

AARE Conference 1994
"Educational Research: Innovation and Practice"
Newcastle NSW November 27th - 1st December

User perception of mixed mode teaching and learning
in postgraduate educational administration.

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ABSTRACT

This paper describes initial staff and student perception of a mixed mode approach to postgraduate teaching and learning in educational administration. Through this approach, positive features of face-to-face interaction were combined with the techniques and strategies of distance education, including use of newer communications technologies, to facilitate effective interaction-at-a-distance. In addition to occasional face-to-face sessions, printed self-instructional packages (containing content information, student activities, readings and school-based assignments) were used in conjunction with teleconferences, which allowed synchronous interaction-at-a-distance in 'real time', and electronic mail, which allowed asynchronous interaction-at-a-distance between class members and their lecturer at times convenient to them. Although originally intended to reduce the number of occasions the lecturer and students had to travel to a second campus, 80 kilometres from the main campus, this mixed mode approach was also used in a regular on-campus course.

Findings demonstrate that the initial implementation process for lecturer and students, particularly for those unfamiliar with computer-mediated communications, was more complex than anticipated. Access to a wide range of resources was necessary and considerable time for effective implementation

was required. Concerns of staff and students about use of technology in university courses were considerable, provoking anxiety and creating considerable management issues.

Difficulties in implementing these mixed mode approaches are discussed and suggestions are made for coping with the complexities of using newer communications technologies in a postgraduate teaching and learning environment.

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Introduction

Rapid changes in society necessitate the upgrading of the skills and competencies of school leaders to cope with a more complex school environment. There is a need to more appropriately prepare school leaders for their new roles. Preparation programs range from short courses offered through in-service programs to award courses in educational leadership at universities. For the practising school or educational leader, options for undertaking university award courses have been restricted to part-time, evening courses or distance education courses. Time and travel constraints, which restrict accessibility to regular on-campus, evening sessions, and the lack of regular interaction with the lecturer and other members of the class in an off-campus course, are seen by potential students as a restricting factors.

To provide more flexible ways of undertaking university courses, recent reports on higher education in

Australia have recommended use of mixed-mode approaches to teaching and learning. These reports suggest that the materials, methods and technologies used in distance education could be applied to conventional, face-to-face teaching and learning to provide more flexible, open methods for content delivery and interaction in all university courses (Johnson, Lundin, & Chippendale, 1992). Distance education techniques for delivery of content have been refined to a high degree by institutions offering distance education courses. Use of study guides, collections of readings, and distribution of audiotapes, computer discs and videotapes provide content and learning activities for distant students. However, maintaining effective interaction at a distance remains a complex issue.

With the increasing affordability and availability of newer communication technologies, effective interaction at a distance, through use of audio teleconferencing, video teleconferencing, and various forms of computer-mediated communication (CMC) such as audiographics, telematics, e-mail, and computer conferencing is possible. The rapid growth of AARNet (Australian Academic and Research Network) as a significant CMC system illustrates ways in which communication between academics is dramatically changing and demonstrates the possibilities for increased interaction at a distance between lecturer and student and between student and student.

This paper reports on the initial stages of a Committee for the Advancement of University Teaching (CAUT) project in which distance education techniques and interactive technologies were used with a postgraduate class traditionally taught face-to-face. It also explores some of the difficulties of implementing change in teaching methodologies and highlights problems of the 'implementation dip' (Fullan, 1991, p.106) as experienced by the lecturer and students.

Description of the project

The content area for this project was a 14 week (one semester) educational administration subject, traditionally taught face-to-face at either of the two campuses of the University of Newcastle, Australia.

The major purpose of the initial stage of the Project was to explore a variety of content delivery and interaction modes in order to reduce the number of face-to-face sessions at the second campus 80 kilometres from the main campus, and yet increase interaction between lecturer and student, and between student and student. The purpose of the second stage of the project was to apply these techniques to a regular on-campus postgraduate class and thereby reduce face-to-face on-campus attendance requirements. The aims of the project were twofold; first, to explore the use of mixed mode strategies within a post graduate subject in order to increase flexibility of delivery and interaction, and, second, to expose educational leaders to new applications of information technologies.

