A CASE STUDY OF ELECTRONIC NETWORKING IN AN INITIAL TEACHER EDUCATION COURSE

H. JOHN PEARSON
MEd Stir. MEd Melb. BA (Hons) BEd TPTC Monash

Submitted in fulfilment of the requirements for
the degree of Doctor of Philosophy in the Faculty of Education,
Deakin University, September 1997.
FORM B

DEAKIN UNIVERSITY

CANDIDATE'S CERTIFICATE

I certify that the thesis entitled...A Case Study of Electronic Networking in...
an Initial Teacher Education Course...

submitted for the degree of...Doctor of Philosophy...

is the result of my own research, except where otherwise acknowledged, and that this
thesis in whole or in part has not been submitted for an award including a higher degree
to any other university or institution.

Name .................................................................

H. JOHN PEARSON

(BLOCK LETTERS)

Signature ..............................................................

Signature Redacted by Library

Date .................................................................

6 April 1998

NB. This certificate, bearing an original signature, should be bound in with
the thesis (ie the examination AND library copies) to follow immediately
after the title page.
CONTENTS

Abstract (i)

Summary (iv)

Acknowledgements (v)

Preface (vi)

Chapter 1: Theoretical Framework 1

- Introduction 1
- Current initial teacher education courses 3
- School-based initial teacher education 4
- Knowledge and teaching 5
- Reflection and teaching 8
- Electronic networking 13
- The effects of new communications technology 18
- Significance of research 20
- Outline of chapters 21

Chapter 2: Context of the Case Study 23

- Introduction 23
- The university 23
- The Gippsland School of Education 23
- Changes in the initial teacher education course 24
- The four year course 24
- The 'school-based' subject (GEC4201) 25
- Selection of schools 30
- School of Education staff involvement 32
- The network 33
- The FirstClass software 37
- Potential uses of the network 39
- The 'school-based' program - 1995 41
- The electronic network - 1995 48
Chapter 3: Literature Review

Introduction 54
Applications of computer-mediated communication 55
Types of computer-mediated communication 55
Contexts 63
Applications of computer conferencing 64
  K-12 schooling 64
  Place-based undergraduate courses 65
  Distance education 70
  Teacher networks 77
Concluding comments 87

Chapter 4: Research Questions and Methodology 89

Introduction 89
Research questions 89
Research design 91
Data collection .95
Data analysis 98
Ethical issues 111
Concluding comments 114

Chapter 5: Network Participation by Trainee Teachers 115

Introduction 115
Network use by trainee teachers 115
Conference messages 117
Factors influencing participation on the network 119
The impact of factors associated with the 'school-based' program 120
The impact of factors associated with electronic communication 122
Participating anonymously - the 'Mary Smith' account 130
Academic performance of trainee teachers 133
Concluding comments 114
Electronic networking ('computer-mediated communication'), considered to be 'a unique domain for educational activity' (Harasim, 1989:50) and 'a new educational paradigm' (Mason & Kaye, 1989:23), has been widely used and researched in K-12 schooling, place-based undergraduate subjects and distance education courses. However, only a limited number of reports of usage with experienced teachers (professional development), beginning teachers (induction support) and trainee teachers (initial training) have been published. Hence, little is known about the ways in which this new medium might contribute to the acquisition and maintenance of professional knowledge in the field of teacher education.

The purpose of this study was to document an application of electronic networking in an initial 'school-based' teacher education course. Three factors which were considered to be important in the adoption of electronic networking were specifically addressed: (a) the potential of the medium to attract and maintain a representative and comprehensive audience; (b) the willingness of participants to use the medium for the notation of ideas about teaching; and, (c) the extent to which reflection on practice was evident in network messages. This study also identified and investigated other effects which emerged as participants attempted to negotiate personal relationships with new technology.

A case study was selected to investigate audience, notation, reflection, and other effects, in a particular application. Data were collected using participant observation, software-generated statistics, printed documentation, university records, questionnaires, interviews and content analysis of messages. These data were used to describe and analyse network participation by trainee teachers, classroom teachers and university staff.

The data revealed that an audience did exist on the electronic network but that this was not comprehensive. Teachers had difficulty accessing the network because of other school commitments, access to equipment and personal competence with microcomputers. These difficulties indicated that developing and maintaining the teacher audience may be a major problem with electronic networking in initial teacher education.

This case study revealed that deeply held concerns about notation of ideas by trainee teachers and classroom teachers can be powerful reasons for limited network participation. For trainee teachers, recording ideas publicly presented special difficulties associated with written communication. They were concerned about writing for an audience; about what to
write about and how to write it. The loss of visual and verbal cues which form part of face-to-face communication was also a problem leading to concerns about how messages would be received by others.

However, the overwhelming concern of almost all trainee teachers about presenting their own ideas was 'fear of criticism' from peers (in particular), and other participants on the network. Trainee teachers expressed concerns about the 'dangers' of putting their thoughts in writing, the scrutiny their messages might have received from others, and the public 'criticism' about what they wrote which might have appeared on the network. Knowing that messages were stored on the network, and could be retrieved at some later date, heightened anxiety about the vulnerability of written communication; what was written on one occasion may have to be defended at some later date when the views expressed initially were no longer held.

Classroom teachers were also unsure about recording their own ideas in an electronic form. Like trainee teachers, they were concerned about the scrutiny their contributions might receive from other users, and the lack of visual and verbal cues which they had learnt to use in face-to-face communication. Notating ideas in text-based messages which were archived (by the software), and retrievable by others later, was also daunting to many teachers. Another major 'danger' for teachers was the possible repercussions of 'public comment' about curriculum policy and initiatives which they thought might get them into 'trouble' with their employer.

Since very few messages were contributed to conferences, there was little evidence of reflection in network communication. In the main, the network was not used to share information and ideas about curriculum and teaching. Public examples of collaboration between participants were not evident, and the 'special knowledge' held by members in each distinct group of users was not elaborated and discussed. Messages were not used to request information or clarification about issues, to outline the processes by which decisions about teaching were reached, or to synthesise ideas from different sources. The potential of the medium to operationalise reflective practice was not realised.

Among the effects observed, the use of an anonymous account to access the network, and the impact this had on participation (in one conference) was considered to be a particularly significant finding. While the opportunity to systematically investigate the effects of
anonymity on network participation and message contributions was not realised (by the author) while the research was in progress, the effects observed and discussed are considered to be important and worthy of further investigation. In this case study, the anonymous account helped trainee teachers mask concerns about personal writing skills and fear of criticism from others, indicating that anonymity may alter communication patterns, particularly in the early stages of network use.

Given the data collected in this case study, and the interpretations placed on it by the author, a pessimistic assessment of the place of electronic networking in initial teacher education courses was presented. For this situation to change - that is, for electronic discussions to become more fully integrated into course activities - four issues which need to be addressed were identified and discussed. These included clarification of the role of collaboration amongst participants in initial teacher education, the ways in which collaboration can be facilitated using electronic networking, the problems of notation - such as the difficulty of expressing ideas about teaching in written form, and the concerns about permanently archived messages - for teachers and trainee teachers, and the lack of skills which many trainee teachers bring to electronic discussions. In the context of initial teacher education, it was suggested that these four aspects require clarification and development before the potential advantages of electronic networking can be realised. Some specific suggestions about how these issues might be resolved were presented.
<table>
<thead>
<tr>
<th>Name of candidate:</th>
<th>H John Pearson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of thesis:</td>
<td>A Case Study of Electronic Networking in an Initial Teacher Education Course</td>
</tr>
<tr>
<td>Degree:</td>
<td>Doctor of Philosophy</td>
</tr>
<tr>
<td>Name of supervisor:</td>
<td>Professor Terry Evans</td>
</tr>
</tbody>
</table>

Electronic networking has been widely used in some educational contexts but to only a limited extent with experienced teachers (professional development), beginning teachers (induction support) and trainee teachers (initial training). Hence, little is known about potential of the medium in the acquisition and maintenance of professional knowledge about teaching.

This study specifically investigated three factors which were considered to be important in the adoption of electronic networking in initial teacher education courses: (a) the potential of the medium to attract and maintain a representative and comprehensive audience; (b) the willingness of participants to use the medium for notation of ideas about teaching; and, (c) the extent to which reflection on practice was evident in network messages. This study also identified and investigated other effects which emerged as participants attempted to negotiate personal relationships with new technology.

A case study was selected as the most appropriate way to investigate audience, notation and reflection, and to examine other effects of technology, in a particular application. Data collected from a variety of sources were used to describe and analyse network participation by trainee teachers, classroom teachers and university staff.

The data revealed: (a) that an audience did exist on the electronic network but that this was not comprehensive; (b) participants' deeply held concerns about the notation of personal ideas and practices about teaching in network messages; and, (c) little evidence of reflection on practice in network messages. Among other effects observed, an anonymous account impacted on network participation.

The data collected in this case study, and the interpretations placed on it by the author, resulted in a pessimistic assessment of the role of electronic networking in initial teacher education courses. Based on this case study, some issues which need to be addressed before electronic networking can be more fully integrated into initial teacher education courses were identified and discussed.
ACKNOWLEDGEMENTS

Thanking others who have supported you in some way with the research completed is a convention in higher degree submissions.

It's customary to thank your supervisor and there are good reasons to do this; supervisors do lots of things to help a candidate. In my case, Terry was particularly helpful in assisting me to clarify my initial ideas about the nature and direction of the research proposed and, much later, in reading drafts of chapters and noting places where improvements could be made. He was always willing to make time available to discuss issues, and responded promptly to requests for information and assistance. Thanks Terry for your professional approach to higher degree research supervision.

It's also customary to thank the subjects; this is important because they contribute so much to the quality of the data collected on which the 'success' of a case study depends. In this regard, I want to thank the trainee teachers, classroom teachers and university staff who willingly gave up their time to talk candidly about their experiences in the 'school-based' program. I particularly want to thank my colleagues Len and Jane - with whom I shared the 'highs' and the 'lows' in the 'school-based' program - for their willingness to 'critically reflect' on their experiences and to discuss these with me.

Finally, it's customary to thank those with whom you share personal relationships for their tolerance and encouragement during the lengthy period in which the research was planned, implemented and reported. Thanks Hilary for putting up with me working evenings and weekends on 'the PhD', and for creating opportunities for me to have periods of unfettered time to complete the task. I've valued your support on many occasions.
PREFACE

Like most fields of human endeavour, educational research is framed by values which the investigator brings to the activity. In my case, these values have been shaped by the professional context in which I have worked for twenty years, my critical reflections\(^1\) (Carr & Kemmis, 1986; Evans & Nation, 1989) about that setting and the things I have done in it, and the literature on electronic networking I have read and thought about since I first became interested in computer-mediated communication in 1990. In this preface, the ways in which these factors shaped decisions in this thesis about what should be investigated, and why, are noted, and ideas about the significance of the research completed are introduced.

Over the last twenty years I've worked extensively with pre-service teachers in initial teacher education courses, and with experienced teachers 'up-grading' qualifications in coursework programs. The initial teacher education courses have been campus-based (initially referred to as 'internal' classes), relying on traditional methods (lectures, tutorials, workshops and supervised experience in schools) of course delivery. On the other hand, 'up-grading' courses have always been offered as 'external studies' (now called the distance education mode), using 'tried-and-true' methods (printed notes, audio and video tapes) in off-campus course delivery, as well as Weekend Schools (residential classes on four weekends each semester)\(^2\) to manage 'interactive' components (discussions, workshops) which could not be (easily) organised and managed at a distance.

One of the striking differences about working in initial ('internal' classes) and 'up-grading' ('external studies') courses has been the extent to which enrolled students' experience in

---

\(^1\) The following quotations are indicative of the ways in which I use this term:
(a) 'The teacher who regards teaching and curriculum as strategic . . . submits some part of his or her work (and, in principle, all of it) to systematic examination. To the extent that it is possible to do so he or she plans thoughtfully, acts deliberately, observes the consequences of action systematically, and reflects critically on the situational constraints and practical potential of the strategic action being considered'(Carr & Kemmis, 1986:40);
(b) 'Critical reflection is the process through which human beings use their analytical powers to assess elements of their lives against their explanatory frameworks (theories). Critical reflection is a precursor to change because, through the recognition of human agency, it encourages people to seek to improve their lives in their own terms' (Evans & Nation, 1989:10).

\(^2\) For a detailed review of the place of Weekend Schools in distance education courses at what is now the university in which I work see Moodie & Nation (1993).
primary and secondary schools has impacted on the nature of learning activities. In 'internal' courses, limited understanding of concepts and issues amongst (mainly) young trainee teachers has often made discussions and workshops 'hard going'; it has often been necessary to resort to 'lecture and question' techniques to maintain any semblance of 'interaction' between participants. On the other hand, in 'up-grading' courses, discussions have usually been easy to structure and maintain as experienced teachers have readily drawn on their experiences when contributing to discussions about concepts and issues associated with teaching and learning. As I moved between Weekend School classes with experienced teachers, and 'internal' classes with undergraduate students, I often thought about the opportunities which were being missed to use the knowledge and experience of teachers to enhance the learning experiences of trainee teachers. Gaining access to this knowledge, and making it available to trainee teachers using electronic networking, has been one of the key ideas (developed in Chapter 1) which has influenced the design of the research reported in the chapters which follow.

