analysis of data collected from all the cases was done in several stages. Transcriptions were done for the majority of interviews and focus group sessions, while the remaining interviews (five in total) were summarised using the key issues as criteria. This raw data was collated into a ‘first pass’ case by case summary of the issues, including the quotations which remained anonymous. The second pass edited this data and made an initial analysis of the issues, making limited reference to documentation provided by each institution. A version of the second pass summary (without quotations) was

sent to all participants for verification and comment. Quotations were forwarded separately to individual participants for permission to include them in the report. This process is represented in figure 2.1.

Figure 2.1 Stages in the analysis of the case study data



2.4 Literature survey

A search was made of Australian literature where examples of useful practice could be found. Conference proceedings of conferences where technology in teaching and learning is a key theme were the main focus. The search involved looking for two types of article.

1. Those which link to the issues identified in the study, for example:
 - policy and leadership;
 - intellectual property;
 - databases which provide the right sort of information; and
 - professional development.
2. Any projects which seem to have:
 - a long life;
 - were disseminated locally (same institution, same city); and/or
 - been commercially developed.

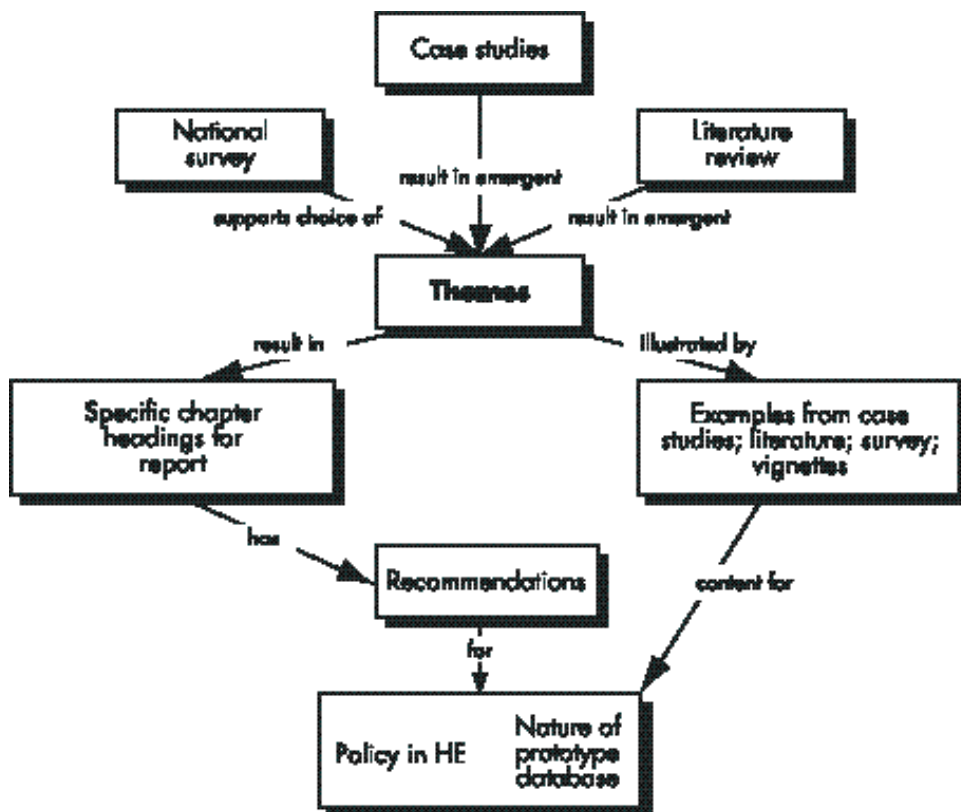
It was difficult to get full details of useful ideas and projects from the literature and this experience partly determined our suggested strategies about the use of databases in disseminating information about CFL resources outlined in chapter 9.

2.5 Vignettes

A series of vignettes or mini-cases was solicited from individuals to highlight important aspects or themes of the study. In some cases, individuals were approached or interviewed but the majority were submitted after an invitation was extended to all ASCILITE members. A total of 18 vignettes revealed a number of examples of good practice, particularly with respect to dissemination and widespread adoption of CFL approaches.

The research process is summarised in Figure 2.2. The emergence of the themes is discussed in chapter 4.

Figure 2.2 Research process



2.6 One final comment

This was a collaborative project between Australian universities and a professional association (ASCILITE) which has a network of members across most Australian universities. We have sought to gain data at institutional level, faculty/ department level and from individual academics. It is our belief that complex issues need to be viewed from several perspectives, and that more extensive and efficient use of CFL resources will require policy changes at all levels of the higher education system.