Rather than use the traditional lecture/seminar format of post-graduate classes, textbooks and collections of readings provided the major content for the course. Study guides, similar to those used in distance education courses, acted as tutorials-in-print (Rowntree, 1990) and suggested ways of applying this content to the school leaders' context. Face-to-face sessions were used at the beginning of the subject to develop class cohesiveness and at several times throughout the semester to fulfil students' expectations for a familiar environment for interaction.

To retain the interactivity of regular face-to-face seminars, tutorials and class discussion, teleconferencing and electronic mail (e-mail) were introduced. Teleconference tutorials (teletutorials) provide group interaction at a distance but are constrained by the need to meet at specific times (Thompson, 1991). On the other hand, use of e-mail has been promoted as an appropriate interaction strategy with students at a distance as it is not limited by time restraints and has been used for some time overseas as a means of delivery and interaction in university distance education courses. Also termed 'computer conferencing' (Eastmond, 1994; Laurillard, 1993), advantages of e-mail include asynchronicity, in which participants can be involved in the same on-line conversations at different times of day or night, and interactivity in that the on-line communication is normally shaped and depends on the input and feedback from its multiple participants (Eastmond, 1994).

Restructuring the subject for different teaching/learning opportunities

As the lecturer responsible for the Project, I had previously taught

this subject at the second, distant

campus in a conventional way and was familiar with the abilities and needs of post-graduate students.

I had been involved in offering distance education subjects for a number of years and was familiar with the instructional design techniques necessary to structure content and activities for students working at a distance. Furthermore, as an administrator in charge of a distance education unit, I was familiar with the use of contract writers to prepare modules of work and the choice of layout and design factors necessary to appropriately package self-instructional distance education materials (Rowntree, 1990).

Therefore, the first step in the project was to restructure the face-to-face content of the semester-length subject into a series of modules focussing on topics within the subject. Ten printed modules were prepared, each one containing overview statements, objectives for the topic, time requirements, summaries of the topic content, study guides relating to sections of textbooks and assigned readings from journals, and school-based activities to gather and analyse data relating to each topic and assessment activities.

The next step was to determine which sections of each topic could be used for interaction through teleconferencing and e-mail. I had experienced various techniques appropriate for teleconferencing and was aware of its strengths and limitations. I knew how to structure a teleconference by distributing a set agenda in advance, how to ensure contributions by each participant and how to implement other factors necessary for a successful teletutorial (Thompson, 1991).

The final stage was to prepare ways in which e-mail could be used for interaction. Although a proficient user of wordprocessing, I was not familiar with e-mail, nor did I possess the necessary equipment and competencies to use e-mail. Rather than consider these factors as limitations, I thought that I would be in the same position as the class - that is, having a reasonable understanding

of computers but little or no understanding or experience with e-mail.

On reflection, many of the issues listed below seem trite, simplistic and relatively insignificant, but at the early implementation stage they were seen as significant challenges, and, sometimes, as almost insurmountable obstacles to using e-mail. These issues are explored further elsewhere (Schiller, 1993) to remind readers that changes in teaching and learning methodology, particularly those changes involving technology, are far more complex, demanding and time-consuming than expected; something often overlooked or ignored by those advocating change (Fullan, 1991).

In summary, seeking advice on setting up the necessary equipment and learning how to use e-mail was more problematic than anticipated as university staff development

courses on uses of e-mail were not easily accessible at the time this project began, nor were inappropriately designed to cater for the diverse needs of participants. Second, physical connection to an e-mail network necessitated use of a modem rather than an ethernet connection to university mainframe computer. Third, acquiring the necessary modem and communications package for my computer introduced me to another bewildering array of options in hardware and communications software. Fourth, obtaining advice from university support staff tended to confuse rather than clarify as some staff did not appear to fully appreciate the level of my misgivings and apprehension while trying to explain protocols, Kermit, baud rates, AUSTPAC, downloading, ASCII files, off-line and other bewildering terms. Further, because I was not sure of the questions I needed to ask, my anxieties and misunderstandings were frequently ignored or misinterpreted. Fifth, my first tentative attempts at on-line communication were frustrated by the limitations of the communications software installed on my computer. Off-line composition of messages was straight forward but transfer of these files to e-mail proved to be very complex until compatible versions of Kermit, Windows and WordPerfect for Windows were installed on my computer and their use demonstrated by computer literate colleagues. Sixth, my situation was made more complex as I tried to learn how to use two e-mail systems

simultaneously to meet the need of the students. Finally, I was not prepared for the enormous amount of time required to obtain relevant advice, learn the basic competencies of e-mail, and practise the skills required for it to facilitate easy interaction at a distance (Schiller, 1993).