Traditional teacher education programs have, of course, used various methods to make knowledge about teaching accessible to trainee teachers. In addition to university-based lectures and workshops, most courses have included a supervised school experience component, where trainee teachers work with the guidance and support of experienced teachers and visiting university staff. Over the twenty years I have been involved in initial teacher education, and visited numerous classrooms to 'supervise' trainee teachers, I have seen many cases where 'school experience' has been a valuable learning experience for participants - for the trainee teacher, the classroom teacher, and for myself as visiting lecturer. If co-operative relationships centered on professional activities develop, trainee teachers value the advice of their teacher and lecturer, the classroom teacher appreciates the 'new ideas' the trainee teacher incorporates in learning activities, and the visiting lecturer has valuable opportunities to observe, analyse and discuss teaching and learning events in a particular classroom. Hence, concepts and issues about curriculum and pedagogy introduced in the university-based component of the course are examined critically at the professional (school) site. The problem, it has always seemed to me, has been that discussions about events are ephemeral; the 'good ideas' about the 'real world' of teaching in classrooms are not available for reflection later. When discussions focus on the same issues in another classroom, you start to wonder about the 'efficiency' of handling each classroom visit as a unique event. And, when you observe other activities, and discuss these with trainee teachers and classroom teachers, you regret that opportunities are not available for these events, and discussions about them, to be documented for the benefit of others. Ideas about
the value of documenting and sharing knowledge about teaching, developed further in Chapter 1, have been another important influence on the nature and direction of the research reported in the following chapters.

Other professional responsibilities have also shaped the research. By 1990, I was also teaching (in what was now called the 'distance education' mode) two subjects in a Graduate Diploma of Computers in Education. The course attracted experienced teachers interested in investigating the educational applications of microcomputers. I started teaching these subjects in the conventional fashion - printed notes and Weekend School classes - but this approach was soon abandoned for two reasons. First, as a result of policy changes, Weekend School attendance for students became an optional component of distance education subjects (Moodie & Nation, 1993). This policy amendment reflected the changing status of the tertiary institution at the time - from 'College of Advanced Education' (with a perceived 'regional' focus) to 'University College' (national focus) - but it was also an acknowledgment of the difficulties which many students experienced in attending weekend school classes from various parts of the country (Herrmann et al, 1991). Importantly, in terms of course design, it removed the opportunities for interaction between participants which had previously existed at Weekend Schools. It seemed that the change in name - from 'external studies' to 'distance education' - at this time was entirely appropriate; relationships between lecturers and students, and between students themselves, were likely to become distant and remote if the opportunities for interaction previously available at Weekend Schools no longer existed.

The second reason for abandoning Weekend Schools in my thinking about subject design and implementation resulted from my developing enthusiasm for using microcomputers for communication. In 1991, communications software was not widely used in education - conference papers referred to communications as the 'last of the "big four" computer applications (wordprocessing, spreadsheet, database and telecommunications) to be developed and used' (Chandler, 1991). The 'hardware' presented problems - 2400 baud modems were considered 'fast' - as did the call charges for transmitting data over telephone networks which were much higher than they are today. Although some descriptions (Cornish et al, 1987; Dekkers & Cuskelly, 1990) of applications had been published, the use of microcomputers for course delivery (instead of printed study materials) and communication with students (in place of residential 'schools') was not widespread in Australian distance education courses. My own work at the time was considered 'experimental' and 'innovatory', attracting funding from the Monash University College
'Distance Education Innovation Fund' (Pearson, 1992b), and invitations to present my ideas at workshops and seminars (Pearson, 1992a, 1993).  

In 1991, I installed bulletin board software on a microcomputer (Macintosh Plus) in my office, and 'customised' the software to suit the particular purposes of the subject I taught (Pearson, 1993). A dedicated telephone line was also installed, and connected to the microcomputer via a modem. An introductory booklet, advising students of the way in which the bulletin board could be accessed, was posted to all students. Students (n=40) were required to register online as 'users' and to download the 'study guides' which contained the course content and assignments for assessment. Using the bulletin board, students could exchange electronic mail messages, or engage in real time 'chats' with other students, or with me one night a week. While these were interesting aspects of the bulletin board software used, the feature which particularly appealed to me, and to the students who participated (Pearson, 1994a), were the 'public conferences' about issues associated with educational computing in schools. For the first time in my experience with distance education courses, and the experience of the students enrolled in the subject, a simple and effective means was available for all participants to engage in 'discussions' about course concepts and issues. Students in widely dispersed physical locations in Australia could 'interact' via the bulletin board rather than physically attend Weekend Schools on campus. Importantly, this means of communication accommodated both my own, and students' work patterns; the asynchronous nature of communication enabled me, and individual students to read and contribute messages when it was convenient to do so. It seemed to me that this had to be 'the way to go', as electronic 'delivery' of 'distance education' courses via the World Wide Web and other Internet facilities has subsequently confirmed.

My enthusiasm for electronic networking in my own teaching, and the development of my own ideas at the time about the place of electronic communication in distance education resulted, in part, from extensive reading of available literature - particularly the work of Randy Garrison (1989), Linda Harasim (1990), and Robin Mason and Tony Kaye (Mason & Kaye, 1989). My enthusiasm was also boosted, and personal ideas developed further,

---

1 In looking back on this period, the changes in technology, and the ways in which these have been utilised in distance education courses, are striking. Now, the use of microcomputers connected to networks to deliver course content and to facilitate communication between students is commonplace.

2 No software for many-to-many communication which might have been used for the purposes envisaged was available on the university college network at the time.
during a four month period (September to December 1992) as Visiting Research Fellow in the Institute of Educational Technology at the Open University (Milton Keynes).

The letter confirming arrangements for my visit to the Open University stated that 'the duties associated with this appointment are to evaluate the use of computer conferencing on B885\(^1\), from the point of view of students, tutors and the Business School'. This was an opportunity to investigate many aspects of a large scale (460 students) application of computer conferencing but, during the period when data were collected and the final report (Pearson & Mason, 1992) was written, two observations - which have impacted on the research reported in the following chapters - remained prominent in my thinking.

The first observation was that computer conferencing could be a valuable medium because ideas and experiences could be recorded in a permanent form. Many students in B885 held senior positions in local government, business and education and, as a result, had a wealth of work and life experiences which they could draw on when discussing case study data, and course themes and concepts, presented in printed study guide materials. In another conference, a 'guest lecture' by the head of strategic planning for a global corporation, and the questions and responses in conference messages which followed, produced valuable data, and interpretations of it, which would have been 'lost' had the same 'discussion' occurred in a face-to-face classroom situation. These examples emphasised the value of permanently recording in this way the 'collective wisdom' of course participants for further analysis and interpretation. As I read the messages in B885 conferences, and recalled my numerous 'lost' discussions with trainee teachers and classroom teachers, it seemed to me that computer conferences could be one way in which 'collective wisdom' about teaching, and learning to teach, could be recorded and discussed (analysed), and made available to other cohorts of trainee teachers, and classroom teachers, who may be interested.

The second observation, however, was that the 'success' of a specific computer conference was problematic. In some cases, numerous messages in conferences resulted in a fascinating archive of ideas and interpretations about themes and concepts introduced in the course. However, in other conferences the limited number of messages contained nothing substantial. In these cases, students obviously found that they could satisfy their study needs, and course requirements, in other ways than by contributing messages to conferences

\(^1\) B885 - 'The Challenge of the External Environment' - was an MBA subject offered by the Open Business School.
on an electronic network. Hence, generalisations about the 'value' of the medium presented in the literature were not always valid; applications of computer conferencing in other situations would need to be tested before generalisations about the 'value' of the medium could be adopted with confidence.

The opportunity to explore the potential of electronic networking in initial teacher education arose fortuitously as a result of course changes in the fourth (final) year of an undergraduate course in what had now become the university in which I worked. These course changes, outlined in detail in Chapter 2, were designed to be 'innovations' (that is, different from what had occurred in the earlier years of the course), aimed at encouraging 'new' relationships between trainee teachers and classroom teachers, and 'new' definitions of the activities in which trainee teachers would engage during the time they spent in schools. Incorporating 'new' communications technology in some way soon became linked to this new course initiative, although ideas about how this might be done, and why this might be useful, were unclear (see Chapter 2).

The introduction (by the Head of School) of the idea that schools would be 'computer linked to the University' and that the 'school-based' program (as it became known) would 'highlight computer technology and access', and a request (again by the Head of School) that I take responsibility for this aspect of the 'school-based' program, presented a rare opportunity for research, a view confirmed later when my review of the literature (Chapter 3) revealed that the application of electronic networking in initial teacher education had not been extensively investigated. It also presented an opportunity to 'test' the ideas I had formed, during the evaluation of B885 at the Open University, about the possibility of using computer conferencing to record ideas about teaching, and to make the wealth of ideas and experiences held by classroom teachers (and university staff) more widely accessible to trainee teachers during their initial teacher education course.

The research which was completed specifically addressed three important aspects related to the adoption and use of electronic networking: (a) the potential of the medium to attract and maintain a representative and comprehensive audience of participants (trainee teachers, classroom teachers and university staff) in an initial teacher education course; (b) the willingness of participants to use the medium for the notation of ideas about teaching, and (c) the extent to which reflection on practice was evident in network messages. However, since unanticipated changes might also be expected to occur as a result of the introduction of communications technology (Sproull & Keisler, 1991a:4-5; Tiffin & Rajasingham, 1995:17)
other effects which emerged as participants attempted to negotiate personal relationships with new technology were also noted and discussed. The research, designed as a case study of the use of electronic networking over a nine month period (February to October, 1995), is reported in the chapters which follow.

Case study research is embedded in a particular situation and influenced by it. What is investigated may relate only to this unique situation, and care must be exercised in generalising findings to other contexts. However, case study research is not necessarily parochial. Case studies enable existing ideas to be redefined in new situations, currently held generalisations about familiar situations can be 'tested' in new contexts, and new insights to emerge which might then lead to a re-examination of familiar situations. In these ways, the nature of the case study, and outcomes in a particular situation, can be relevant in other contexts. Therefore, a case study can make a contribution to knowledge in the field, as well as the specific situation investigated. The research reported in the following chapters has made a significant contribution in a number of ways.

First, the potential application of electronic networking has been extended beyond place-based and distance education courses to encompass professional education and training. Using initial teacher education as the example investigated, an indication has been given of the potential of electronic networking in the acquisition and maintenance of professional knowledge and skills which might be relevant in a variety of fields (for example, counselling, nursing, and medicine). The rationale presented (Chapter 1) for incorporating electronic networking in initial teacher courses has indicated the ways in which similar justifications might be developed about using new communications technology for education and training purposes in other professions.

Second, the efficacy of the medium in initial teacher education has been investigated in detail. This is significant because the literature about the use of electronic networking in teacher education is limited; the possibilities of enhancing teacher education courses in this way, and the problems which might arise in trying to do so, have not yet been documented. These seemed to be particularly important aspects to investigate so that other attempts to use electronic networking in teacher education courses, and ideas about the 'virtual faculty' and the 'global university' - if these were to be considered in relation to initial teacher education - might be considered using research specific to the field.
Third, this case study of electronic networking enabled widely reported 'advantages' of the medium - such as the text-based nature of communication and the archiving of messages for retrospective review and analysis - to be evaluated in another situation. Data collected revealed that respondents in this case study did not always consider these characteristics to be 'advantages' of the medium; instead they reported that they posed special difficulties (such as describing teaching in written form) and sometimes disconcerting (potential 'criticism' from others). Findings such as these indicate that the hyperbole often used when referring to electronic networking may need to be tempered in light of the outcomes observed in specific applications (Burge, 1994).

Fourth, this case study reported significant data about the reasons for lurking, and the impact of anonymity on participation, aspects of electronic networking which have not been researched in any detail. This case study revealed special reasons for lurking, which may help to frame further research on the special difficulties experienced by some users, particularly when participation is compulsory. Similarly, this case study revealed that anonymity may alter communication patterns, and suggested some of the ways the use of pseudonyms might impact on the willingness of participants to contribute messages. These findings indicate aspects of network design which might be the subject of further research.

In these ways the research completed has made a significant contribution to knowledge in the field. But it also seems appropriate to finish this preface on a personal note. In the opening paragraph of this preface I indicated that the research completed was shaped, in part, by the professional context in which I have worked and the research literature on computer-mediated communication. Now, after submitting this case of electronic networking to 'systematic examination' (Carr & Kemmis, 1986:40) in such an intensive way, the research completed has added to my personal understandings of concepts and issues associated with electronic networking. Hence, outcomes of the case study completed will impact on the professional contexts involving electronic networking in which I work in the future, as well as the nature and direction of research in the field which will be pursued.
CHAPTER 1   THEORETICAL FRAMEWORK

INTRODUCTION

In the last ten years, there has been considerable interest in the educational applications of electronic networking (Harasim, 1990; Kaye, 1989; Mason & Kaye, 1989). Numerous reports (reviewed in Chapter 3) have appeared about electronic networking in K-12 schooling (Riel, 1990, 1993; Wells, 1993), place-based undergraduate courses (Hiltz, 1986, 1990; Hiltz & Turoff, 1990, 1993), and distance education courses (Hansen & Gladfelter, 1995; Harasim, 1987; McCreary, 1989). This extensive literature presents numerous examples of the ways in which electronic networking can facilitate educational outcomes in these learning contexts.

