

PUTTING THE TOE INTO THE SHARK-INFESTED WATERS OF ELECTRONIC DISTANCE EDUCATION: THE DEVELOPMENT OF A MULTI-CAMPUS UNIT AND LEARNING PACKAGE USING LOTUS LEARNINGSPLACE

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ABSTRACT

Australian Catholic University is located on seven campuses on the eastern seaboard and its academic operations are such that the academic Faculties operate as single units across the university structures. This enables close links to be developed between staff operating in the same academic and interest areas, despite the distances. Another feature of the Faculties is that courses with similar purposes, as in say teacher education, have structures which have been standardised across the University. One effect of this leads to the sharing of resources and the development of efficiencies in course delivery.

Lecturers from campuses where one particular core unit in the teacher education course is offered have worked together to develop a distance education package using Lotus LearningSpace. Hunt (1997) has already described the value of using technology to prepare teachers and this paper will report on the presentation and evaluation of a core unit over two semesters on three campuses and the preparation for a full-scale launch in 1999. The paper will report 'hands on' experience, the positive outcomes, issues to be addressed and cautionary tales. The need for adequate staff preparation and development as well as appropriate induction procedures for students will be discussed.

One of the strengths of the pilot program was that it was multi-modal with face-to-face meetings with students, so that there were appropriate safety nets in place to overcome technical and other problems encountered in the initial presentations. Another strength was that the staff on each campus knew one another and were able to communicate readily by teleconference, videoconference and linking face-to-face meetings in association with other University commitments.

By the time of the conference in December, student and staff evaluation reports from the pilot program and two semesters of implementation will be available for discussion at the Conference.

The ultimate plan is to make the unit available through Lotus LearningSpace for external students to access and for the use in Inservice Programs for teachers in off-campus situations. The first major external test of this program is scheduled for 1999. At that time it is planned that a number of other courses units will be available using the technology and experience gained in the present project.

KEYWORDS

Flexible delivery, distance education, curriculum design, technology, electronic, evaluation.

1. WHY WE 'PUT THE TOE IN'

The university where this pilot project was undertaken is located on seven campuses on the eastern seaboard of Australia and its academic operation is such that the academic faculties operate as single elements across the University structures. This enables close links to be developed between staff operating in the same academic and interest areas, despite distances.

Another feature of the faculties is that units with similar purposes, as in say teacher education, have their structures standardised across the University. One effect of this is the sharing of resources and the development of efficiencies in unit delivery. It was widely felt that there was a need to acknowledge the application of contemporary learning theory, especially constructivist learning theory in the presentation of some of their studies and to have students engage in processes of meta-cognition and meta-learning. Distance education, where the students construct their own knowledge with the assistance of specifically designed learning materials and in-built interaction, has long been shown to support these processes (Holmberg, 1989). It was seen that by offering alternative learning modes to the students, the University was able to offer this to more students.

Flexible delivery seemed on the one hand to hold the key to the solution to our demographic problems, and on the other, to extend practical learning opportunities for students whose profession is learning. Flexible delivery of units usually implies units of work being studied in a form that does not involve face-to-face teaching. In some cases it is tailored to suit individual needs, in other cases the delivery is in a general form that allows for individual adaptation. It can be in the traditional correspondence mode of printed materials posted to students, but more recently technology has advanced to the point where material can also be in non-print form and students can communicate through telephone, tele-conferencing, video-conferencing, computer-conferencing and electronic mail.

There are many reasons to consider offering selected units by flexible delivery. Initially it can increase the options for on-campus students, but has the potential to be used in distance education mode. There is much evidence that learning remotely can develop more independent learning and form a basis for future life-long learning (Dieckmann, 1997). From an access and equity point of view, the provision of an alternative method of study can increase the options for many students. Flexible delivery mode can remove geographic barriers, give extra time for students whose first language is not English, place the choice for time and pace of study in the hands of the students, can cater for disabled students and can be designed to cater for the special needs of groups such as Aboriginal students.

Hunt (1997) has already described the value of using technology to prepare teachers, and students in education should be aware of the growing use of technology in educating children in remote areas as well as adults through open learning. Experiencing study under like conditions is a fruitful experience for future educators.

In a multi-campus university, the capacity to offer units to students dispersed in small numbers over the university can also be a cost-effective measure.

2. LITERATURE REVIEW

Cunningham has argued recently that 'demand for higher education is diverse, and that diversity of institutional form and delivery is not only desirable but inevitable' (Cunningham, 1998). He points to the need to examine alternate forms such as distance education, open learning and flexible delivery.