Preparation for use of different approaches to teaching and learning

It was assumed that student use of the distance learning packages would be straightforward as the printed packages were self contained in terms of objectives, readings, and activities. As several face-to-face sessions had been planned, it was felt that any clarification necessary could be done at that time. Similarly, it was assumed that teachers would find teletutorials relatively straightforward. Use of e-mail was seen as the major change for both lecturer and students.

To assess the students' entry level of understanding and experience with computers and e-mail, data were gathered via survey, class discussion, and audiotaped comments during teleconference tutorials at the beginning of each semester.

In the first student cohort, seventeen experienced teachers and school leaders (7 females, 10 males) enrolled in this subject in the second semester 1993. Most participants in the class had extra administrative roles such as Head of Department, Deputy Principal, Regional Consultant or Principal.

Two female students indicated that they had no knowledge or experience of computers at all, whereas two males indicated that they had considerable computer experience ranging across a variety of software applications. Surprisingly, most of the class stated that their computer skills were very basic, limited to preparation of student tests and occasional preparation of papers. Seven members of the class had a computer at home or occasionally took a computer from school for home use.

In the second student cohort, four teachers, a computer consultant and a social worker (2 females, 4 males) enrolled in the first semester 1994. As with the first cohort, abilities in computer usage ranged from a very basic level to an advanced level.

Written comments on initial surveys indicated a high level of concern by students that computer usage would be a requirement of the subject, and an even greater level of concern that some interaction within the subject would necessitate access to a modem and require wordprocessing skills to prepare material for transmission. Therefore, the challenge of using e-mail tutorials as a significant aspect of the subject, was considerable.

Student access to appropriate technology and training

As the first semester of the project progressed, it became obvious that two different e-mail systems would have to be made available for student use. During the initial planning phase, the assumption was made that the majority of the students would be teachers from schools of the NSW Department of School Education. As there had been assurances from the Computer Consultants within the NSW Department of School Education that every government school in NSW had a modem and that Keylink was the e-mail network used by the Department, the assumption was that access to e-mail would be straight forward. A number of factors complicated these initial assumptions. First, over one third of the class came from non-government schools. In most cases these schools did not have modems and if they did, they were not connected to Keylink. Second, some government schools did not possess modems, despite the consultant's assurances. Third, access to a modem was denied in some schools as the school policy dictated that the modem was only for dedicated use such as the school banking system, on-line ordering of school supplies, or for use with the 'Office Administration System in Schools' (OASIS). More than 70% of the class had no ready access to a computer and modem. Finally, most members of the class had never used a modem and were unaware of the ways in which electronic mail could be used.

Access to the electronic mail system on the university's mainframe computer at the second campus

site was explored as an alternative to use of Keylink. However, this also posed difficulties. Because

of the lack of sufficient telephone lines to the new campus, only two terminals, located in the library for the purposes of undertaking library searches, were connected to the mainframe computer. Access to these terminals would be difficult, however, as the terminals were constantly in use by students for accessing library information, and, therefore, the librarians were reluctant to allow them to be used for e-mail. In addition, the Computing Services Centre indicated that student access to e-mail on the mainframe computer was restricted to students undertaking computer courses. Negotiating access for an educational administration class to the mainframe took some time.

For the second semester in which this project operated a completely different strategy was adopted. As all students were enrolled at the main campus, access to an account on the mainframe VAX computer was arranged. Procedures had been changed so that any post-graduate student could access the mainframe computer as long as the lecturer obtained permission from Computing Services. Although access to computers terminals, which were connected via ethernet to the mainframe computer, was now possible throughout the campus, it was decided to lend each student a modem so that they would have access to the network from their homes. Each student was supplied with a modem, communications software and instructions on setting it up. A support person was hired to provide telephone advice. To ensure that all students in the second cohort knew the basic operation of e-mail before they received their modem, an intensive workshop was provided by a member of the Library staff who was familiar with use of e-mail.

Discussion

Student feedback, in the form of written surveys and class discussion at the end of both semesters, indicated that the use of various modes of delivery and interaction was thought to be appropriate in postgraduate subjects. The self-instructional packages, although more time-consuming than expected, were regarded as appropriate means of exploring various topics. Discussion of the themes and topics raised in these packages, either in face-to-face sessions or during teletutorials provided the necessary interaction. Concerns focussed on use of e-mail.

