Promoting Rural Aboriginal Off-Campus Study Using Information Technology and Other Innovative Strategies

Abstract

Indigenous students from rural New South Wales (Australia) must cope with isolation and distance from the University as they undertake Diploma in Aboriginal Education/ Bachelor of Teaching studies in a part-time mixed-mode course. Once immersed in their communities following residential schools, they struggled to manage their studies along with work, family, and community responsibilities (Grant and Trimmingham 1993). They wanted more frequent contact with each other and university staff for encouragement and to sustain motivation (Grant 1995). A review of the program in 1995 noted these data, and further concluded that printed course materials did not sufficiently take account of indigenous preferred learning modes.

In order to address these issues in 1996 and with the support of a National Teaching Development (CAUT) Grant, a number of initiatives were taken. Local study centres using existing information technology infrastructure at schools, TAFEs, Open Access Learning Centres and libraries were established. Students now use e-mail and the Internet/World Wide Web for contact and as learning resources. Interactive text-based teaching materials with graphical elements have replaced more traditional text, and development of a course Web site, specific-purpose videos and other resources are underway.

Such innovative program adjustments are not easily accomplished. I will take due note of the difficulties in this paper.

1. Introduction

Aboriginal and Torres Strait Islander access to higher education in Australia has a short history. In 1969 there were 18 Aboriginal students enrolled nationwide; by 1989 this had increased to 3307 (Bourke, 1991). In 1990 the Federal Labour Government passed the Aboriginal Education Act (AEP) which brought together all education sectors across all governments, Federal, State and Territory, to set targets for Aboriginal and Torres Strait Islander participation. The Act is responsible in part for a rise in university attendance by indigenous students to 7832 by 1995. Last year, 4532 students commenced higher education, compared to 1750 in 1989. However, recent data suggest that indigenous students' retention and graduation rates are approximately 60% that of other students (Crean, 1995).

At the Indigenous Higher Education Conference in October 1995 the Federal Minister for Employment, Education and Training announced a further $24 million allocation to projects over the next four years to support indigenous participation. The Hon. Simon Crean (p.4) suggested
that a key objective ‘could involve the development of new facilities where that is essential in remote locations. It will almost certainly involve a more substantial commitment to flexible, open learning approaches to higher education delivery, to take higher education where it is needed’. $1.75 million is to be spent on the development of ‘an indigenous electronic network aimed at improving access to existing indigenous education and support services in our universities’ (p.4). Following the 1996 Budget, the present Minister, the Hon. Amanda Vanstone indicated that she will proceed with the previous government’s initiatives.

Indigenous organisations which lobby on behalf of the education needs of their people have identified some of the underlying reasons for the problems at tertiary level. For example, during the 1980s over several reports, the National Aboriginal Education Committee (NAEC) addressed the problems of access to education and concluded that Aboriginal people have not been well served by Australian education systems at any level. A major cause for concern was the scarcity of Aboriginal teachers in school systems. The Committee's 1984 report advised universities of ‘a large pool of mature-age Aboriginal people who [had] lacked the opportunity to obtain more than minimal, if any, secondary schooling, but who [were] capable of completing tertiary award courses' (p.8) in teacher education.

In 1986 the Committee argued that:

At all levels from preschool to tertiary, the structures and processes of education generally are inappropriate and give little recognition to the needs and aspirations of Aborigines. General education facilities are often not available in Aboriginal communities while resources for special programs are often inadequate (1986:7).

The 1986 report noted also that while Universities and Governments had by then developed a range of special entry programs in the areas of teacher and teacher-assistant education, such programs did not always embody the values and cultural practices of Aboriginal people.

The NAEC recommendations helped shape past initiatives taken by Australian Catholic University (ACU) in the area of indigenous education. Coincidentally, our present initiatives following a major course review fit well with the 1995 Federal Government's vision as articulated by the former Minister.