In contrast, the literature about the use of electronic networking in teacher education is not extensive. Only a limited number of reports which document the use of electronic networking in professional development activities with experienced teachers (Muscella & Dimauro, 1995; Odasz, 1992; Schrum, 1992), for induction support for beginning teachers (Beals, 1991, 1992; Merseth, 1991), and in initial training (Bull et al, 1992; Canning & Swift, 1992; Selinger 1996a, b) have appeared in the literature. Most of these reports have been brief descriptions and evaluations of specific applications, rather than detailed investigations of the extent to which explicit educational objectives have been realised in practice. Hence, not a great deal is known about the ways in which this new medium might contribute to the acquisition and maintenance of professional knowledge in the field of teacher education.

The reasons for the limited research about electronic networking in initial teacher education are difficult to explain. However, two factors might be important. The first is the persistence of traditional forms of initial teacher education in which the roles of universities and schools are often demarcated into 'theory' and 'practice'. Knowledge about teaching is developed in university classes which trainee teachers then apply when placed in schools. Often, little attention has been given to potential benefits which can result from interaction between participants in developing the knowledge base of teaching, or to critically examining the rule-governed notion of learning to teach inherent in the 'theory' and 'practice' dichotomy. In short, the purpose of electronic networking in courses like these has not been evident. Second, organising the physical components (computer equipment) of an electronic network, and training participants in its use, has been difficult. Many schools do not have the equipment, or staff expertise to operate it, and any attempt to network teachers
electronically would involve a significant commitment of resources on the part of universities.

Hence, when an alternative 'school-based' course in initial teacher education - in which participants (university staff, classroom teachers and trainee teachers) had access to an electronic network - was planned and implemented, the opportunity was taken to investigate the potential of electronic communication in the study and development of professional knowledge about teaching. Of particular interest was the extent to which electronic networking in this 'alternative' course would provide opportunities for participants to share information about the knowledge base of teaching, and operationalise 'reflective approaches' to the study of classroom events and practices. In studying this example, generalisations were sought about the opportunities and difficulties of incorporating electronic networking in initial teacher education courses for these purposes. This research also seemed to be important for practical reasons; the difficulties of staffing alternative courses of initial teacher education (Williams, 1995), and rapid developments in new technology, may lead to attempts in the future to utilise new technology both in initial training and the professional development of teachers. Hence, research about this application of electronic networking - a 'virtual faculty' rather than the traditional place-based university/school course - may present insights about the possibilities and difficulties inherent in innovations of this nature.

This chapter outlines the theoretical framework for a case study which investigated the use of electronic networking in an initial teacher education course. The opportunity to examine the application of electronic networking in initial (pre-service) teacher education arose as a result of the development and implementation of a 'school-based' teacher education course in the final year of a four year (primary) teacher education course (outlined in Chapter 2). This course provided the context for the case study on which the research reported in this thesis is based.

This introductory chapter has a number of purposes. First, traditional teacher education courses are briefly described and criticisms of these courses noted. Second, attention is focused on an alternative 'school-based' model of initial teacher education. The sources of knowledge about teaching, and the importance of reflection in learning from experience, are clarified by drawing on two studies - based at Oxford and Cambridge universities - which present theoretical perspectives about school-based professional education and training, and the work of Shulman (1987) on the knowledge base of teaching. Third, the potential of electronic networking for sharing ideas about teaching (audience and notation), and learning from experience (reflection), is identified and discussed. Fourth, intended and unintended effects of the application of new technology are recognised. Fifth, when these perspectives
on the topic investigated in this thesis have been outlined and discussed, the ways in which this thesis might be able to make a significant contribution to knowledge in the field is discussed further. Sixth, the focus of each of the chapters in this thesis is noted in the concluding section of this chapter.

CURRENT INITIAL TEACHER EDUCATION COURSES

Initial (pre-service) teacher education courses for primary teachers in Australian universities usually comprise four major components:

- studies in academic disciplines, including one or more specialist studies in some depth;
- education studies, designed to form the basis of students' understanding of children or adolescents or adults, teaching and learning, the nature of education and its relation to society;
- curriculum and teaching studies, to develop knowledge, understanding, and skills in designing and teaching programs;
- field experience, including teaching practice. (Beeson, 1987:48).

The first three components - academic studies, education studies and curriculum studies - are usually located in the university faculty and taught and assessed by university lecturers. The field experience (teaching practice or practicum) component is located in schools where student-teachers gain practical experience in the planning, implementation and evaluation of teaching under the supervision and guidance of experienced teachers. In some courses, university staff also supervise the practicum, visiting classrooms to liaise with supervising teachers and to observe student teaching.

This arrangement of course components is common in initial teacher education courses but there have been many criticisms of these courses. These include poorly defined objectives for the practicum, lack of liaison between universities and schools, inadequate supervision by teachers and university staff, limited and fragmented practical experience for student-teachers, and lack of credibility of university staff with student teachers and classroom teachers (Beeson, 1987; Tisher, 1987). Student teachers (and classroom teachers) have often perceived an undue emphasis on academic studies in teacher education courses which have little relevance to immediate classroom concerns. On the other hand, university staff sometimes believe that practicum experiences are coercive, socialising student teachers into traditional patterns of classroom behaviour which are antithetical to the expressed objectives of the teacher education course. These, and other criticisms, have been frequently outlined in

SCHOOL-BASED INITIAL TEACHER EDUCATION

Concurrent models of the type described above have been dominant in Australian initial primary teacher education programs. However, alternative 'school-based' models have also been reported in the literature. Most have been small, often involving about 20 student teachers in 3-4 schools, although the program in secondary schools described by Dow (1977, 1979) was more extensive. Descriptions and evaluations of individual school-based courses in initial teacher education have been provided by Baldie & Barnes (1981), Dobson et al (1983), Evans (1977), Henry & Charles (1985), Kamp (1982), Smith et al, (1977) and Vlahov (1977).

School-based courses in teacher education have also operated in England for many years (Dart & Drake, 1993; McCulloch, 1993; McIntyre 1988, 1990a, 1990b, 1991; Nichol, 1993). Interest in the concept of school-based teacher education, and discourse about its current and future forms, has intensified during a lengthy period of Government intervention in teacher education during the 1980s and 1990s (Wharfe & Burrows, 1990; Williams, 1995). In 1992, the Department of Education and Science (1992:1) announced that 'schools should play a much larger part in initial teacher education as full partners of higher education institutions'. In 1993, similar directions were prescribed in relation to initial teacher education for primary teachers (Department for Education, 1993).

There have been many criticisms of these government 'reforms' of teacher education (Dart & Drake, 1993; Nichol, 1993; McCulloch, 1993; Wilkin, 1990), and many aspects of 'school-based' teacher education in England are contentious. However, the impact of specific government initiatives in England is not examined here. In more general terms, the interest in these initiatives concerns two defining features of school-based teacher education - that teacher education is a partnership (in some way) between schools and universities and that the location of professional preparation can have significant outcomes in terms of what is learned (McCulloch, 1993).

In an attempt to explicate these features, a review of the literature concerning school-based teacher education was undertaken. Much of the literature was found to consist of application-orientated descriptions of specific courses (Board of Teacher Registration, 1994;
Standards Council of the Teaching Profession, 1995), which did not contribute significantly to an outline of the theoretical framework for this thesis.

Therefore, in developing the framework for this thesis a decision was made to focus on two recent studies - based at Cambridge and Oxford Universities - which specifically examined issues surrounding collaboration between universities and schools. While these were mainly based on initial teacher education courses for secondary teachers, the issues raised, and analyses presented, are also relevant to initial teacher education courses for primary teachers.

These two attempts to theorise about initial teacher education were conducted independently of each other and originated from different circumstances. The Oxford Internship Program involved the development of a PGCE course based on a university-school partnership (McIntyre 1988, 1990a, 1990b, 1991). The Cambridge analysis was based on an evaluation of four PGCE courses (Furlong et al, 1988). The interest in these studies here is on the reasons presented for developing initial teacher education courses based on close university-school relationships and the significant outcomes which are believed to accrue from locating the professional preparation of teachers in schools.

KNOWLEDGE AND TEACHING

In outlining the Oxford Internship Program, McIntyre (1988:103) considered that there were 'several kinds of knowledge about teaching which can be made available to beginning teachers, each with their strengths and weaknesses'. This knowledge originated from three sources - findings from research, the 'craft knowledge' of experienced teachers, and the 'knowledge, common sense and wisdom of teachers and teacher educators'.

The first source of knowledge about teaching was findings from research. However, while classroom research could inform teaching, McIntyre argued that it could not be used to derive 'prescriptive principles for teaching':

> Classroom research, and especially research of a process-product kind, had demonstrated clearly that prescriptive generalizations about teaching not based on the study of classrooms, whatever their source, were dangerously untrustworthy. Such research had not, however, itself produced a body of knowledge which could be used to generate such prescriptive principles. (McIntyre, 1988:101)

McIntyre outlined three reasons to support this point of view:
First, such process-product research is necessarily ideologically committed in its choice of process variables and, more especially, its choice of product variables . . . Thus to use these findings as a basis for prescriptions about teaching would be to beg fundamental educational questions.

Second, it is difficult to envisage ways in which such quantitative and comparative research can become sufficiently subtle and sensitive to take account of the appropriateness of teacher actions to the specific situations and needs for which they are taken, or of the ways in which teachers generate these specific actions.

Third, and most important, questions about the generalizability of findings across cultures and contexts, such as subject area and pupil characteristics, make unreasonable any aspiration to generate a scientific body of knowledge which student-teachers might be asked to apply in their teaching. Thus, for example, virtually all worthwhile process-product findings are either from outside Britain or relate to the primary age group: these findings may be highly relevant to teaching in British secondary schools, but this cannot be taken for granted. (McIntyre, 1988:101-102)

Therefore, research might inform participants in a teacher education course but research findings needed to be mediated to suit particular contexts.

The second source of knowledge about teaching was the 'craft knowledge' of experienced teachers. According to McIntyre (1988:102), craft knowledge was 'the very sophisticated thinking . . . involved in . . . everyday teaching but which is only semi-conscious and not articulated'. Hence, it was 'not normally accessible' to student teachers (McIntyre, 1988:102). His account of his own attempts to document 'craft knowledge' emphasised the difficulties involved:

we have found that, if the agenda is clearly focussed on a particular observed sequence of teaching, if it also is concerned only with what the teacher views as the successful aspects of that teaching, and if the teacher is encouraged and helped by a skilled, sympathetic and mature researcher, many teachers—possibly most—are able to make explicit some of the very sophisticated thinking which is involved in their everyday teaching but which is only semi-conscious and not articulated.
Hence, one of the problems in initial teacher education was 'to establish effective ways of helping student-teachers or interns to gain access to such knowledge, which is not at all easy for them' (McIntyre, 1988:102).

The third source of information about teaching was 'the knowledge, common sense and wisdom of teachers and teacher educators' (McIntyre, 1988:102). Curriculum advisers and teacher educators provided 'understandings of good practice' while classroom teachers focused on more practical matters:

the wisdom of practising teachers tends to be focused on issues of practicality, including organizational and resource constraints, the problems of time and expertise necessary to cope with the demands upon them, and especially to cope with suggested innovations. Practising teachers also very clearly depend upon and have available large amounts of knowledge about their specific contexts, including resources, organizational procedures, syllabuses and examination requirements, and especially the individual pupils whom they teach. (McIntyre, 1988:103)

In summary, McIntyre (1988) argued that there were several kinds of knowledge - research, craft and practical wisdom - about teaching which were available to student teachers but difficulties existed in access to this knowledge. The ways in which teachers drew on their experience to mediate between research findings and their classroom settings, and utilise craft knowledge in decisions about teaching, needed to be made explicit so that it would be accessible for student teachers in 'school-based' initial teacher education courses.

Similar views to those of McIntyre (1988) have been presented by Shulman (1987) who recognised that the 'wisdom of practice' - 'the maxims that guide (or provide reflective rationalization for) the practices of able teachers' - were an important knowledge base of teachers. He also noted that much of this knowledge had been unrecorded:

Practitioners simply know a great deal that they have never tried to articulate. (Shulman, 1987:12)

Shulman considered that difficulties in accessing this knowledge arose because teachers had no audience with which to share their work and no system of notation to record practice:

One of the frustrations of teaching as an occupation and profession is its extensive individual and collective amnesia, the consistency with which the best creations of its practitioners are lost to both contemporary and future peers ... teaching is
conducted without an audience of peers. It is devoid of a history of practice. Without such a system of notation and memory, the next steps of analysis, interpretation, and codification of principles of practice are hard to pursue. (Shulman, 1987:11-12)

If Shulman is correct, access to practical wisdom depends on the sharing of information about teaching. Sharing information about teaching requires an audience of other practitioners with similar interests, and a system of notation for recording ideas about practice.