Hall and Hord (1987), in their explanation of individuals coping with change, explain that concerns which focus on self are to be expected in the early stages of change as individuals seek information about a change and assess how it will impact on them. They highlight however, that these concerns must be addressed by the change facilitator to enable individuals to cope with the change. Therefore, my introductory explanations of how e-mail works and why it was

proposed as a means of communication, were kept as simple as possible, with minimum use of technical jargon. As I only had basic knowledge of the use of e-mail, I was able to share the concerns which I had in learning to use a new technology. The voluntary aspect of using e-mail was stressed and reassurances were given that the varying levels of computer competency would not be taken into account for assessment purposes. Every member of the class was encouraged to talk with a computer user at their school and to locate someone familiar with e-mail who could demonstrate how it worked. Several groups of students organised informal workshops with the computer 'expert' at a neighbouring school for this purpose. They felt that it would be more beneficial if several people worked together and learnt from each other. However, despite attention to their concerns, most students in the first cohort were unable to spend sufficient time to establish their system and use e-mail, nor did they give it priority. Furthermore, the level of expertise available in each school was insufficient to provide the type of advice needed for users to become confident.

Difficulties for teachers in gaining access to computers in their schools was surprising. Moreover, the even greater problem in gaining access to a modem was unanticipated. Even where a modem did exist in the school, some school administrators expressed concern regarding their perception of costs in using Keylink. With devolved budgeting, additional costs to the school, no matter how small, are questioned and may inhibit use of e-mail as costs are not fully understood. Security of the modem was also a concern of school administrators, some of whom insisted on locking the equipment away for most of the time.

For the second student cohort, the modem had been supplied for their use at home. An intensive introductory workshop using the university's ethernet system ensured that every student could establish an account on the VAX mainframe computer and that basic e-mail operations was understood. However, the transfer of these skills from a university-based, ethernet connected system to a home-based, modem operated connection proved to be more difficult than anticipated. Some students were able to connect their modem, install their communications software and operate their system with a minimum of difficulty. Others, including the computer consultant, had considerable difficulties in installing their modems and, despite assistance from the resource person, Computing Services Centre personnel, and colleagues, took several weeks to get their system operational.

Reasons for difficulties in installing and operating modems in students' homes included; use of incorrect cables, misinterpretation of instructions, lack of understanding of software installation

procedures, incorrect use of settings on the modem, lack of understanding of e-mail commands to the VAX computer, lack of reasonable keyboard skills, and disruption to family life when a modem is connected to the only phone line, thereby preventing use of the phone.

Change is a process which takes considerable time. Moreover, change does not occur unless individuals change (Fullan, 1991; Hall & Hord, 1987). For the lecturer, an enormous amount of time was required to understand the complexities of the many options of hardware and software combinations available for e-mail use. Unravelling issues of incompatibility, or at least, mismatches, of hardware and software, and coping with the complexities of learning to use e-mail, took far more time than expected.

Having spent a great deal of time, however, and having sought help from a range of colleagues, I am now a confident user of electronic mail, at least in its basic form. E-mail messages can be read and sent, files can be transferred via e-mail, I am a subscriber to an

international bulletin board, I have posted messages on international bulletin boards and I have e-mail contacts in Australia and overseas. Importantly, I have overcome the 'implementation dip' which is characteristic of individuals coping with change (Fullan, 1991:106) in that the positive experiences outweigh the negative ones and my use of e-mail is now relatively smooth and trouble-free.

The same cannot be said of the participants in the class! Their use of e-mail was inhibited by the following factors; (a) use of e-mail was a low priority of the students because of the pressures of completing assignments, time required to complete the readings for the subject and the voluntary nature of using e-mail, (b) difficulties in obtaining access to a school-based computer and modem, and (c) complexities in connecting and using a modem at home. Lack of interest by teachers in using technology, due mainly to lack of expertise or a lack of understanding of its applicability to interacting at a distance, was also a factor inhibiting use of e-mail. At this point in the project, the students do not see the usefulness of interacting via e-mail. As distances are relatively small, use of fax or telephone was preferred. Frustration with not being able to access e-mail easily, the large amount of time required to learn how to use the communications software effectively, and lack of computer skills, particularly in the use of wordprocessing, were seen as the major negative factors inhibiting wider use of e-mail for interacting at a distance. Student preference was for more use of teletutorials to enable interaction at a distance rather than use of e-mail.