2.ACU’s Indigenous Education Program

2.1The Program
ACU developed and in 1989 implemented its program to serve the education needs of mature-aged Aboriginal people living in outer suburban Sydney and rural NSW and to contribute to overcoming the great shortage of Aboriginal teachers and professionally qualified Aboriginal Education Assistants (AEAs). The course is offered in two stages: three years of successful part-time study yields a Diploma in Aboriginal and Torres Strait Islander Education, and two further years a Bachelor of Teaching. The mixed-mode course structure, an outcome of negotiations with Aboriginal communities during the course development phase, is intended to provide maximum opportunity for the students to sustain their family, work, and other responsibilities, and to maintain strong links with and use of resources within their own communities.

2.2 Course Delivery

Students attended one ten-day residential school at the university's Sydney campus each semester plus two week-end schools in regional centres, and studied in between at home. Centres were established at Moree and Mount Druitt (outer Sydney) followed by Kempsey and later still, Moruya (one intake only). The Mount Druitt centre was discontinued after two years and Moree after five, leaving Kempsey and a new centre based on the Sydney campus, which, being better served by public transport, was easier for many students to access. The notion of the week-end schools being focused on the local community worked well in the initial years, when enrolments from the immediate areas predominated, but the positive reputation enjoyed by the course meant that within three years, students were joining from far afield, necessitating their travelling long distances across the state for week-end schools.

From its beginning, the program employed two major approaches to course delivery. The first is face-to-face instruction in the residential schools conducted by specialist lecturers using non-traditional methods. There is emphasis on the mutual education of the indigenous students and their predominantly non-indigenous teachers in this context. The second is the provision of printed, text-based booklets designed to support off-campus study including completion of assessment tasks. Both modes incorporate indigenous perspectives. A support unit (Yalbalinga) staffed mostly by Aboriginal people was established early on and is a vital feature of the university's commitment.

A longitudinal study over four years into their experiences of becoming tertiary students (Grant and Trimingham, 1993) showed that participants placed great importance on the social and affective aspects which formed a significant component of their educational experience in residential schools. They highly valued face-to-face instruction and modelling of teaching/learning processes by lecturers, and prized their relationships with Yalbalinga and lecturing staff and their peers.
They drew support and encouragement from these relationships. Research undertaken in 1995 indicated that while students did not wish to spend longer periods away from home, they would like more frequent opportunities to interact with lecturers, and with each other (Grant, 1995).

2.3 Off-Campus Aspects

Indigenous people in the most remote areas of Australia tend to enter off-campus tertiary education programs in reasonably large, single-community groups (McConnachie and Farrow, 1988). ACU students, in contrast, are scattered throughout NSW, mostly in ones and twos. On return from residential school students are immersed and often isolated in their local communities with reduced or no opportunity for peer support. Competing responsibilities to family, extended family, community and work can make scheduling of necessary study time highly problematic (Grant and Trimingham, 1993). Few students have access to a dedicated study area.

Educational and other kinds of off-campus support for students have tended to be hit-and-miss, relying on three main forms: telephone contact initiated by ACU staff or the student; the Department of Employment, Education, Training and Youth Affairs' (DEETYA) tutorial program; and encouragement and support offered by family/community members/work colleagues who are attuned to student concerns (Grant and Trimingham 1993). Some students are without phones and many are not easily contactable. Around 20% of students do not make use of tutors at all, and others do so sporadically rather than regularly. Those who do seek consistent tutoring have less difficulty in maintaining momentum with their studies and achieving timely, successful completion. A number of students face negativity and sometimes open opposition to their academic aspirations and study-time requirements from a variety of people with whom they have significant relationships (Grant and Trimingham 1993). Motivation and task commitment are difficult to sustain in these circumstances.

2.4 Course Review

A major review of the program undertaken in 1994-5 together with data from the longitudinal study cited above confirmed that while 18 students had already graduated as fully qualified primary school teachers and around 45 with AEA qualifications, a sometimes high attrition rate (up to 60% among first year students) and a relatively high incomplete/failure rate of a minority of students in individual subject units were issues requiring attention. Time taken to complete the overall program stretched well beyond the five year minimum for some students. Attendance at week-end schools was affected by the distance many students travelled, and the fact that this might take up
to two working days to accomplish.