However, reflection is also needed to learn from experience. According to Shulman (1987:19), reflection is:

what a teacher does when he or she looks back at the teaching and learning that has occurred, and reconstructs, reenacts, and/or recaptures the events, the emotions, and the accomplishments. It is that set of processes through which a professional learns from experience.

Hence, in addition to audience and notation, reflection is also a necessary component in sharing knowledge about teaching. Ideas about the place of reflection in initial teacher education are discussed in the following section.

REFLECTION AND TEACHING

The Cambridge Analytic Framework presented a similar view about the use of research findings in teaching to those outlined by McIntyre (1988). The Cambridge study accepted Schön's (1983) thesis that professional activity was more than the application of specialised knowledge in a rule-governed way; professional activity involved the use of past experiences to 'define' (structure, interpret) a situation. When actions are taken, consequences are evaluated in an on-going, reflexive way:

The definition is constantly monitored for its 'fit' with the situation at hand; if it does not work an alternative or supplementary definition has to be employed. The professional also has to evaluate the consequences, both intended and unintended, of his or her actions . . . Professional activity is therefore a constant process of interpretation, action, reflection and adjustment. As such it is very different from the rule-governed application of scientific knowledge to produce predictable results. (Furlong et al, 1988:123)
This notion of professional activity was considered to have important implications for understanding teacher education and training. According to the Cambridge study:

traditional PGCE courses would seem to reflect a rational rule-governed model of professional activity. In the college or university there is an emphasis on 'preparation' in curriculum and education studies which one learns to apply on teaching practice. It is our contention that the move to school-based training, at least potentially, implies a rather different epistemology, one that may more closely resemble Schön's notion of reflection-in-action (Furlong et al, 1988:123)

The Cambridge study also drew on Bernstein's (1971) concepts of *classification*\(^1\) and *framing*\(^2\) of educational knowledge in developing an analytic framework for school-based teacher education. Traditional PGCE courses were considered to exhibit strong classification and framing:

Because in the traditional [PGCE] course the classification of different elements of the curriculum was strong, education studies (sociology, psychology, philosophy and history) were clearly demarcated from each other as well as from curriculum or methods work. Perhaps most crucial of all, they were clearly insulated from work undertaken in school; students were initially 'prepared' in the training institution and only at a later date did they enter the classroom for teaching practice. Framing in the traditional course was equally strong; the pedagogy was typically didactic . . . in that lecturers retained tight control over the selection, pacing and organisation of knowledge. (Furlong et al, 1988:124-5)

Strong framing was also a factor in the separation of 'theory' and 'practice' in the minds of student teachers. This is explained using Bernstein's notion of the 'deep structure' of educational codes:

\(^1\) The classification of educational knowledge refers to the extent to which different areas of the curriculum are demarcated. When the components (subjects or topics) of a course are separated from each other (strong classification), Bernstein considers the curriculum to be a 'collection code'. When the boundaries are not clearly separated (weak classification) it can be described as an integrated code.

\(^2\) The framing of knowledge refers 'to the degree of control teachers and pupils possess over the selection, organization and pacing of knowledge transmitted and received in a pedagogical relationship' (Furlong et al, 1988:124). When framing is strong, teachers maintain control over what is taught and follow a didactic model of teaching. When framing is weak, students have some degree of control and teaching strategies are often group-based.
[Bernstein] argues that the deep structure of a collection code means that students are inducted into existing hierarchies of knowledge. As learners, they are relatively powerless; they do not have the opportunity to learn how the knowledge they are required to master is produced. The emphasis in such a curriculum is on 'states of knowledge' rather than on 'ways of knowing'. . . only the most advanced learners . . . have the opportunity to engage in knowledge production themselves. Within the traditional PGCE this was seldom possible. Students simply had to learn what they were taught within their training institution and apply it as best they could during teaching practice. (Furlong et al, 1988:125)

By contrast, the Cambridge study considered that 'a curriculum appropriate to the epistemology of professional practice put forward by Schö'n would be more likely to approximate to an integrated code':

The recognition that teaching is an interactive process whereby one draws on one's past experiences and understandings to experimentally impose meaning on a situation applies equally to the novice as to the experienced practitioner. Even the most naive student therefore comes to the PGCE with a stock of knowledge with which to 'define' classroom situations, as well as certain practical skills with which to deal with children. However inadequately, most students can 'survive' in the classroom even from the earliest days of training. Professional training may therefore be seen as a process of sophisticating students' pre-existing skills and understandings. From this point of view students are not being asked to 'apply' the rules they have learned in a different context. Rather the primary purpose of training is to help them bring the 'constant process of interpretation, action, reflection and adjustment' that is necessarily involved in professional activity increasingly under their own control and understanding. (Furlong et al, 1988:125)

If this view of professional practice was accepted, a more integrated code would be followed in teacher education courses - 'practical activity' would be placed 'at the very heart of training'; weaker classification would exist between education studies, curriculum studies and activities in schools; and there would be weaker framing as student teachers had 'greater control over the selection, pacing and organisation of knowledge'. Therefore, there would be a move towards more active pedagogies concerned with how knowledge is created, and away from didactic pedagogy which emphasised states of knowledge and how these could be applied (Furlong et al, 1988:125-6).
Similar ideas about 'active learning' and 'reflective practice' were involved in thinking about the Oxford PGCE. McIntyre (1988) suggested that student teachers played an active role in their own learning about teaching and that this had implications for teacher educators:

first, they have their own extensive repertoires and their own agendas; ... we as teacher educators, if we are realistic, need to accept that we can only help them in their efforts, not define the enterprise in which they are engaged.

Second, ... even if we did believe that we had ... reliable knowledge about how best to teach, student-teachers would not accept it but would want to test it for themselves in various ways; we can probably exert more influence by encouraging this process of testing than by pretending it is not necessary.

And third, we can have some confidence that if we do not put student-teachers into situations which overwhelm or seriously threaten them, we have good reason to believe that they will explore the problems of teaching with a high degree of objectivity about their own performances and rationality in their investigations. (McIntyre, 1988:104-105)

Hence, knowledge about teaching was tentative, rather than prescriptive, and subject to investigation and evaluation:

the integrated school-university curriculum can and should be one of the explicit generation and testing of hypotheses, most typically hypotheses about what can be achieved by acting in given kinds of ways in given types of situations. (McIntyre, 1988:108)

These 'hypotheses' are likely to follow a developmental sequence, from simple to more complex ways of doing things. Throughout the course, as ideas are 'tested', student teachers may need assistance in reconciling 'the different perspectives which they will inevitably encounter in schools and the university', the ways in which 'their own current perspectives have been shaped by their personal histories and especially by their temporary roles as interns' and 'the need to test suggested ideas and practices against a variety of criteria' (McIntyre, 1988:108).

The development of 'reflective teachers' has received detailed attention in the teacher education literature for many years. According to Grimmett et al (1990:21), reflective teaching is concerned with:
the explication of educators' meanings and understandings as they engage both in the practical practice of teaching and in the process of examining the practice of others. The purpose is neither prediction nor explanation; rather, it is to explore phenomenologically how educators create what Shulman (1987) describes as the 'wisdom of practice' within the complex and dynamic world of teaching.

Grimmett et al (1990:23) identify three perspectives - based on clusters of studies 'that appear to possess similar epistemological commitments regarding the roles and purposes assigned to a knowledge base in the reflective process' - which underlie researchers' and program developers' conceptions of reflective practice. These include reflective practice as (a) instrumental mediation of action, (b) deliberation among competing views of teaching, and (c) reflection as reconstructing experience. As Smyth (1989:4) notes:

Reflection can... vary from a concern with the micro aspects of the teaching-learning process and subject matter knowledge, to macro concerns about political/ethical principles underlying teaching and the relationship of schooling to the wider institutions and hierarchies of society.

Many examples of reflective programs in teaching and teacher education can be found in the literature (Richert, 1990; Ross, 1989; Roth, 1989; Wildman & Niles, 1987; Zeichner & Teitelbaum, 1982; Zeichner & Liston, 1986). However, irrespective of the methods used to promote reflection about teaching, the research reviewed often recognised the difficulties associated with attempts to operationalise reflective practice in schools. For instance, Roth (1989:34) noted that:

Unfortunately, explaining to students that they need to look beyond practice or behaviour and gain insights may not suffice. Depending on the level and academic maturity of the student, training and coaching in reflective observation will be necessary.

A similar point is made by Wildman and Niles (1987:26) about beginning and experienced teachers in the Virginia Beginning Teacher Assistance Program. They suggest that teachers' understandings of classrooms are 'more utilitarian than analytic and not rich or detailed enough to drive systematic reflection'. Teachers need opportunities to develop and practice observational skills and time free from classroom and school responsibilities to reflect on teaching. Wildman and Niles (1987:28) also note that teachers need 'strong and reliable support systems' to overcome the 'vulnerability' of reflection - that is, 'the option to share
the nature of their reflections to help them cope with their feelings and thoughts, and also to consider collaboratively plans of action to solve their problems.

Many courses in initial teacher education have attempted to prepare 'reflective' teachers, but teachers (and student teachers) often need to be supported to do this. While support can take many forms, electronic networking presents new opportunities to encourage 'reflective' approaches to teaching. The potential of new technology to do this is outlined in the following section.

ELECTRONIC NETWORKING

In previous sections of this chapter, the importance of sharing ideas (dependent on an audience, and a system of notation) and reflection (learning from experience) about the knowledge base on teaching have been established. Hence, audience, notation and reflection are necessary if student teachers are to gain access to knowledge about teaching and understand the ways in which teachers make use of this. In this section, the potential of electronic networking for sharing and reflection are outlined and discussed.

Audience

The procedures involved in communicating on an electronic network are relatively simple. Text messages are created and transferred on a network, or on telephone lines (in the case of remote users), to a host computer on which special software has been installed. This software stores these messages in individual 'mailboxes', accessed only by the recipient of the message, or in 'conferences' where the messages can be read by others.

Computer 'conferencing' has emerged as an important educational application of electronic networking. It has been acclaimed as a new 'domain' (Harasim, 1989:50) or 'paradigm' (Mason & Kaye, 1989:23), for educational activity and used extensively in distance education courses to facilitate communication between participants in widely dispersed locations, and in place-based tertiary courses as an adjunct to face-to-face discussions (reviewed in Chapter 3). The use of computer conferencing in distance and place-based teaching would appear to indicate that computer conferencing on an electronic network has the potential to create an audience (forum) for classroom teachers, student teachers and university tutors to access, discuss and clarify professional knowledge about teaching. Three features of the application suggest this is possible.
Many-to-many communication. Messages sent to 'conferences' are available to all participants with accounts on the network. Each conference is a 'shared space' which 'focuses and organises the group discussions' (Harasim, 1989:52). Participants can read messages contributed by others, comment on these or add their own ideas in new messages. Hence, computer conferencing has the potential to facilitate group interaction and the exchange of information.

The possibility of many-to-many communication on an electronic network may be an important innovation in school-based initial teacher education. The electronic 'shared space' may provide a unique opportunity for all participants (student teachers, classroom teachers and university tutors) to share knowledge about teaching in a way which has not previously been possible. Active dialogue amongst a wider audience on an electronic network may present new opportunities to identify and examine concepts and techniques in teaching, and to delineate the implications of these for classroom practice.

Place-independent group communication. Electronic networks can facilitate collaboration between participants who are not geographically proximate. Potentially, common interests and particular expertise can be shared more widely. As Harasim (1990:46) has noted:

learners, free from geographical constraints, can access a range of input richer and more diverse than available locally. Academics, researchers, educators, and learners can collaborate with colleagues on the basis of shared interests and expertise rather than being constrained in the first instance by the requirement of shared location.

This attribute may be significant in school-based teacher education courses because of the distributed locations of participants. Travel to common locations for seminars, and inconvenient meetings scheduled after school hours, could be avoided if an electronic network was available. Importantly, an electronic network could bring all participants together, rather than restricted sub-sets (tutors and student teachers in a university seminar, or teachers and student teachers in a school) which is usually the case in traditional teacher education courses. A larger group, representing a broader range of interests and expertise, could be anticipated to facilitate the discussion of concepts and techniques about teaching. However, minority interests could also be accommodated (Graddol, 1989), with separate conferences created for special interest groups which emerge outside mainstream discussions.
**Time-independent communication.** Unlike face-to-face discussions, computer conferencing is based on asynchronous communication. This is claimed to have considerable advantages for group interactivity and discussion.

Participants in computer conferences have control over the timing of their interactions. Instead of physically attending meetings scheduled at a particular time, messages can be accessed when it is convenient to do so. Participants also have control over the pacing of their involvement; they can read messages from others and compile their own messages when they are ready to do so.

One of the reported advantages of electronic communication is that the inhibitions felt by many participants in face-to-face meetings can be minimised. There is no competition to have one's opinion heard, no time restrictions on the expression of ideas, and no interruptions by assertive members or chairpersons. Contributors who need time to formulate and present ideas can participate to the same extent as more confident and assertive individuals (Harasim, 1990:47).