To determine whether these initial experiences had coloured perceptions of the students towards the use of mixed mode approaches to teaching and learning, data were

collected from both cohorts of students over six months after the completion of the subject. The first cohort of 17 teachers were surveyed using a Likert type questionnaire which sought their views on the various approaches used. It also sought their views on use of e-mail in a postgraduate subject, one year after the conclusion of the subject. 11 surveys were returned. The second cohort of six students, who had been permitted to keep the modem during the semester following the conclusion of their

subject, were interviewed by telephone and their responses audiotaped for transcription.

Both cohorts of students felt that a combination of modes of delivery and interaction were appropriate. Use of self-instructional packages and teletutorials were seen as appropriate means of reducing the number of times required on-campus. As most students lived some distance from the campus this was seen as desirable. However, all students stressed the need to retain some face-to-face sessions for development of class cohesiveness and to encourage greater interaction.

Comments on the use of e-mail were equally spread across the range of responses from 'definitely not appropriate' to 'definitely appropriate'. On the other hand, the second cohort, who had borrowed a modem, all felt that interaction via e-mail was desirable. They found that e-mail enabled them to communicate with the lecturer at any time and they appreciated the quick response to questions. They found the access to the library via the modem to save them considerable time and travel costs in not having to visit the campus as often. They recommended, however, that future use of e-mail in postgraduate subjects, include greater emphasis on learning how to use e-mail before the subject began as they felt too much time was required to acquire basic e-mail skills and detracted from subject content. Further, they recommended that assessable e-mail components be included in the course to acknowledge its significance as an integral method of communication.

Conclusion

The aims of the project, namely; to explore the use of mixed mode strategies within a post graduate subject in order to increase flexibility, and to expose educational leaders to new applications of information technologies, were achieved.

The major conclusion of this paper is that mixed mode delivery and interaction can provide greater flexibility for post-graduate students and thereby reduce the number of occasions they need to attend on-campus sessions. Use of printed distance education, self-instructional modules are viewed positively and, when reinforced through teleconference tutorials, are an effective substitute for

traditional classes. However, the e-mail component of the subject needs to be explored further.

For e-mail to be an effective means of interaction at a distance within a university subject, each student must have ready and easy access to a computer and modem, preferably at home or at a work location to which they have frequent access. Straight forward instruction in its use and considerable support from experienced colleagues during the initial stages of implementation is critical. Follow-up workshops and assistance is essential if new technology is to be effectively mastered. These workshops should be developmental, with specific mastery exercises being built into each level, as the 'learning curve' for use of e-mail is considerable. Finally, use of e-mail must be seen by the student as being an effective and necessary form of interaction at a distance. For these particular groups of students, the need to use e-mail was not seen as a priority.

E-mail and other forms of computer-mediated-communication hold considerable promise as effective means of interacting in both on-campus and off-campus courses as they are not constrained by time or distance. However, more widespread use of CMC for teaching and learning will be inhibited if care is not taken in the initial implementation stage as it can be daunting for lecturers and students. In this project use of e-mail was more complex than implied by many of the writers who advocate e-mail as a cost-effective and appropriate means of interaction at a distance. Problems in using electronic technology in higher education should not be overlooked or underestimated (Tinkler, Smith, Ellyard & Cohen, 1994).

Concerns by staff and mature-age students about use of technology in university courses are considerable, provoking anxiety and sometimes creating insurmountable obstacles in coping with the wide range of needs, understandings and competencies. For the person promoting change, account must be taken of the considerable variations in individuals' stages of concern about use of computers and e-mail. It is vital that appropriate advice is provided to meet students' concerns at that time. This can be very demanding on time and resources.

Use of e-mail is still surrounded by sufficient jargon among devotees, complex software, difficulties of compatibility, difficult-to-read manuals, and equipment malfunction, to inhibit widespread use for interaction in the teaching and learning process. Changes to teaching and learning through use of e-mail will take large amounts of time and necessitate considerable assistance from specialist personnel who must tailor their advice to the needs of the learner. Ready access by students to computers, modems and appropriate communications software remains the major obstacle to more widespread use of e-mail as a means of interacting at a distance. The challenge is to realise the potential of this exciting means of providing interaction-at-a-distance for teaching and learning.

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