The limited nature of the University's support for students' off-campus study undoubtedly contributed to the difficulties, and it seemed possible that they may have been further compounded by the nature of the study materials provided students. In the context of discussion about the diversity of learning/information processing styles (eg. Gardner and Hatch, 1989;) and their importance to pedagogy; and further, the evidence of an Aboriginal preference for kinaesthetic, imaginal, oral, and co-operative modes (Hughes and More, 1993), the reliance on text-based booklets for individual, off-campus work can be seen as limiting the extent and quality of student learning, and in some instances, their success rate in the course.

Following the review a number of decisions were made, to be implemented in 1996. A DEETYA funded study had established that a `critical mass' of potential students were to be found in Wilcannia, a very isolated town in the far west of the state, from which the predominantly Aboriginal population had virtually no opportunity to pursue tertiary studies and were unwilling to travel to Sydney. The University's decision to open a regional centre there for students from Wilcannia and Bourke, the next nearest town, expressed its on-going commitment to a community base for the course where this was still feasible. Semester residential schools were to be reorganised for all years of the program to become two, seven day schools in Sydney and a new regional centre in Wilcannia, permitting cancellation of the now-problematic week-end regional schools, with no diminution of face-to-face teaching time. Further adjustments to the program's mode of offering to improve support structures for second year and new students and to facilitate more effective and systematic off-campus study were to be made. The question as to what the model for supported learning should be comprised a significant proportion of the review committee's deliberations.

3. A Model for Supported Learning: Development & Implementation

The model for supported learning developed by the committee and trialed during 1996 has three main features: the establishment of local, community based study-centres enabling access to information technology (IT); the extension of the tutor program to all year one and two students; and the revision and development of course materials and resources. The last was to be supported by a National Teaching Development (CAUT) Grant won by the author and a colleague who were both members of the review committee.

3.1 Information Technology Enriched Study Centres

The climate created by reduced government funding on the one hand and active policies of promotion on the other favours the adoption in Australia of information technology for general course delivery, but
particularly for distance education. Information technologies 'hold the promise of reducing the cost of the human capital component in [course] delivery' (George, 1992:237) and at the same time are seen as a key to meeting increased demand for higher education including from disadvantaged groups (George, 1992; Crean, 1995). While cost has always been a more than usually significant element of ACU's program because of the delivery mode, educational considerations suggested that much could be gained by incorporating appropriate new technologies in the model for supported distance study being developed for our indigenous students.

A DEETYA report produced in June 1996 notes that educators are recognising the potential of information technologies to enhance learning outcomes. Listing these, the report (online version) cites the National Council for Educational Technology (NCET 1994) which found that effective use of IT can:

- provide the flexibility to meet the individual needs and abilities of each student
- reduce the risk of failure
- provide students with immediate access to richer source materials
- present information in new, relevant ways which help students to understand, assimilate and use it more readily
- motivate and stimulate learning
- enhance learning for students with special needs
- motivate students to try out new ideas and to take risks
- encourage analytical and divergent thinking
- encourage teachers to take a fresh look at how they teach and the ways in which students learn
- help students learn when used in well-designed, meaningful tasks and activities
- offer potential for effective group work.

Information technologies are now basic tools in most work environments and are becoming increasingly commonplace in homes. They have been available in many Australian schools for at least the last ten years (DEETYA 1996). It is vital that all teacher education students learn to use them for their own learning needs and so that they are properly equipped to take their place in classrooms on graduation.

The fact that ITs were already being either successfully trialed or fully incorporated in courses offered to remote indigenous communities by universities in South Australia (see George, 1992), Western Australia (Rehn, 1992), and Queensland (Gotts et al 1992, Logan and Sachs, 1992) was very encouraging. They had not so far been used for these purposes in New South Wales.

ACU's plan envisaged the development of local study centres where
students could meet regularly with tutors and have access to selected technologies. It depended on the negotiation of access to existing facilities such as schools, community centres and the Open Learning Access Centres (OLACS) already established in some areas by other universities. Such sites could be expected as a minimum to have IT resources such as computers and faxes already in place which could be supplemented if necessary by University purchases. Times of access by students and tutors would need to be individually negotiated once ACU had organised an in-principle agreement and all associated costs would be met by the University. The exception to these arrangements was to be Wilcannia and Bourke, where a combined total of 22 students necessitated the purchase and installation of selected hardware in the three schools to be used as study centres.