This feature of electronic communication may also have potential advantages for participants in school-based initial teacher education courses. Electronic communication overcomes the practical difficulties associated with attending time dependent meetings. Moreover, the asynchronous nature of communication allows time for individuals to research, formulate and present ideas (discussed further in this section in relation to reflection). This may be particularly important where participants (student teachers, classroom teachers and university tutors) have different knowledge about, and experience with, ideas and practices which might be discussed. Delayed communication may assist all participants to contribute, not only those with immediate knowledge and experience, or those who might be more confident in presenting ideas.

**Notation**

Contributions to computer conferences are text messages which are permanently stored on the host computer. These messages provide a unique record of concepts and ideas discussed on the network. Case studies of computer conferencing have indicated that text-based communication has several advantages in group interactions.

Harasim (1990:51) considers that 'online educational interactions, being revisable, archivable, and retrievable, augment the user's control over the substance and process of the
interaction' on the network. She explains the importance of recorded messages in the following way:

Users . . . have more control over the nature of their interactions than they have in face-to-face environments: they may read all items, read items selectively, or merely scan. They may save particular items to disk or print them to be used in later or more intensive review. Transcripts of group interactions can [also] be recalled for retrospective analysis . . . (Harasim, 1990:52)

Harasim (1990) also claims that the expression of ideas as written text - distributed electronically - requires participants to clarify their own thinking before contributing messages to conferences. This presents:

the opportunity to make explicit to oneself the aspects of an activity that are usually tacit-for example, expressing the thinking processes by which a decision or conclusion is reached, or the strategy for accomplishing some task. (Harasim, 1990:49)

The exchange of text-based messages also encourages 'active' (Harasim, 1990) and 'self-directed' (Mason, 1988) learning since interaction between participants is dependent on participants accessing the network frequently to follow conferences, read and comment on messages by others, and compose and submit their own contributions to conferences.

Other aspects of text-based communication are claimed to facilitate communication. These include the absence of social and physical cues which focus attention on 'the content [of messages] rather than the presenter' (Harasim, 1990:49) and a reduction of 'the stereotyping associated with high external social status and physical appearance, thereby removing a significant barrier to equal participation' (Harasim, 1990:50).

Hence, computer conference may provide an opportunity to notate educational ideas and practices. As the number of conference messages increases, a rich database of material would be available to provide guidance and support with practical activities and to help student teachers develop understandings of educational issues and practices. In the development of this database, student teachers could play a very active role in their own learning as they 'test' their ideas about teaching. If, as McIntyre indicates, student teachers need assistance to reconcile school and university perspectives, their current views about teaching, their temporary roles as student teachers, and the criteria by which their ideas and practices might be judged, active participation in computer conferencing might help student
teachers to articulate their concerns (in written messages) and to improve their understanding of issues involved on receiving advice (reading messages) from other participants.

However, while the exchange of written messages has been found to have some positive benefits on group communication, it must also be noted that the loss of some of the features normally associated with face-to-face discussions is sometimes perceived as inhibiting by participants. This is often the case in the initial stages of using this new medium.

Some inhibiting factors are: (a) the lack of physical cues (facial expressions, voice intonations, gestures) and nuances of speech (humour, irony); (b) the 'vulnerability' of contributing ideas to a conference when the reactions of other participants cannot be anticipated; and, (c) the difficulty of managing large amounts of information in active conferences (Harasim, 1990:50).

It could be anticipated that the loss of social and physical cues on participation in an initial teacher education course might be difficult to predict. For instance, by the time student teachers reach the fourth year of a teacher education course, they have had extensive experience with face-to-face communication and they may find the loss of cues in electronic communication disconcerting. In addition, differences in the knowledge base of participants, their lack of familiarity with each other before the school-based course commenced, and varying levels of skill in written communication, may lead to feelings of 'vulnerability' about contributions to conferences, especially in the early stage when experience with the medium would be limited. These, and other factors which impact on electronic communication, were investigated in this case study and are discussed in greater detail in later chapters.

Reflection

Electronic networking may also present new opportunities to support reflection (learning from experience) in initial teacher education courses. Several characteristics of the medium help participants investigate and clarify issues and practices involved in learning to teach.

The asynchronous nature of electronic communication enables participants to research and clarify ideas before contributions are made to conferences. This may be particularly important when participants (student teachers, classroom teachers and university tutors) have different knowledge about, and experience with, ideas and practices which might be discussed.
Text-based communication provides opportunities for participants to seek clarification about ideas and issues raised, to outline the processes by which decisions are reached, and to synthesise ideas from a variety of sources. Hence, text-based communication encourages participants to make knowledge about teaching explicit, and therefore accessible to analysis from different perspectives.

Many-to-many communication can facilitate collaboration; particular expertise can be shared more widely. Computer conferencing presents an opportunity for teacher education courses to follow a more integrated code; weaker classification between education studies, curriculum studies and activities in schools, and weaker framing as student teachers gain greater control over the selection, pacing and organisation of knowledge.

Computer conferencing

The use of computer conferencing could be one way to facilitate the epistemology of professional practice envisaged in thinking about school-based courses in initial teacher education; helping student teachers (and others) bring 'the 'constant process of interpretation, action, reflection and adjustment' that is necessarily involved in professional activity increasingly under their own control and understanding' (Furlong, et al, 1988:125).

THE EFFECTS OF NEW COMMUNICATIONS TECHNOLOGY

In previous sections of this chapter the objectives of school-based courses, and the potential of electronic communication to further these objectives, have been outlined and clarified.

In the main, the case for using electronic networking has been based on anticipated 'efficiency gains'; that is, the potential of this application of technology to assemble the audience (teacher, student teachers and university tutors), notate (record) practice, and promote reflection about teaching in school-based initial teacher education.

These 'efficiency gains' are what Sproull and Kiesler (1991a, 1991b) call the 'first level effects' of communication; that is:

the anticipated technical ones - the planned efficiency gains or productivity gains that justify an investment in a new technology. (Sproull & Kiesler, 1991a:4)
In addition to 'first level effects', however, it must also be recognised that technological applications have other consequences, which Sproull & Kiesler call 'second level effects':

Second-level effects from communication technologies come about primarily because new communications technology leads people to pay attention to different things, have contact with different people, and depend on one another differently. Change in attention means change in how people spend their time and in what they think is important. Change in social contact patterns means change in who people know and how they feel about them. Change in interdependence means change in what people do with and for each other and how these coupled functions are organized in norms, roles, procedures, jobs, and departments. Social roles, which codify patterns of attention and social interaction, change. (Sproull & Kiesler, 1991a:4-5)

According to Sproull & Kiesler (1991a, 7-8), the potential consequences of new communications technology are:

- 'hard to foresee';

- 'usually have less to do with efficiency effects and more to do with changing interpersonal interactions, ideas about what is important, work procedures and social organisation';

- 'often emerge somewhat slowly as people renegotiate changed patterns of behavior and thinking';

- 'constructed as technology interacts with, and is shaped by the social and policy environment. Although as humans we decide our own cultural responses to technology, an initial technological change can set the direction of a deviation-amplifying spiral. We can affect technology design and policy and therefore influence the second-level effects as well'.

Two additional aspects about 'second level effects' can also be recognised. First, where human-technology interaction is prescribed, second level effects are more predictable. For instance, in distance education subjects where electronic networking is used (discussed in Chapter 3), the frequency and nature of communication is often specified in assessment requirements. Hence, many students use the electronic network for the specified activities and, when these are completed, make little further use of the network (Pearson & Mason,
1992). However, when interaction is undirected, second level effects are more difficult to predict as participants may use the technology in new or unexpected ways (Bresler, 1990).

Second, while technology design and policy can influence second level effects as Sproull and Kiesler claim, it is the human-technology interaction which is likely to be the most important factor in shaping second level effects (Hede, quoted in Harrington, 1993:13). How participants respond to and use new technology will determine, to a large degree, the second level effects.

While a case for the use of electronic networking in school-based initial teacher education has been made in terms of anticipated first level effects, the importance of second level effects must also be recognised. This is considered to be particularly important since the application of electronic networking investigated in this case study was largely unstructured (undirected). Hence, in addition to documenting first level effects concerned with the efficiency of the network to deliver pre-determined outcomes, another focus of the research in this case study was on the identification and examination of unanticipated second level effects - changed patterns of behaviour and thinking - which might become evident as participants in the school-based course negotiated their own relationships with this new technology. Therefore, by focusing on both first level and second level effects, both the intended and unintended consequences of this innovation in a school-based initial teacher education could be documented. As a result, conclusions about the adoption and use of communication technology could be broadly based, taking account of all effects which became evident in the application of electronic networking.

SIGNIFICANCE OF RESEARCH

The use of computer conferencing in school-based initial teacher education may be an important innovation in professional education and training. It provides a practical way in which knowledge about teaching, from a variety of perspectives, can be described and stored. As this database of ideas grows, it can be accessed and analysed by others in ways which have not previously been possible. Electronic networking also provides a medium in which participants can raise relevant concerns and have these dealt with from a variety of perspectives. It provides the pedagogical means to foster an epistemology of professional practice, among both novice and experienced teachers, based on reflective stances towards teaching and active engagement in examining knowledge about professionally relevant problems and issues. Electronic networking has the potential to 'blur' the boundaries between university-based ('theory') and school-based ('practical') course components, fostering an inclusive community of inquiry into aspects of teaching and learning. As noted
in previous sections of this chapter, electronic networking has the potential to contribute significantly to the objectives of innovative approaches to initial teacher education.

However, while computer conferencing may present a new opportunity to foster a different epistemology of professional education and training, the potential of the medium to enhance initial teacher education courses has yet to be established. The limited number of applications (outlined in Chapter 3) do not enable an assessment of the educational value of the medium to be made. This case study, in investigating one example of electronic communication in a school-based course, endeavours to provide additional information on which the efficacy of the medium in initial teacher education can be assessed.

The additional information sought, specifically clarified in the research questions investigated (Chapter 4), took three forms. Investigations which focused on (a) the potential of the medium to develop and maintain an audience of all participants, and any difficulties experienced in maintaining comprehensive participation and access to the network; (b) the willingness of participants to publicly notate ideas about teaching, and any difficulties experienced in doing so; and, (c) the extent to which 'reflective practices' (learning from experience) were evident, and the reasons why these did or did not develop.

As the potential of electronic networking becomes more widely understood, the utilisation of new technology in the initial and continuing education of teachers might be expected to increase. Research on potential applications, and the problems which may be experienced in using new technology, could be important in the implementation and maintenance of these innovations. The findings of research like that reported here may be valuable in informing other innovations, enabling potential difficulties to be handled appropriately.

OUTLINE OF CHAPTERS

This chapter has outlined and discussed the theoretical framework for a case study of electronic communication in initial teacher education.

In Chapter 2, specific features of the 'school-based' initial teacher education course in which electronic communication was trialled are outlined.

In Chapter 3, the literature on various application of computer conferencing is reviewed and the location of this thesis within the literature is established.
In Chapter 4, the research questions which structured this case study, the methodology followed to investigate these questions, and the data gathering techniques used, are described.

Chapters 5 and 6 outline the use made of electronic networking by student teachers, classroom teachers and university staff, and reports on the perceptions of members in each of these groups about the value of the medium in an initial 'school-based' teacher education course.

In Chapter 7, conclusions are presented about the efficacy of the medium in initial teacher education and recommendations made about the ways in which outcomes could be enhanced in other school-based applications of the medium.
CHAPTER 2 CONTEXT OF THE CASE STUDY

INTRODUCTION

This chapter outlines the context in which the specific example of electronic networking investigated in this thesis was developed and operated. A description is given of the initial teacher education course, and the specific fourth year 'school-based' subject, in which the electronic network was used, as well as the physical elements - hardware and software - of the network system. Issues surrounding the development and implementation of the course and the 'school-based' subject are outlined, and the perceived impact of decisions made and actions taken about these issues are assessed. This has been done so that the nature and extent of participation on the electronic network (reported in later chapters) can be considered in relation to the milieu in which the network developed and operated during the period it was investigated.

THE UNIVERSITY

The electronic network which was the focus of this case study was based on the Gippsland campus of Monash University. Six faculties (Arts, Business and Economics, Computing and Information Technology, Education, Engineering and Science) and two sub-faculties (Art and Design, Nursing) are represented by schools on the Gippsland campus.

Most courses on the Gippsland campus are offered in on-campus and off-campus (distance) study modes. The on-campus mode involves regular student attendance at lectures and tutorials. The off-campus (distance) mode is based on course materials (print and audio visual) designed for independent study, supplemented with supporting activities (residential schools, off-campus study centres, telephone conferences and electronic mail).

THE GIPPSLAND SCHOOL OF EDUCATION

The Gippsland School of Education (GSE) has offered a range of courses in initial primary and secondary teaching since 1975. These have included full-time on-campus courses for initial (pre-service) training, and part-time off-campus (distance) courses for qualified teachers upgrading qualifications. Postgraduate coursework and research degrees are also offered.
CHANGES IN THE INITIAL TEACHER EDUCATION COURSE

The trainee teachers\(^1\) who participated on the electronic network investigated in this case study had initially enrolled in a three year course of initial teacher education. However, in response to changes in requirements for teacher registration, the GSE had extended the initial course to four years, and transferred this cohort of students to the new course at the commencement of second year. Other changes were made as the course was extended from three to four years. These included modifications to the structure and content of subjects in the first three years, and the development of a fourth year course (outlined in more detail in following sections of this chapter).