Distance education is the term used to embrace distance teaching and distance learning - teaching by a teacher remote from the student and learning by that student of a topic determined by the educational institution. It is characterised by the inclusion of an element of two-way communication between teacher and student. In practice this two-way communication can be either synchronous (as in video-conferencing) or asynchronous (as in written and posted assignment work or bulletin boards). Educators speculate about the relationship between

traditional and distance education or flexible delivery at all levels of education and numerous studies have been carried out to compare the learning outcomes of students studying by each mode (Calvert, 1995). The majority of these have been at tertiary level with a large body of published research on dropout and varying results in comparative outcomes for the groups.

All of what constitutes the process of education when teacher and student are able to meet face-to-face also constitutes the process of education when teacher and student are physically separated. All the accepted necessary conditions for the educational process are inherent in face-to-face contact. They are not necessarily actualised, but the potential is always there. This is not the case when teacher and instructor are physically apart. The task of flexible delivery is to find the means by which to introduce these necessary conditions, or to simulate them so closely as to be acceptable proxies (Shale, 1988).

This view looks at flexible delivery as a restricted version of education with real education being usually seen as the conventional form. Keegan among others (1990) regards distance education in the form of flexible delivery as one of several forms of education – each with their own characteristics and therefore it is considered as a distinctive educational technique in its own right. Currently flexible delivery at the tertiary level is determined by educational institutions which are offering innovative delivery modes, flexibility and improved choices for students. Taylor (1995) and Juler (1991) believe that the lessons learned in the use of new technologies and new methods of delivery in higher education could improve the face-to-face teaching and learning process. Squires and Sinclair (1993) found that using teleconferencing at the secondary level ‘makes demands on its participants that are different from those in many a conventional school, calling for responses of a kind and a quality which are educationally positive and highly desirable’. They suggest the potential for flexible delivery, using electronic technology, to spawn new teaching methods and point to the possibility of the technology also facilitating entirely new forms of teaching and learning.

Correspondence schools have used technology in the form of printed materials and postage services, since their inception. Recently, newer electronic technologies such as audio-tapes, radio, television, video-tapes, interactive video-discs, CD-ROM, computer supported or managed learning and on-line data bases are being introduced and interactive multi-media disks are being produced for education and training at all levels (Council, 1992). These materials facilitate interaction between the student and the learning material but not necessarily between the student and the teacher or other students. More recently synchronous two-way interaction can be fostered through audio, video and computer techniques and access to the Internet. Such technologies are being developed and moved into educational situations rapidly with many evaluative studies of individual applications being undertaken (Calvert, 1995). The unique context of each application encourages individual investigation. Jones supports critical evaluation of such new technologies (Jones, 1983).

In *Costs and quality in resource-based learning on- and off-campus*, NBEET, October 1994 it is noted that ...expansions of resource-based learning is nevertheless desirable. The reasons are that resource-based learning:

- is more like the ways in which people will continue to learn after the end of their university studies, since it makes them more active and more independent learners;
- provides a safety net for students who are in danger of falling by the wayside in the more traditional mode of university teaching which is still dominated by lectures;
- offers opportunities to benefit from economies of scale where student numbers are large, as they are in many first year classes;
- helps to overcome the difficulties of teaching in multi-campus or transcampus situations;

- helps to reduce educationally unproductive travelling time for part-time students; and
- offers opportunities to earn revenue from sales of materials.

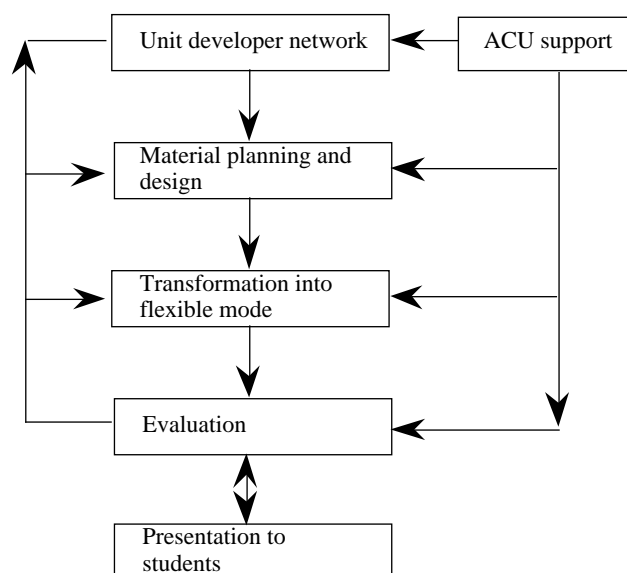
(NBEET, 1994)