3.1.1 Choosing the 'Right' Technologies

From among the proliferation of information technologies available by 1995, the vexed question became 'which to choose?' Morehouse and Stockdill (1992, in George, 1992:238) see the adoption of technology by an organisation as a complex issue. Suggesting that it is 'the result of interrelated actions, forces, and political decisions', they identify five critical factors for the successful selection and utilisation of innovative technologies:

1. educational need
2. user characteristics
3. content characteristics
4. technology considerations
5. organisational capacity

These factors comprise a useful framework for consideration of ACU's requirements, choices, and implementation issues. The political decision of most import was to initiate the model in 1996, although the review recommendations were not finally accepted by the relevant committees until October-November 1995.

Educational Need

ACU's program is committed to access and equity in education for indigenous groups and individuals via a course which provides appropriate support structures for study in students' home communities. Support in this context must address matters such as the distance of the students from the resources of the University, both educational (eg. library; computer) and human (eg. the expertise and services of Yalbalinda, academic, and administrative staff) (George, 1992).

Distance from the dominant culture represented by the University may also be necessary for the sustenance of the cultural life of
indigenous individuals and communities, and therefore its maintenance should be viewed as a positive (George, 1992). ACU's original and ongoing commitment to a community-based course reflects this understanding. Our model therefore 'need[ed] to be flexible enough to work within both worlds: to fit into the cultural context of the students while fulfilling the requirements of the University' (George, 1992:240).

The specific off-campus educational need of students is to consolidate, apply and integrate the learning begun and extended in residential schools, which remain the primary focus for course delivery. Consolidation may require exposure to core and associated course materials and completion of exercises, activities, and assessment tasks.

User Characteristics

Students in the program enrol under special entry provisions for mature-age applicants. The majority have not completed a high school education, leaving on average around the ages of 15 or 16. A proportion have undertaken tertiary preparation courses through Technical and Further Education (TAFE) colleges. Most of the students are mature women, with family, work and community responsibilities. They usually have little background in the use of IT. Younger students are more likely to have had more years of high school education and some have completed year twelve. They have had varying experience with IT, ranging from none to extensive, in, for example, commonly available computer applications. Recent intakes have included higher proportions of younger men.

Variable work and other commitments of most students mean that reliable common patterns of off-campus study or contact time do not exist, nor could they be organised, except in a very limited way, across a year group.

Most students highly value opportunities for interaction with university staff and with each other at residential schools, and benefit from the support and sharing of experience which takes place at such times. Individuals may feel isolated in their educational endeavours on return to their home communities in the absence of such interaction.

Many students show a preference for the multi-sensory, oral and co-operative learning modes characteristic of many Aboriginal people (Hughes and More, 1993) and less interest in extensive, solitary reading as a strategy. They demonstrate a 'willingness and capacity to embrace innovation where they recognise it to be of value in their cultural context' (George, 1992:236)
Content Characteristics

The content of the course curriculum is in large part determined by the subject knowledge and instructional and management skills appropriate to each award, and by the need to induct students into the disciplinary discourses of an academic education. Within these constraints cultural sensitivity is respected in the selection of illustrative text, graphics and examples. In addition, interaction and negotiation give rise to multi-way exchanges of information and ideas.

Technology Considerations

As with the project reported by George (1992), analyses of educational needs, user characteristics and content indicate that the technologies of choice must have two essential characteristics if they are to be used successfully in ACU’s model. They need to offer flexibility, and be capable of promoting interactivity among staff/student(s), student(s)/student(s) and staff/tutor(s), and between student/study material(s).

George (1992) points out that flexibility is also usually required of the equipment supporting candidate technologies. Because of limited funds, readily accessible, multifunctional equipment offers an advantage. Computers fit this requirement – they can be used for word processing, to run instructional packages and often CD-ROM, to send/receive email, and to access the World Wide Web with its multi-media versatility, its rapidly multiplying educational resources, and its publishing capabilities. Computers are to be found in key sites in almost any community in the state. ACU’s plan began with the acceptance of computers with attached printers and modems as the hardware of first choice.