The planning of the fourth year course, which is particularly relevant for this case study, commenced when trainee teachers were in their third year.

Hence, the trainee teachers in this case study had experienced substantial changes to the course in which they had initially enrolled - the course had been extended from three to four years, and modifications had been introduced for the first time when these trainee teachers were in the second and third years of the course. When these trainee teachers were in third year, the planning and development of the fourth year commenced; once again, this cohort of trainee teachers were to be the first to experience a new course.

In interviews at the conclusion of the 'school-based' program University staff considered that these changes had influenced trainee teachers' attitudes about the course and, possibly, their participation on the network. The views of staff on this point are discussed in Chapter 6.

THE FOUR YEAR COURSE

The requirement for four years of initial teacher education had been implemented by the GSE with a dual degree titled Bachelor of Teaching / Bachelor of Education. The first three years (Bachelor of Teaching), available in the on-campus mode only, comprised subjects in three strands - general education (12 subjects-72 credit points), studies in education (3 subjects-18 points) and curriculum and teaching studies (3 subjects-54 credit points). The requirement for a fourth year (Bachelor of Education) course. The title was designed to signal to participants that the practical 'school-based' component in fourth year would be qualitatively and organisationally different from the field work (teaching practice, practicum) components in the first three years (Bachelor of Teaching) of the course. It was also designed to reflect the status of these final year teacher education students as 'beginning education professionals' (Cairns, et al, 1995:7). The term 'trainee teachers' is adopted here; however, in some places (eg, printed documentation quoted), 'trainee teachers' are also referred to as 'students' and 'student teachers'.

\(^1\) 'Trainee teachers' was adopted during the planning of the fourth-year (Bachelor of Education) course. The title was designed to signal to participants that the practical 'school-based' component in fourth year would be qualitatively and organisationally different from the field work (teaching practice, practicum) components in the first three years (Bachelor of Teaching) of the course. It was also designed to reflect the status of these final year teacher education students as 'beginning education professionals' (Cairns, et al, 1995:7). The term 'trainee teachers' is adopted here; however, in some places (eg, printed documentation quoted), 'trainee teachers' are also referred to as 'students' and 'student teachers'.
points). The curriculum and teaching studies strand included the practicum - 55 days of supervised school experience in the second and third years of the course. Students could graduate with the Bachelor of Teaching after successfully completing the first three years of the dual degree.

The successful completion of the Bachelor of Teaching was not a condition of entry into the fourth year (Bachelor of Education) course. Some 31% (n=8) of trainee teachers entered fourth year without completing requirements for the Bachelor of Teaching. The academic progress of trainee teachers is considered to be a significant factor affecting participation on the electronic network investigated in this case study. It is discussed fully in Chapter 5.

The fourth year (Bachelor of Education) of the dual degree also comprised subjects in three strands - general studies (2 subjects-12 points) offered in the on-campus mode, curriculum studies (4 subjects-24 points) offered in the off-campus (distance) mode, and a 'school-based' subject (12 points) which included 45 days in primary schools. The electronic network investigated in this case study was established to facilitate communication between trainee teachers (and other participants) in this 'school-based' subject. The Bachelor of Education was offered for the first time in 1995.

The structure of the fourth year (Bachelor of Education), and subject content and requirements, were the focus of intensive discussion and development in the year preceding implementation. Since decisions about the 'school-based' subject are particularly relevant in understanding the context in which the electronic network operated, the development of this subject is examined in more detail in the following section.

THE 'SCHOOL-BASED' SUBJECT (GEC4201)

The planning of GEC4201 commenced in April 1994, ten months before its scheduled introduction in February 1995, when a group of GSE staff drafted the Subject Proposal (a requirement of the University's Education Committee). 'Aims and Objectives' of the proposed new subject were outlined in the following terms:

This subject will provide students with an opportunity to:
(a) further develop skills in the planning, implementation and evaluation of classroom teaching and learning activities for extended periods in primary schools;
(b) complete research on one aspect of primary schooling (e.g., curriculum, teaching strategies, classroom organisation);
(c) present the findings of their research to the school community.

The 'Methods of Teaching' were also stated:

The actual placement [60 days in schools] will be the result of negotiation between students, classroom teachers and Education Faculty staff and will be based on (a) the needs and interests of students, and (b) the opportunities available for teaching and research in primary schools. Students will work cooperatively with teachers in participating schools to (a) plan, implement and evaluate extended teaching sequences . . . [and] (b) research an aspect of primary schooling and provide both oral and written presentations on the outcomes of this action research.

On the Subject Proposal, the 'Methods of Assessment' were listed. To satisfactorily complete the subject, trainee teachers were required to:

(a) prepare appropriate written documentation (eg, program outlines, unit plans) for all planned teaching sequences;
(b) maintain a reflective journal of teaching and research activities;
(c) prepare a research report (6,000 words) on a selected topic;
(d) present findings of research to members of the school community;
(e) participate in campus and school-based seminars.

Many of the features initially presented in the Subject Proposal were implemented when the subject was offered the following year. However, other aspects of the development and implementation of the subject were finalised after the Subject Proposal was approved. A brief account of issues discussed, and decisions taken, about the 'school-based' subject in the period from approval (June 1994) to implementation (February 1995) is outlined here to present a more detailed account of the situation in which the network was introduced.

Once the Subject Proposal was approved by the University's Education Committee, leadership of the planning and implementation process for the new 'school-based' subject was assumed by the Professor and Head of GSE. This leadership role was initiated by presenting, in printed documentation, (a) a personal conceptualisation of 'school-based teacher education', and (b) an outline of the organisational framework (schools, staffing, resources) in which the 'school-based' program would operate.
In a prepared paper (Cairns, 1994), the Professor and Head of GSE presented a personal view of 'school-based teacher education'. It was defined in the following way ('What it is'):

The key elements which distinguish school-based teacher education from other concepts which usually relate to school experience or practice teaching are that:

- it involves a collegially planned, delivered and evaluated theory-into-practice sustained professional series of activities in the school over a significant proportion of an academic year.

- it goes beyond practice teaching or the practicum curriculum in its negotiated curriculum content and deals with student teachers more as emerging colleagues and as personal problem solvers in the school;

- it overtly involves a group of teachers, students and academics in a joint collaborative enterprise;

- it assists the student teachers in its sustained and collegial approach to become socialised into the *profession* as reflective, thinking teachers with a broad base rather than traditional socialisation through practice teaching experiences. (Cairns, 1994:3-4)

In another section of the same paper ('What it isn't'), 'school-based teacher education' was distinguished from the practicum in initial teacher education courses in terms of 'additional elements related to collegiality, linkages between the school and the University, problem-solving and the broader school-community issues which can be addressed in the sustained contact over most of the year' (p.5). 'School-based teacher education' was also distinguished from 'school-located' programs:

Whereas School-based programs are . . . based in and on the school in which the collegiate and co-operatively planned, delivered and evaluated program occurs, the School-located program concept refers to a program which occurs or is physically located on a school site but does not have the collegiality, co-operatively developed content, nor the school-based focus in its activities. Demonstration lessons and discussions, observation programs, lectures given by university staff in a room on the school site are typical of this type of program (p.6).
The personal views presented in this paper, based on perceptions of the advantages of 'school-based teacher education' (and limitations of the 'practicum' in initial teacher education), centered on three main criteria by which 'school-based' programs could be recognised - 'collegiate relationships', 'negotiated curriculum' and 'research about practice'. 'School-based teacher education' was envisaged to be qualitatively different from the practicum in initial teacher education, and a more appropriate way to incorporate professional experience in the fourth year (Bachelor of Education) of an initial teacher education course.

At the same time as the paper defining 'school-based teacher education' was released, the head of the GSE also presented a personal outline of the organisational framework in which the program would operate. The main features noted in printed documentation were:

- 'two to four (maximum) schools' would be approached to join the program. It was considered that schools needed to be 'within reasonable travelling distance from the campus to allow students to be on-campus for their [two] general studies [subjects]'. It was considered that five to ten students would be placed in each school.

- a School-based Planning Group (SBPG) would be established comprising principals from local schools (2), full-time (3) and part-time (2) University staff, and four elected student representatives. This committee would be chaired by the local District Liaison Principal (who provided guidance and support to primary school principals). One of the full-time staff members was the author in this case study. It was considered that the role of this group would be to 'develop the [school-based] proposal, liaise with the student group, select the schools and put in place the agreements negotiated with the DSE [Department of School Education] and CEO [Catholic Education Office]'.

- 'special 'school-based lecturers'' (later known as liaison lecturers) would be appointed as 'co-ordinators of the programme in negotiated schools. (All with recency of teaching practice and school administration)'.

- 'special features' would be schools 'computer linked to the University' and a program 'highlight[ing] computer technology and access (via the University link)'.

The papers on 'school-based teacher education', and the organisational framework in which it would operate, commenced a process of discussions about the 'school-based' subject which extended for the remainder of 1994 (and continued into 1995 when the subject had commenced). These discussions involved (a) academic staff and the current
third year students who would enrol in the subject in February 1995, and (b) members of the SBPG. The extent to which these discussions influenced decisions made about the 'school-based' subject are briefly noted here.

Trainee teachers' reactions to some of the proposals outlined were not favourable. At a meeting called by the Head of School, trainee teachers requested the opportunity to undertake fourth year 'teaching practice' in schools of their own choice in various locations. They also wanted to complete the two fourth year general studies subjects, like the four curriculum studies subjects, in the off-campus mode. The rationale for these changes was that trainee teachers could move their entire course off-campus, resulting in savings in on-campus accommodation costs and the ability to maintain part-time employment close to their home locations. The request to complete 'practice teaching' in schools of their own choice was also based on a perception\(^1\) that becoming known at the schools they chose in fourth year might increase their chances of employment in these schools, or others near by, after graduation.

This proved to be a 'non-negotiable' component of the proposed subject. Despite support from some tertiary staff, the Head of School maintained that the 'school-based' program should be based in a limited number of schools close to the University campus. Clearly, this change could not be accommodated in the model of 'school-based teacher education' - based on 'collegiate relationships', after school seminars, visits by liaison lecturers - which had been presented in circulated papers.

In SBPG meetings, trainee teacher representatives also raised concerns about the curriculum studies subjects they would be completing in the off-campus mode, including proposed restrictions on the subjects they could select, the lack of subjects in some of the curriculum areas they wished to study, and the access they would have to curriculum lecturers responsible for distance education subjects. Despite a great deal of discussion about these points, changes to the way curriculum studies subjects would be offered was not possible due to staffing constraints, the 'issues' being 'resolved' by a written request (in November 1994), by the Subject Examiner to staff responsible for curriculum studies subjects, requesting 'some interaction between the School Based Program and the advanced curriculum subjects' particularly in relation to 'negotiated assignments' for assessment.

Trainee teachers also raised concerns about workload in the fourth year course in SBPG meetings. The sixty days (3 days per week) in schools, and other assessment

\(^1\) This proved to be an accurate perception. Several trainee teachers who completed the 'school-based' program in the selected schools did obtain employment in these schools, or others close by, once they had graduated.
requirements, were not considered comparable with workload requirements in general studies and curriculum subjects. Here, trainee teachers had more success in influencing decisions made. The number of days was reduced to 45 (2 days per week, in Terms 1 and 3 of the school calendar) - a reduction in the opportunities for 'sustained professional activities' considered an important part of 'school-based teacher education' in the papers circulated - and specific advice about the trainee teachers' total workload was incorporated in letters sent to schools.

SELECTION OF SCHOOLS

During the period when trainee teachers' concerns were discussed and resolved, attention was also given to the selection of schools for the 'school-based' program. While it had been accepted (reluctantly by some tertiary staff and trainee teachers) that only four schools in the vicinity of the University campus would be used (as outlined in the model of 'school-based teacher education' presented by the Head of School), the specific schools needed to be selected. To do this, a proforma requesting information about the school, discussed and approved by the SBPG, an introductory letter signed by the Head of School, and the paper on 'School-Based Teacher Education' prepared by the Head of School were forwarded to schools. The Head of School, and the Chair of the SBPG (also the District Liaison Principal) attended a local Principals' meeting to outline the program and clarify issues surrounding its implementation.

The proforma requested information about the 'school philosophy', the 'level of staff commitment to the school based program', a list of staff who might contribute to the program, and the 'particular strengths of the school program that are relevant to a school based program'. A description of the facilities which would be available for trainee teachers, the computer resources currently in use, and any other information which might be considered relevant were also requested.

A review of the substantial written documentation, submitted for consideration by the eight schools which responded, revealed that all schools provided most of the information requested. Much of this was functional in nature, relating to staffing, curriculum and facilities. Several submissions mentioned the opportunities which would be available for trainee teachers in co-operative curriculum development and delivery, specialist programs and professional development.

When considered in relation to the criteria for 'school-based teacher education' outlined by the Head of School (see page 27), the information provided in these submissions related to 'collegiate relationships' and 'negotiated curriculum'. In providing this information, schools were documenting established practice - teams of teachers worked
together ('collegiate relationships') to plan and implement the primary school curriculum. What was done in any specific program was based on teachers' expertise and interests ('negotiated curriculum'). Hence, the requirements of a 'school-based' program in terms of the opportunities for trainee teachers could, on these criteria, be readily accommodated by schools in their submissions.