Evaluations in distance education highlight the impact of interaction, technophobia, access to information and support systems (Dieckmann, 1997). Holmberg (1997) is at pains to point out that interaction is the relation between people and the technology which supports it is only a tool in that interaction. He also notes that interaction implies reaction to the learner's comprehension so therefore it must be individualised. He supports research into this interaction rather than into the associated medium of the interaction. This is supported by Gallo and his accent on building distance learning theory (1997). de Lange sees the students' need for interaction in the form of support. He notes that they should 'have access at his or her own discretion to tutorial support and guidance' (de Lange, Wyatt, & Waldmann, 1997) and he is investigating how the technology can support this kind of interaction. Obviously then, the technology used to support flexible delivery at the University should be user-friendly for staff and students, be in harmony with contemporary learning theories, be capable of giving access to a variety of resource materials, support interaction between the lecturer and the students, and between the students themselves. Lotus LearningSpace seemed to do all this.

3. WHAT WE DID

Academic staff from campuses where one particular core unit in the teacher education course is offered, have worked together to develop a distance education package using Lotus LearningSpace. This unit has been presented to final year students over two semesters on three campuses in anticipation of a full-scale launch in 1999.

The model adopted by ACU is illustrated below in Figure 1.



One of the strengths of the pilot program was that it was multi-modal with face-to-face meetings with students, so that there were appropriate safety nets in place to overcome technical and other problems encountered in the initial presentations. Another strength was that the staff on each campus knew one another and were able to communicate readily by teleconference and videoconference. Team members were able to use the opportunities afforded by University commitments, such as Faculty Board meetings, to meet face-to-face to discuss the project. The pilot team comprised two academic staff experienced in teaching the unit face-to-face and one with distance education experience. The team also sought input from interested colleagues.

3.1 PLANNING AND DESIGN

The team had numerous teleconferences and three face-to-face meetings to plan the unit. The basic curriculum design of the majority of the unit was already in place, but the unit had been developed for conventional delivery and was to be adapted for flexible delivery. The first two meetings focussed on curriculum design and only the last meeting on the technology. When planning units for flexible delivery, it is important to think through the differences various media make to the learning environment. One thing that stays constant is the intellectual content of the unit. That content falls into two categories:

- that written by the lecturer; and
- that written by others but sequenced by the lecturer.

All this is placed within some educational context. In this case, the previously used constructivist model was implemented. Once the content and context have been determined the next thing to be considered is the presentation of that content. Expository teaching such as lectures, videos, or books is still possible, however, just as in face-to-face teaching, it is desirable to make students responsible for their own learning and for following and forming links remotely. Where possible learning materials, pacing and activities should be flexible enough to cater for the individual needs of the students. A typical form of presentation is key idea, illustration and elaboration then exploration. The chain of concepts that link ideas is the thinking through that is required of the student. What this means is that flexible mode material is not divided according to the demands of the timetable but according to the conceptual plan of the unit. One of the difficulties that often arises in teaching is the discordance between the demands of a linear presentation and the non-linear relationship between ideas. New modes of delivery like CD-ROM and the World Wide Web give greater flexibility in dealing with this issue. A useful part of the planning of any flexible mode of delivery unit is a semantic map showing the linear or non-linear structure of the content. With multi-media delivery systems the non-linear links in the content can allow the students to explore the material in a more flexible way than is the case for paper based materials. There are three very important principles for developing flexible mode units:

- small sections each structured around a key idea;
- appropriate assessment built in to each section; and
- each section situated within the whole semantic framework.

Some materials pose a challenge for flexible delivery – those that rely on person based skills to be modelled such as counselling or education method. For some learning areas remote delivery is entirely inappropriate. Some content, such as mathematics, can be difficult to demonstrate electronically and present a challenge. However, the CD-ROM, *Learning about teaching* (Mousley & Sullivan), illustrates the modelling possible using this medium.

3.2 PREPARING AND TRANSFORMING MATERIALS

The team familiarised themselves with technologies such as Web-Course-in-a-Box, FirstClass, TopClass and Lotus LearningSpace. It was found that generally they all provided a framework for scheduling, material, interaction and assessment. Transforming well-designed materials is a mechanical task using these packages as long as the content and connections are clear. Any reasonable questions which students might ask about the content, activities and materials need to be anticipated in advance. Copyright issues should be dealt with here. At this stage it is essential that there be constant interaction between the academic staff involved in developing and teaching the unit to ensure that the educational focus of the unit is not diminished in the transformation or to see how it might be enhanced in the transformation.