A reliable means of off-campus interactivity is a major issue for all involved with ACU’s program. A number of technologies offer either synchronous or asynchronous interactivity (George, 1992). Tele- and video-conferencing are examples of technologies offering synchronicity of interaction and therefore immediate feedback capabilities, but they tie sender and receiver to an agreed, specific time. This can be difficult enough in diadic communication and particularly complicated when large groups of people with disparate commitments are involved. The technology chosen must be flexible enough to allow for the cultural, social and work-related obligations of students and staff (George, 1992). While teleconferencing requires relatively low-level equipment and organisation, videoconferencing across multiple sites is complex and expensive. Both were in the end eliminated as possibilities.
Email and its variants (listservs; bulletin boards) are asynchronous and therefore adaptable in terms of scheduling, but lack the benefits conferred by immediate feedback (George, 1992). They offer great flexibility as regards the number of people who can be involved in the interaction and the manner in which it can be conducted. They were accepted as appropriate for ACU’s program, for both the socio-affective support and educational possibilities they promised. The latter included the transfer of textual and graphical materials between and among participants.

Video and audio taped resources (either commercial or customised) offer limited interactivity between student and material if they are accompanied by appropriate questions, worksheets, etc. but considerable flexibility. Most students are able to access the necessary equipment, and can time use of the resource to suit themselves. They, along with computer applications offer variants of the multisensory experiences which are thought to be mainstays of indigenous learning styles. They were identified as appropriate technological choices for the program. CD-ROM on the other hand offer greater interactivity, but less flexibility as regards the equipment required - not all computers accessible by students read them. They are also expensive to buy in multiple copies and are very costly and time consuming to produce. Few of those commercially available at present are either specifically content relevant or sound enough in their instructional design to warrant mass purchase for off-campus use by individual ACU students.

Fax machines offer asynchronous interactivity and are readily available. They too are thought suitable for use in the program.

Since ACU’s course is mixed mode with face-to-face classroom activity carrying most of the pedagogical burden the direct teaching possibilities offered by, for example, audiographics, which in any case require real-time interaction, were ruled out. In Appendix 2, technology options considered and their key characteristics are summarised in tabular form.

Organisational Capacity

The capacity of the organisation to set in place and support the technology innovation is a major consideration (George, 1992). Constraints imposed by funding allocations naturally exist at ACU, though in a one-off situation occasioned by a special grant, there were sufficient funds to purchase computers (nine in all) for the two Wilcannia study centres and a Bourke centre and modems for distribution to a number of centres which lacked them.

Significant organisational problems emerged in two areas as ACU staff sought to implement decisions about the choice and location of the new technology. The first was the selection and establishment of local study centres. Work was begun towards the end of 1995 on identifying
and negotiating with personnel at potential sites in communities where
the then first year students and the applicants for 1996 admission to
the course were located. While a clerical assistant was assigned to
assist the author who was undertaking this task, the work mostly relied
on networking using contacts established around the state during the
years of academic co-ordination of the program.

Many representatives of the organisations contacted were receptive, at
which point the questions became ‘what forms of IT were available, what
were their specifications, and what arrangements could be made for
student access?’ A preliminary, and promising list began to take

shape. However, consolidation and amendment could not take place until
enrolments were completed some way into the 1996 academic year. In the
end, it took almost three-quarters of the semester to arrive at an
(almost) finalised list of centres. Ongoing modifications included
relocations from sites which at a distance had initially appeared
suitable but where difficulties on the ground emerged for one reason or
another.

More serious problems developed around the issues of infrastructure and
technical support. Negotiations with the University's Director of
Information and Communications resulted in a decision to use a
commercial Internet Service Provider (ISP) to service the scattered
study centres. Open Net, initiated by the Federal government to
establish just such services nation wide and offering a 131xxx dial-in
phone number at local call rates, software, and a toll-free help line,
seemed the obvious choice. In any case, our most remote sites at
Wilcannia and Bourke had no other ISP available.

After successful trials in Wilcannia, Walgett, and Macksville, we were
ready to send the remaining tutors the connection kits, and modems if
they were needed. To our consternation, late in March 1996 we were
notified of Open Net's decision to close down its ISP operations at the
end of May. Their cited reasons were that Telstra was changing the
price structure for 131xxx call, and some unresolved funding guarantees
by the Federal government. A few more sites managed to get on-line
before the closure. ACU students were the victims of political
decisions made in a highly volatile and competitive telecommunications
market.