However, information about the third criteria - 'research on practice' - was only provided in the submission from one school. Under the pro-forma heading 'Particular strengths of schools programs that are relevant to a school based program', several topics for 'action research projects' were mentioned. An offer to assist trainee teachers 'plan valid research' was also made.

Two possible explanations for the lack of information, in written submissions from schools, about this aspect of the program can be advanced.

First, schools may have had insufficient time to consider this aspect of the proposed program. The School of Education had been tardy in preparing these documents and distributing them to schools. When they were sent:

the date of submission was extended to allow a couple of weeks for responses but the documents were received in schools in the last week of term (some reported only receiving them a day before break-up) and the response date fell in the school vacation (Cairns, 1995:5. Emphasis added).

Hence, there may have been insufficient time available for teachers in schools to consider the 'school-based' program, identify and clarify the unique features of this 'new' approach to teacher education, and then prepare and return the written documentation requested.

Second, there was no established tradition of 'research' in the schools invited to submit expressions of interest in the 'school-based' program and, as a result, this aspect was overlooked. The submissions from schools emphasised the delivery of the primary school curriculum, including specialist programs, and expressed interest in trainee teachers contributing to this process. The submissions did not mention past or current research (problems, concerns) or evaluation projects, or the contributions which trainee teachers might be able to make to these (such as, reviews of relevant literature or the collection and analysis of data).

Confusion about this aspect, specifically in relation to the 6,000 word 'research project' which trainee teachers were required to submit for assessment in the 'school-based'
subject, was evident in the early months of the following year when trainee teachers attended schools. The pre-occupation of trainee teachers with the research project, and how they could accommodate this in schools where 'research' was not part of the teachers' role, impacted on the 'school-based' program and, in particular, the extent to which trainee teachers were able to use the electronic network (discussed more fully in Chapter 5).

Four local schools were selected (in October) to join the program the following year. While the written 'expressions of interest' submitted by schools were referred to extensively as part of this process, the actual selection made was based more on the preferences of trainee teachers (who had been given opportunities to visit schools) than the perceived contributions which particular schools might make to the objectives of the 'school-based' program. For trainee teachers, preferences about schools appeared to be based on practical considerations - the time required to travel to particular schools, and those with the best 'home room' facilities for trainee teachers - rather than well-developed views about the types of programs they were interested in teaching or the topics they wished to investigate.

Trainee teachers were placed in the following schools:

<table>
<thead>
<tr>
<th>School</th>
<th>N</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>6</td>
<td>(5F, 1M)</td>
</tr>
<tr>
<td>B</td>
<td>7</td>
<td>(7F)</td>
</tr>
<tr>
<td>C</td>
<td>8</td>
<td>(6F, 2M)</td>
</tr>
<tr>
<td>D</td>
<td>5</td>
<td>(4F, 1M)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>26</strong></td>
<td>(22F, 4M)</td>
</tr>
</tbody>
</table>

Teachers did not have a role in selecting trainee teachers placed at their school. If they had, the mechanisms (eg, interviews, written submissions) by which this might have been done may have sharpened the perceptions of classroom teachers and trainee teachers about the objectives of this 'school-based' program and the nature of the tasks which trainee teachers would complete, which was evident when trainee teachers arrived in schools the following February (discussed in Chapter 5).

SCHOOL OF EDUCATION STAFF INVOLVEMENT

Staff involvement in the 'school-based' subject, and ipso facto participation on the electronic network, was the result of staffing decisions made by the Head of School.
The SBPG included three full time academic staff - the Head of School, the 'Primary Program Co-ordinator' (the author) and the 'Subject Examiner'. Two staff holding casual positions, also teaching other subjects in the initial teacher education course, were also appointed to the SBPG. (Four elected trainee teachers were also members).

Three casual staff (including the two members of the SBPG), and a full time teacher, were appointed as 'liaison lecturers' by the Head of School. Each liaison lecturer was expected to be the 'programme facilitator, organiser and mentor' in one school (Cairns, 1995:5).

Liaison lecturers were expected to be 'well qualified and experienced teachers with recency of school involvement'. According to the Head of School:

This latter aspect [ie, 'recency of school involvement'] was a feature of the programme that was important to both the schools and to the credibility of the practical and school-based nature of the programme. It was an aspect that some tertiary staff were uneasy about - some felt this was tantamount to criticising their credibility in schools.

If School of Education staff felt 'uneasy' about being excluded for the reasons stated, this may have been a factor which influenced attitudes towards the 'school-based' program and, indirectly, participation on the network. However, some academic staff interested in research in schools may have also resented being excluded from opportunities to work with trainee teachers on school-based research projects.

THE NETWORK

The idea of an electronic network was raised in the initial documentation (June 1994) prepared by the Head of School, where it was proposed that 'ensuring that all [chosen] schools are computer linked to the University' and that 'highlighting computer technology and access (via the university link)' should be 'special features' of the 'school-based' program.

The idea was not discussed at meetings of the SBPG before the invitation was extended to schools (in August) to submit 'expressions of interest' about participating in the 'school-based' program in 1995. The introductory letter noted that selected schools would be given:
a computer (Macintosh LC) in the allocated fourth-year B.Ed. provided space with capacity to be linked to AARNET and INTERNET through the University system for use by the School-based group.

How the network would be established, and the purposes it might serve, were not discussed in SBPG meetings where, as already noted, concerns related to procedural matters such as trainee teachers' workload and the selection of schools. The idea of using the 'University system' was then dropped, apparently because Computer Centre policy did not include Internet connections for 'third-party' individuals or organisations.

The idea of the School of Education providing a network for participants in the 'school-based' program had already been mooted in informal discussions. The author, and another staff member (also a member of the SBPG and liaison lecturer), both with some experience with electronic communications, had used FirstClass (client) software for some time. The Head of School had also seen this communications software demonstrated. These staff considered that this software could be used for a 'computer link' which the Head of School was keen to see as part of the 'school-based' program.

At the final meeting (November 1) of the SBPG, FirstClass was demonstrated (by the liaison lecturer) 'after the meeting'. This event was recorded without comment in the minutes. The minutes also record the appointment of the author, absent from the meeting, as 'Computer Coordinator'.

At this time, the author ('Computer Coordinator') considered that the idea that the School of Education supply (and maintain) the network faced two major problems.

First, as the 'expressions of interest' in the 'school-based' program returned by schools indicated, there was no useful microcomputer equipment, and no expertise (particularly with communications software) amongst teachers. Hence, schools would not be able to contribute physical components (microcomputers, modems) for the network, or to the maintenance (in-servicing of staff, advice, trouble-shooting) of the network once it was in operation. Limited experience with microcomputers proved to be a major factor influencing classroom teachers' participation on the network (discussed later in this chapter and in Chapter 6).

Second, both the physical components, and maintenance, of the network would impact on the budget and staffing resources of the School of Education. However, with support from the Head of School, particularly in relation to the costs involved in hardware and software purchases, it was decided to accept the responsibility to establish a 'computer
link' between the School of Education and the four schools involved in the fourth year program.

The expectation was that the network would be available for use by the commencement of the next school year (February 1995); the Head of School suggesting (personal memorandum, 7 December 1994) that 'it would be good to trial it (with the Principals perhaps) before school starts in 1995!'

In the three month period between November and February, the following actions were taken (by the author) to establish the network:

- a microcomputer (Macintosh IIvx), surplus to School of Education needs at the time, was acquired as the network fileserver.

- a room was obtained to locate the fileserver. Previously, this had been a meeting room known as 'The Conclave'. In the absence of any other 'good ideas' about what the 'school-based' electronic network could be called, and after checking a dictionary, it was decided (by the author, anticipating possible uses of the network) that 'The Conclave' would be the name given to the network.

- the maintenance department on the University campus was requested to install three telephone lines to the selected room. It was decided that these would be run internally from the campus PABX switchboard, thereby saving the costs of installing, and renting, dedicated lines.

- a 'hurdler card' was purchased and installed on the fileserver. This enabled up to three remote (telephone) connections (using only one telephone number) to the fileserver at any one time.

- the maintenance department on campus was requested to install a network connection to the fileserver so that School of Education staff could contact 'The Conclave' from their desktop microcomputers. The fileserver software was configured to permit ten concurrent network users.

- the *FirstClass* host software (which included network and 'Telecom' user licences) was purchased, and installed on the fileserver. After gaining familiarity with this software, it was decided that the default desktop (see Figure 2.1) presented to users would be appropriate to handle the demands participants in the 'school-based' program might be anticipated to make of the network. However, a conference
(Staffroom) was added to the Conferences folder in which it was anticipated that users might post notices, introductions and trial messages.

- copies of the FirstClass client software (for Macintosh, and IBM microcomputers capable of running Windows software), were obtained.

- four Macintosh LC microcomputers (previously located in the offices of School of Education staff) were obtained (one for each school selected in the 'school-based' program). The hard disks on these microcomputers were reformatted and the FirstClass client software installed. A copy of ClarisWorks (Version 2), containing wordprocessing, database, spreadsheet and Draw/Paint programs, with which trainee teachers were familiar, was also (re)installed on each microcomputer.

- four 2400 baud modems, one for each school, were purchased. The decision to use 'low speed' modems was based on available financial resources and the local call charges incurred when contacting the network and transferring data.

- visits were made to each school to locate the trainee teachers' 'home room' in which the microcomputer equipment and telephone connection would be placed. A request for suitable furniture in this room was also made. In one school, proposed building renovations resulted in the location of the microcomputer in the computer room used by pupils instead of the trainee teachers' 'home room'. This proved to be an inappropriate location for trainee teachers and impacted on the use which they could make of the network in the first six months of the next school year.

- arrangements were made with schools (for access during the vacation period), and the telephone authority, to install dedicated lines at each of the four schools selected. The installation costs incurred were met by the School of Education. This decision was taken because: (a) all schools had telephone networks which might have interfered with data transmission, and (b) it was not considered advisable to engage (perhaps for lengthy periods) existing telephone lines for the network in case parents (and others) might want to urgently contact the school. The Head of School agreed to meet the operational costs (rental and call charges) associated with this decision.

- four laser printers (Personal LaserWriter 320) were purchased.

- the User Guide to The Conclave (Appendix A) was written. This outlined (9 pages) the procedures needed for network and remote users to contact 'The Conclave', send and receive private messages, and complete other functions (eg, forwarding messages, adding and retrieving attachments). The User Guide also included a
section (7 pages) on 'computer conferencing'. Here, the concept was defined, and an outline presented of the ways in which conferencing might be included in the 'school-based' program, suggestions ('netiquette') about participating in conferences, and the procedures involved in sending and receiving messages.

- a two hour in-service program for participants was planned. These were scheduled (in consultation with the Subject Examiner) to commence in the week beginning 15 February the following year. Given the focus of the 'school-based' program on the school, it was decided that these in-service programs should be held in the schools selected for the program. Another consideration was the lack of a suitable University venue at which the in-service could be held; Computer Centre staff had advised (incorrectly, as it was discovered much later) that a connection with the fileserver, on which the FirstClass (host) software had been installed, could not be accessed from the Macintosh laboratory on campus.

- the operation of the network was trialled (during January) with another member of the School of Education staff (not associated with the 'school-based' program). Various features of the software were explored and tested. Due to an oversight, this person's account was not deleted after the trials had been completed. Renewed interest in 'The Conclave' by this staff member later (March), resulting in messages to one (public) conference, had a significant impact on trainee teachers' participation on the network (discussed in Chapter 5).

The February deadline, on which 'The Conclave' was expected to be operation, was met, despite delays with the supply and installation of facilities by computer vendors, the campus maintenance department, and the telephone company due to Christmas/New Year closures. Only minor problems with equipment, in a technical sense, were experienced once the network had been fully established and these were quickly resolved by the telephone company.

THE **FIRSTCLASS** SOFTWARE

*FirstClass* (client) software was installed on each microcomputer placed in schools, and a settings file created to automate connections with the fileserver at the University. By double-clicking on the settings file and, when prompted, entering user name and password, a connection with the network could be initiated easily.

*FirstClass* presents participants with an easy-to-use graphical interface. Once a connection with the network has been made, four folders are displayed (Figure 2.1).
**Figure 2.1** *FirstClass* Default Desktop

![Mailbox, Help, News, Conferences icons]

**Mailbox** stored incoming and outgoing private mail.

**News** was used for announcements by the Computer Coordinator (network Administrator) and Subject Examiner for the 'school-based' program.

**Conferences** contained public conferences which developed during the year (Figure 2.2).

**Figure 2.2** *FirstClass* Conference Folders

![Staffroom, Ed Society, Maths, Assessment, Resources, Projects, Music, Science, Course Comments icons]

Double-clicking on a particular icon displays a list of messages in the conference. Double-clicking on the title of the message displays the message (Figure 2.3).

**Figure 2.3** *FirstClass* Message Form

![Assessment Item, From: LAP, Subject: LAP, To: Assessment, Is the Learning Assessment Project necessarily a bad thing?]