The first task is to design a framework for the flexible units and associated administrative procedures. These can be set up individually or, in this case, in the form of the computer package Lotus LearningSpace, which enables flexibility in the way unit information,

communication and administration are handled. This involved transformation of materials, establishing communication and support mechanisms, setting up assessment strategies and putting on-going evaluation and quality control in place.

Initially materials could be accessed by the students through Lotus LearningSpace in student computer laboratories, on the Internet or in print. According to need, this can be extended with the use of CD-ROM, audio or video-conferencing, or any combination of these.

The first group to use this was a class of 55 from Victoria in Semester 1, which was evaluated closely. In Semester 2 it was offered to a large class in New South Wales and in intensive two-week mode to a class of 60 in the ACT, followed by another evaluation.

3.3 MODULES

There was a printed Introductory Guide to the unit giving details similar to those usually presented in the Unit outline - aims, objectives or outcomes, learning approach, overview of the unit, interaction – details, times, assessment – criteria, standards, length and weighting, textbook and cost, selected bibliography, resources, specific requirements of the unit, suggested study schedule, URL of Faculty Handbook, etc. and contact telephone numbers, facsimile numbers and email addresses for the Lecturer-in-Charge, tutors, Study Skills unit and the local campus Computer Services Officer.

The unit was divided into modules. Some options are:

- a) 12 modules similar to those in a twelve week face-to-face scenario;
- b) 3 nominally four week modules which are self-contained but form a whole. One or more of these could be subsequently offered as professional development modules;
- c) 1 nominally twelve week module which forms a unit which is self-contained; and
- d) various other configurations.

In this case, the length of the modules was variable, covering the designated twelve weeks in the first instance.

3.4 PACING

The pacing of the presentation of the material to the student can take different forms:

- a) an appropriate amount of new material is revealed to the students each week;
- b) all unit material is presented to the students at the beginning of the unit; and
- c) some combination of these two.

In this case, materials were generally added weekly in Semester 1, but in Semester 2 it was all presented to the students at the beginning, giving them the opportunity to pace their work according to their own timetables.

3.5 STUDENT INTERACTION

The amount and frequency of the interaction should be determined according to the needs of the individual student. Contacts about administration and contacts about academic matters formed a significant part of the interaction.

- a) Some individual interaction options are:
 - regular email contact from tutor/lecturer to student and/or student to tutor;
 - regular telephone calls from tutor/lecturer to student.
- b) Some class interaction options are:
 - computer discussion groups, e.g. where the lecturer/tutor poses a discussion question and students email in their comments within a given time frame;
 - a short video-conference, say two or three times a semester;

- real-time computer conferencing for students to work on projects together; and
- regular short tele-conferences.

In this case, the students were divided into groups of approximately seven to collaborate via email on a predetermined reading. One assessment task described in their unit outline was as follows.

1. Join a discussion syndicate of seven people.
2. You will be assigned a password for admission to our Web site.
3. Create a discussion topic of 500 words and post it to your syndicate's discussion site.
4. Write a 100 word response to the discussion topics initiated by the other members of your discussion syndicate.
5. Write a 400 word response to the responses you have received to your discussion topic.

The site was open and private to each syndicate until it was ready to be posted to the lecturer. The students also used email to contact each other and the lecturer on other matters pertaining to the unit.

3.6 ASSESSMENT

As in all assessment, students appreciate the linking of the assessment with the objectives of the unit. From our experience, some early, easy assessable task encouraged students to continue in the unit. Devices were included in the teaching materials, to allow both teachers and students to assess understanding and progress, and the developers of the unit had the flexibility to the decide the various forms of assessment appropriate to the unit. It was important to consider the deadlines for submission of assessment items and work in progress and the latitude tolerated within these timelines. It was also found to be advisable to indicate expectations about the standard of student work e.g. sample essays or a checklist of assignment marking criteria.

3.7 EVALUATION

Roberts states that 'if distance education is to be recognised as a discipline worthy of serious attention, then efforts need to be made to link theory and practice' (Roberts, 1984). Evaluation is part of that link.

Evaluation of any innovative teaching strategy is vital. To this end input from unit designers and presenters, as major participants in the process, was central. Documented, informal verbal and written perceptions and feedback from students were important parts of the evaluation process in this project. This strengthened the formal evaluation tools which were used as part of the normal evaluation process of the university in line with the university principles of quality assurance where all students submit a structured evaluation form for each unit at the end of the semester. Formative evaluation by the students and staff was undertaken during the semester using comments, email messages, telephone calls and group discussions. This has operated at all stages of planning, design, material transformation, implementation and stabilisation although it came especially into focus at the conclusion of the first offering of the unit in June, where lessons learned were drawn together to improve the quality of the unit for next time it was offered in second semester. The evaluation considered the worth of the unit from educational, equity, effectiveness and economical perspectives. Results of the evaluations in June and November, will affect the extent to which flexible delivery will be used throughout the University.