There commenced another round of discussions about provision of
Internet services. The Faculty of Education was fully committed to
maintaining and extending student access. Ultimately, ACU agreed to
become the service provider, as its own infrastructure had increased in
capacity in the interim, and more staff had been employed to provide
technical support. A 1800 xxx freecall was established for students
and tutors dialling long distance. ACU email addresses were set up for
all students and tutors and several support people in one or two
communities. Extensive instructions were produced and sent to tutors
to guide the reconfiguration of Open Net software to ACU’s
specifications. Two thirds of the way into the second semester, of a
total of 22 sites - 19 around NSW, 1 in Queensland and 2 in Sydney -
14 had achieved connectivity.

The main factors accounting for the failure to achieve 100%
connectivity appear to be: first, some tutors are uncertain about or
unwilling to tackle the admittedly quite difficult task for the
technologically inexperienced of installing and configuring the
necessary software. Second, access to some sites is proving more
difficult than expected. Third, some students seem reluctant to liaise
with their tutors over the task of installation. Enquiries yet to be
made should clarify matters further.

Where connectivity was easily achieved the following factors were
important: first, highly supportive key personnel (eg. the Principal at
a school used as a site) who go out of their way to ensure successful
access and installation. Second, a good relationship of some duration
with tutors which makes negotiations easier (eg. as with two people who
have participated as regional tutor co-ordinators as well as tutors
over a number of years with the program). Third, on-the-spot
organisation of the site and connectivity by ACU staff (eg. the
lecturer in Information Technology who set up the study centres in
Wilcannia and Bourke)

3.1.2 Student Use of Information Technology

A total of 30 students in first and second year of the revised course
have participated over two semesters in residential classes on
information technology. Although they were off to a sometimes shaky
start, more lately, in almost all cases, they are using IT with a high
level of enthusiasm and reasonable competence. Their motivation is
often enhanced by knowing that they are successfully employing
technologies that most people in their local areas are only just
beginning to be aware of. They have:

- learnt to understand a range of information systems (word processing,
database, graphics etc.)
- used email to communicate with lecturers and each other, and in some
instances with the wider internet community (eg. a student who works as
a part-time tour guide at Mootwingee National Park near Broken Hill
gave her email address to some international tourists and now
communicates regularly with them)
- used email to send assignments to lecturers
- produced video-graphics illustrating Aboriginal themes and legends
using software such as they might find in schools (children at
Wilcannia Central School who were shown what their AEA had produced
were highly excited to see a well-loved local story so represented) employed computers as a `productivity tool' for writing and illustrating explored the World Wide Web and contributed their autobiographies (the result of a learning task integrating concepts and processes across three curriculum areas) to the Yalbalanga Web Site begun tentative participation in a recently established listserv

With wide variation in student opportunities to consolidate their skills in off-campus study time the major problem overall is access and equity. However, it is still possible within the constraints mentioned to describe students' introduction to and use of computer based information technology as a great but qualified success. Apart from the issue of connectivity for all, the major remaining difficulty seems to be that of students, tutors and staff new to the technology getting used to using email as a routine tool for communication and support. Some who have access are still very tentative travellers down the IT road.

3.2 The Tutor Support Scheme

A major goal of the review was to ensure that all students on the revised program were matched with a tutor and would experience tutoring on a minimum of four occasions during each semester, with the aim of reviewing and consolidating progress guided by task sheets provided by lecturers. It was anticipated that once tutors were in place, contact would in fact be much more frequent in most cases. While some students are highly organised self-starters regular tutoring was expected to promote in others a systematic and structured approach to study, and ultimately, successful negotiation of course requirements. One significant advantage of having four mandated formal study sessions which were to take place in local study centres was that, if they needed to, students could quote the requirement as a reason to set aside some of their other responsibilities temporarily without incurring personal blame. They could also work undistracted in a neutral space.

Prior to 1996, students who wanted qualified tutors through DEETYA's Aboriginal Tutorial Assistance Scheme (ATAS) arranged their own through invitation to someone they knew, or else were expected to rely on DEETYA's registry, as was customary under the scheme. Many students who could think of no-one suitable to nominate, or were too hesitant to ask the person went without, rather than opt for a stranger. This year, the author sought to use her networks and student suggestions to find tutors for all beginning students and those without them in second year (the majority), in tandem with establishing the local study centres. The process took much more time and was more complicated than anticipated, nevertheless, it was accomplished for almost all students
by mid semester. This left the minimum goal of four sessions for all only partially achievable in first semester.

DEETYA's tutor scheme does not usually allow for a 100% take-up by students in any one course. However, ACU is prepared to argue that in a course which takes five years to complete and which is so heavily reliant on usually inexperienced students establishing in isolation and often under very difficult circumstances their own patterns of study, tutors form a vital touchstone for success. Students have testified warmly to this fact (Grant and Trimingham 1994).

3.3 Revision and Development of Course Materials and Resources

Thorough revision and redevelopment of course materials is a necessary part of course review. The major aim in this instance was to create synergistic combinations of techniques and technologies for flexible course delivery which would call on a fuller range of student learning styles and produce more effective learning outcomes. Following the decision to use new technologies and with a National Teaching Development (CAUT) Grant for support, lecturers were encouraged to consider how they might develop off-campus study materials incorporating technology where appropriate. They were invited to attend a comprehensive all-day seminar/workshop on 'communicating with learners at a distance' offered on two occasions by Educational Media Services, University of Wollongong, which brought them up-to-date on various options for flexible course delivery. Other staff development days were held on the Internet and supported learning and the production of distance education print materials.

With the goal of developing self-directed learning packages, lecturers were asked to redesign printed course materials in modular form, and to build in tasks and activities which promote more active interaction with and processing of the material. Aboriginal-style graphical elements were added to plain text to give the overall product a more inviting appearance, and a student's artwork was selected to enhance the cover. Lecturers responsible for first semester units worked to a very tight time frame to prepare their materials - in fact, most had to keep one step ahead of students throughout the semester with their module writing and publishing. Lay-out and design were commissioned from an outside agency as the University's publishing services were unable to handle the short turn-around required. Student oral and written feedback regarding format, appearance, degree of difficulty, etc. was requested on completion of each module. Most responded favourably.

Perhaps half of the lecturers were able to integrate IT-based tasks and activities into the work students were expected to undertake at home and at residential schools. The tasks required use of email, the World Wide Web, and audiotaping. Although expectations had to modified because of the difficulties with connectivity and study centres
outlined above, a number of the activities were successfully undertaken during residential schools. Once the issue of the suitability of an IT had been resolved, lecturer familiarity and confidence with the available technologies influenced whether or not they adopted them in their subject units. Most ACU staff have themselves only recently been exposed to the newest forms and vary greatly in their attitude to and acceptance of them. An additional factor is the general level of pressure under which academics operate: involvement in the course is just one area of responsibility to be juggled with many others, and the innovative use of new, perhaps unfamiliar technologies requires a great deal of time spent on careful planning and producing.

CAUT grant funds are on offer to assist those lecturers who wish to create IT and other kinds of learning resources to support their print materials and their teaching. To date, the following projects are completed, in progress or being planned:

- a video demonstrating a Science and Technology investigation lesson with Aboriginal and other primary school children
- a video on learning about aspects of the development of Aboriginal children, for a core unit in Child and Adolescent Development. The video features a teacher graduate of ACU's program working with Aboriginal children of different ages. It is to be accompanied by a printed publication
- an animated video demonstrating Participatory Action Learning
- print publication in booklet form of first year students' stories about a person they most admire
- customised software for Internet connectivity

4. Conclusion

In summary, the course review committee expected that the model for flexible, innovative course delivery incorporating tutor, staff and peer interaction described in this paper, would promote these outcomes:

- extension of the highly valued interactivity characteristic of residential schools beyond their short timespan
- a better match with students' preferred learning styles producing more effective learning
- student self-management and self-responsibility for learning, in a responsive off-campus environment where the resources of their communities can be accessed
- more successful negotiation of learning tasks and other course requirements by individual students
- student ease and expertise with information and communications
technologies which would give them a competitive edge in the workforce 
an improvement in retention rates of students.