4. UNIVERSITY SUPPORT

The University provided the software, training courses, a help desk, adequate computers, funds for meetings and access for students to Lotus LearningSpace via the Internet. It also provides University-wide evaluation support.

Following the initial delivery of units by this mode, a policy will need to be developed on the proportion of units to be offered by flexible delivery. It is envisaged that gradually the interim support will be replaced by standard curriculum design, staff development and technical support teams which are already operating within the university. This stage will depend on the strengths or weaknesses of this delivery mode which are revealed during the implementation and evaluation stages.

5. THE SHARKS

The feedback from students at the beginning was very supportive but morale took an awful pounding due to failure of the system, and the students grew angry due to what they saw as a lack of service. Staff found that although students had a high level of computer literacy, they still need some induction into the system. The University technology did not always facilitate this. In fact the introduction of flexible delivery taxed the University infrastructure sorely. The program was not on lecturers' desktops, there was often an inadequate bandwidth for Internet replication, there was no technical helpdesk and the local IT staff were not familiar with the software as the Lotus LearningSpace help desk had been outsourced.

The issue of compatibility between Lotus Notes and LearningSpace IDs and passwords needed to be resolved. Staff found that they needed administrative assistance to get all the student IDs and passwords organized and they often felt powerless when confronted by bureaucracy in these administrative matters.

The outsourced help desk did not provide adequate support when the software crashed which limited some aspects of the planned presentation such as group work. However, this was often off-set by the students proving to be very innovative in finding their own solutions to these problems.

The University also had to address the issue of copyright at a policy level – CD-ROM, Internet sites and hard copy. The Faculty also had to consider current attendance requirements and other University regulations.

6. THE POSITIVES

Using a different vehicle for presentation forced the staff to stop, rethink and justify the curriculum design and generally they felt that they could offer something which was richer than the traditional study unit. Staff shared resources where once they would have operated independently and offering it to such divergent groups, made the staff test the flexibility of the system. It gave them the opportunity to individualise their teaching and the students' learning in line with current educational theory.

The students took a keen interest in their own learning – a step towards the goal of life-long learning. They felt they were able to take charge of their own learning. The students were most enthusiastic and found the unit to be more up-to-date and in line with 1990s students.

The difficult start forced the staff to determine what to ask of a help desk and now the University has a new one which works more smoothly.

7. CAUTIONARY TALES

The most important factor in the success of the pilot was the ability to work as a team, each member with their own strengths. The team constantly contacted each other by regular email, telephone, and face-to-face meetings and felt responsible to each other. It was this aspect that kept the project on target. In this case, the sum of the team far outweighed the sum of the individuals. In future endeavours it would also be important to incorporate a library person on the team for balance and advice with resources.

It was felt that induction to the system was the first support that the students needed and it was invaluable in establishing the co-operative nature of the unit.

The technology was such a dominant aspect of the unit that making friends with the local campus IT people was vital. Because of the fallibility of the technology it was always wise to have backup measures in readiness. For this reason too, it was felt that there was wisdom in offering such a unit to on-campus students first, where face-to-face backup was possible in the event of difficulties.

The in-built evaluation was the route to problem solving and improvement (because it is not going to be perfect on the first run through so these imperfections need to be found and remedied as quickly as possible). Student input into the evaluation is an essential part of that improvement process.

8. WHERE TO NEXT?

The ultimate plan is to further refine the unit and make it available through Lotus LearningSpace for external students and for use in In-service Programs for teachers in remote areas. The first major external test of this program is scheduled for 1999. Problems of access by means other than the Internet will have to be addressed, perhaps by using Lotus clients.

It is planned that a number of other units will be available using the technology and experience gained in the present project. Each of the team members is planning to offer other units and to assist other interested academic staff by acting as mentors. Before this, the team must take steps to interest other members of staff.

The team also has a role in alerting other tertiary institutions to the gains and losses of the delivery method and acting as mentors outside the home institution. Many educators and administrators feel that flexible delivery is the way of the future to life-long learning. The team also sees that it has a role within the commercial world of the software developer as outside, educational advisors to these and other manufacturers.

9. CONCLUSION

From this experience, it can be concluded that changing to a flexible mode of delivery is not only possible within a traditional university, but it has the capacity to stimulate more individualised teaching and learning by the staff and students. It can provide a richer learning experience for many students. It also has the capacity to spawn new ways of learning previously unobtainable.

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