The implementation of the model to date has been imperfect at best, yet 
the basic framework and features have been achieved against challenging 
odds. With one to four years of the course still to run for the 
participating students (depending on their present year and future exit 
point) the listed outcomes are still achievable. Indeed, an improved 
retention rate is already evident in the Wilcannia-Bourke group, where 
17 out of the original 22 students are now completing their first 
academic year.

This outcome may in large part be explained by three factors: one, the 
students, with one exception, are in groups ranging from 4 in Bourke, 
to 12 in Wilcannia, and therefore have peers at hand sharing many of 
the same experiences. Two, ACU staff had gone to considerable lengths 
made possible through a grant permitting on-the-ground preparations 
throughout 1995, to ensure that suitable tutors were recruited and 
inducted, and that appropriate study centre sites were identified and 
resourced. The tutors met very regularly with the students throughout 1996, easing them into study routines and supporting them effectively 
thereafter. They worked in study centres in schools managed by highly 
supportive principals. Three, electronic connectivity with the 
university for students and tutors was established very early and was 
used regularly throughout the year, except for the period between May 
when Open Net's ISP shut down and August, when ACU's system was 
initiated.

On the other hand, there was a loss of 12 out of 24 students in the 
1996 Sydney based intake. Follow-up interviews of the students who 
withdrew are yet to be undertaken, and they would undoubtedly yield a 
diverse array of individual reasons for their decision. Nevertheless, 
it is instructive that all three factors noted above were absent in 
whole or part for a significant proportion of these widely scattered 
students. I believe that the contrasting evidence on retention from 
the two regional centres points to the value of the model, rather than 
the reverse.

The CAUT grant applicants believed that the production of 
teaching-learning packages incorporating new technologies would promote 
lecturers' awareness of and their development of more innovative and 
varied pedagogical strategies, enabling them to be more responsive to 
students with diverse learning needs and styles, including 
international students and all those entering university under equity 
provisions. In my own case, this has been a pleasing outcome, and I 
have also been energised by the need to come to grips with and make use 
of some exciting new technologies. I haven't yet formally canvassed my 
colleagues on the subject, but anecdotal evidence suggests that many
would agree.

Reflection on the experience of trialing the model during 1996 suggests these recommendations:

1. there should be a reasonable lead-up time before the implementation of a complex model such as ACU's; in order to effectively undertake the following through localised rather than remote activity:

identification and induction of tutors. The latter needs to encompass matters such as: orientation to indigenous culture and the study and support needs of indigenous mature-age students; the tutor role; course requirements; and basic skilling in IT

identification of appropriate study centres followed by supplementary resourcing if necessary, and the installation of Internet-connectivity software. The identification of someone attached to the site who is able and willing to support the student and tutor if necessary, particularly in the initial stages of accessing the centre and using the IT is highly desirable.

2. the university should be the course ISP, either using its own computing and other infrastructure, or that of other universities. Commercial ISPs may be too expensive, too subject to unpredictable market forces to provide an enduring service, or both

3. lecturing and support staff need professional development in the educational and support uses of IT and opportunity to develop the relevant skills. Lecturers require assistance in the production of flexible learning materials and resources, and sufficient lead-up time to do the job effectively.

I will conclude with an encouraging comment from a senior Aboriginal educator whose advice was sought about the employment of new technologies for flexible course delivery to ACU's Aboriginal and Torres Strait Islander students:

'it's a brand new venture for Aboriginal students. For once they're getting in at the embryonic stage of development. Aboriginal people shouldn't have to come into this new area with a deficit.' (Jim Miller, March 1996; verbal communication)
Acknowledgments

Des Matejka, who led the development and implementation of the communications technologies components of ACU's model for supported learning, teaches the Information Technologies unit in the program, is co-applicant and co-administrator of the CAUT grant, and made helpful suggestions for this paper.

The Department of Employment, Education, Training, and Youth Affairs, which awarded the National Teaching Development (CAUT) Grant whose use has been described.

Aboriginal advisers James Miller, Frances Dobie, Darryl French, Albert Torrens, for many helpful and encouraging comments about the model; and Mary Button for advising on and assisting with the production of one of the video resources.

ACU staff, tutors and students who participated in the trial of the model throughout 1996 and graciously coped with the strains and difficulties.

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