Everything I have read thus far on this conference has been negative. Surely LAP has some qualities to recommend it? I cannot
Valuable features of *FirstClass* for messaging (private and public) are full-text editing and formatting (including colour) and graphics (eg, scanned images, Draw/Paint files). These features can be incorporated in messages, or in attachments to messages. These features were used extensively (eg, to display 'theme maps', notices of meetings, pro-formas) by trainee teachers when the electronic network was operational. A more detailed outline of features of the software, and the procedures used to operate it, is presented in the *User Guide* (Appendix A) prepared by the author and distributed to participants.

POTENTIAL USES OF THE NETWORK

While the network (hardware and software) was physically in place before the 'school-based' program commenced, there had been no consideration by participants about the ways in which the network might be used. There had been no discussion amongst School of Education staff (most were experienced users of other electronic mail software) involved in the program about the specific purposes it might serve; only an awareness that it might 'facilitate communication' amongst participants was evident. Trainee teachers had not been introduced to the network. While experienced with other microcomputer software (wordprocessing, database, spreadsheet, presentation and some of the software currently used by pupils in primary schools), no trainee teachers had any experience with communications software. And, as the 'expressions of interest' in the 'school-based' program returned earlier by schools indicated, classroom teachers could be assumed to have no experience with microcomputers, basic applications and communications software.

The only available information about the network was a brief statement prepared by the Computer Coordinator (the author in this case study). This was included in the *Participant's Folder*, prepared by the Subject Examiner and distributed to participants at the beginning of the following year. This statement attempted to anticipate possible uses for the network, presenting suggestions which might be developed by participants. Since this statement contains assumptions held by the author in this case study, which might be considered to have influenced behaviour on the network, the relevant passages are reproduced here.

The hardware and software supplied will serve two major purposes.

1. Trainee teachers will be able to:

   - prepare quality printed materials for teaching purposes;
• access electronic information services such as NEXUS and Keylink, and plan opportunities for children to participate in national electronic projects (eg. OzProjects) with other schools;
• review software for classroom use;
• develop and trial innovative programs using specialised software (eg. LOTE, robotics) with small groups of children.

2. All participants (trainee teachers, co-operating teachers and University staff) in the 4th year program will be able to use 'The Conclave' for asynchronous (delayed) communication. This can be done in two ways:

(i) one-to-one communication (electronic mail). Personal messages can be sent to other participants.

(ii) many-to-many communication (computer conferencing). Messages can be sent to 'conferences' ('discussion groups') on topics of interest to some, or all, participants.

There are many ways in which computer conferencing can be used. Some suggested applications are:

(a) conferences could be set up to discuss issues which are of interest to all participants;

(b) conferences could be set up for participants with similar interests who are located in different places;

(c) guest lecturers could be invited to initiate topics and respond to the replies contributed by participants;

(d) 'seminar papers', or drafts of projects, could be presented for comment;

(e) 'self-help' groups could be established to discuss common problems and issues;

(f) social contact ('chit-chat') can be developed and maintained;

(g) information about the 4th year program can be 'broadcast' to all participants.
Other uses will emerge throughout the year. This conferencing facility will reduce the need for face-to-face meetings and enable participants to maintain contact, especially during those times when trainee teachers are not working in schools. The delayed nature of communication will enable participants to contribute ideas at times which are convenient to them, and provide opportunities for thoughtful and reflective analysis of concepts and issues about teaching. 'The Conclave' will provide a 'shared space' for information exchange, group interactivity and collaborative learning by all participants in the 4th year program (Participant's Folder, Section 2).

THE SCHOOL-BASED PROGRAM - 1995

The school-based program commenced with trainee teachers placed in schools for two weeks (30 January-10 February). ¹

The local newspaper (21 February) recorded the event with a report (commissioned by the Head of School) titled 'Local schools benefit from new university program'. Quoting the principal (a member of the SBPG) of one of the selected schools, and one of the trainee teachers (also a member of the SBPG) placed at this school, the report extolled the perceived benefits of the 'school-based' program. Other plans to publicise the program (attributed in the newspaper report to the Head of School) were also announced; 'a workshop ² on the program would be held at the Australian Teacher Education Association Symposium in Sydney in July' and 'the Standards Council of the Teaching Profession would soon publish a book ³ on partnerships in teacher education' in which the 'Monash University School Based Primary Teacher Education Program will be featured as a possible approach for other universities to follow'.

According to the minutes of the SBPG of 15 March, the 'school-based' program was:

progressing well... The teacher trainees are busy planning and implementing extended teaching programs. The teacher trainees are submitting their action based research project proposals.

Despite these endorsements of the program, there were several contentious issues which emerged immediately. This was not unexpected since the program had been based on the premise that decisions about features of the program would be the result of 'negotiation' amongst participants. Some of these issues were resolved quickly; others required

¹ Following these ten days, trainee teachers returned to schools for two days per week for the remainder of Term 1.
further attention. A brief outline of the issues is presented here (and in more detail in Chapters 5 and 6) since these impinged on the use made of the electronic network during the year.

First, the role of trainee teachers required discussion and clarification. The minutes of the first SBPG meeting (15 February) record that 'the role of the trainees was not clearly defined in all schools as some trainees were placed specifically with teachers as a student-teacher'. The minutes of the following meeting (15 March) recorded:

A couple of issues have required consideration. The first has concerned how the teacher trainees' hours in the schools are allocated. There is a perception that the teacher trainees should be 'real' teachers. There is also a perception that they should be action based researchers with requisite planning and evaluation time.

The Subject Examiner (23 March) outlined this issue in the following statement:

We still seem to be implementing what is in many cases a glorified teaching round, in which people are teaching lesson series with no outcome other than teaching an effective lesson series. This is not what this is about. These students have been on teaching rounds before and have successfully completed them. They have taken full and whole-day control, they have planned extended learning sequences, they do not need to be doing this again. I understand the notion that these students are meant to be behaving as 'real' teachers. This is, in part, true but they are also meant to be 'real' researchers and in some cases should be considered more as a specialist visiting teacher than as a member of the day-to-day teaching staff. (Southcott, 1995:7)

Evidence of these tensions is available in the transcripts of interviews recorded at the end of the year. According to one classroom teacher [CT], the 'school-based' program was the opportunity for trainee teachers to display 'teaching commitment':

From our kids' point of view, it's been fantastic to have some of the extra groups, that weren't major projects stuff, on spelling extensions and gifted children extension. There were a lot of little sub-groups going on that weren't part of their major projects but it was professionalism. We push professionalism. This is the reality of what you do in a school. This is the teaching commitment you have. Be here as professionals. That was what we were pushing with the school-based program. Develop your reputation. Get as much as you can from your time here. And that's what's going to be important in the future. So, looking at the school-based program, it was a benefit for our kids' sake. [CT1]
On the other hand, one member of the university staff [US] wanted trainee teachers to be 'professional about their major project', and attempted to influence the perceptions which classroom teachers had of their role with trainee teachers.

____ Primary School has got some staff members who are still doing a student teacher-supervising teacher role. Some of them have picked up on what a mentor is, but I feel we had to do a lot of work with the school to get them to understand what a mentor is, rather than supervising a student-teacher. They're all under the supervising teacher mentality. I wouldn't have any idea if I'd been out in the classroom. [US3]

Second, disputes developed over trainee teachers' release ('APT') time in schools. The opportunities for release time differed between schools, and trainees teachers requested clarification. The need to address this issue was clearly evident to the Subject Examiner, who commented in March that:

We must address notions of APT and teacher trainees having an equitable allocation of APT time, but this does not mean that the rest of their time must be spent standing in front of a class of children. They are not necessarily a beginning Grade 3 teacher, they are something else and we need to clarify our definitions of that. The graduate teachers are very aware of this dichotomy, in fact it is more than a dichotomy because they adopt about three roles at least - beginning teacher, specialist teacher, researcher, additional school resource, and I am sure we could think of more. (Southcott, 1995:7)

However, for another University staff member (a member of the SBPG) this was part of the 'negotiation' which was meant to characterise the 'school-based' program. This staff member stated in interviews at the end of the year:

I was a bit concerned, and still am, that there was a push by a couple of schools, and some of our staff here, and some of the students, to seek what they see as greater clarity by having more University-defined structure. A good example of that was the long-standing, long-running debate about [trainee] teacher release at the school sites. Some [trainee] teachers in some schools had more release time than others but our students wanted an equitable, across the program definition. They weren't prepared to run with the site differences at different stages, and some staff wanted to put out [guidelines] and in the end did. Now I see the tensions that those sorts of things brought as a really good learning experience. I think its important to have it vague so that, [with] each year that goes through the
program, the students do have some ownership of the process because they're developing the answers in consultation. That's how they learn. If you gave it to them all cut and dried they'll be operating in a prac teaching program. [US1]

Release (APT) time was discussed at SBPG meetings during Term 1 and remained unresolved when trainee teachers had completed their placement in schools for Term 1. At the end of Term 1 the SBPG decided that, for Term 3 (when trainee teachers would return to schools), 50% of the time would be allocated to the major project, 25% to Curriculum Studies subjects and 25% to 'other school involvement'.

Third, uncertainties existed about the project, a major component of assessment for trainee teachers in the program. Similar tensions to those involved in the issue of release time were also evident here.

On the one hand, a member of the University staff reported to the SBPG (February) that, based on initial visits to schools, problems had arisen 'with some trainees feeling uncomfortable with the assignment as specific details had been given'. The same member of staff commented in an interview later that:

the project dominated the thing [program] too early. Trying to get people into their project very early meant that became the driving force for the whole bloody thing for some students. And the assessment of that became the whole driving force. [US1]

On the other hand, liaison lecturers and classroom teachers saw the issues associated with the project, and its assessment, differently. For instance, in response to a question about the way in which the major project appeared to dominate the early part of the program, one liaison lecturer commented that:

I pushed the dominating side of it I think because I was frightened they were going to leave it to the last moment. [Moreover] my expectation of what I wanted them to do was not just a set of teaching lessons. Not a 'flash in the pan' sort of thing. I didn't feel that did justice to the school and that's why I think the domination was there all the time because I wanted them to focus and be professional about their major project. [US3]

This liaison lecturer also commented that:

...a lot of the staff at the school grabbed on to the major project too because they didn't know what to do with trainees. It's like a teaching round. They looked at
the assignments they [trainee teachers] had to do and talked about that so they could start somewhere. [US3]

Uncertainty about the major project, and about the roles of trainee teachers and classroom teachers in the 'school-based' program, are evident in these comments. However, for tertiary staff (and perhaps others) more serious concerns existed about projects. The Subject Examiner outlined these publicly in March:

our students apparently have little or no idea how to plan a small research program. Once I realised this, I found the flow diagram on research planning and sent that to the schools. We organised a short seminar on the topic but I feel that this did not help people clarify their thinking. A symptom of this was avoidance in submitting contract proposals. People are not clear about what they are doing and therefore did not put their plans in. The few I have seen need some form of modification and development and clarification. Some of them need a great deal. The students have also raised this as a concern, they are aware of their lack of experience in the field. (Southcott, 1995:6)

This assessment of trainee teachers' lack of familiarity with research was also supported by another member of staff. When asked in a interview with the author later in the year about whether trainee teachers were 'up to speed in terms of handling what we were asking them to do', this member of staff commented:

I don't think so. I think a minority were and they tended to be the people who embraced it. They seemed to grapple with it pretty well. But the bulk I don't think were up to speed. [US1]

Fourth, the minutes of the 15 March meeting of the SBPG recorded concerns about the 'negotiation skills' of trainee teachers. The inability of some trainee teachers to formulate their own programs in consultation ('negotiation') with classroom teachers was particularly evident to University staff. One member commented in interviews that:

The thing that surprised me is that, after three years, they had no idea what negotiation was, in terms of negotiating their own curriculum or negotiating with colleagues or about the projects. Some of them just went in and made demands and then were petulant when they didn't get their way. They didn't see the 'to and fro'. They didn't see the need for the groundwork and that's our fault. We should have prepared them for that in three years, given how a negotiated curriculum is an important element and has been for years. [US1]
Another staff member expressed similar concerns, using a specific example to illustrate the perceived problems:

Another issue that has arisen is that our students, in some cases, have not developed negotiation skills or, in my opinion, a real understanding of how schools, as groups of people, function. Our trainees must learn that it is not acceptable to walk into a room and request three children from a class, now! This is an extreme example and probably has not, in fact, happened but, in some cases, this is how some of the classroom teachers are perceiving the requests that our trainee teachers are making. Trainee teachers have to learn that a teacher considers their classroom as their domain and for someone else to enter it means seeking approval, giving prior notice and possibly, outlining fairly accurately what it is intended to do. Plus, our students do not seem, in some cases, to be aware of how the hierarchical power structure in schooling affects how they negotiate. (Southcott, 1995:8)

The extent to which the difficulties which arose between trainee teachers and classroom teachers were due to inadequate 'negotiation skills', or other causes such as uncertainty about roles or requirements, cannot be assessed but these comments indicate that workable relationships between trainee teachers and classroom teachers may have been slow to develop.

Fifth, considerable attention was given to journal writing, one of the assessed components of the subject. Discussion centered on what should be included, who would read them (classroom teachers?) and, if liaison lecturers had access to trainee teachers' journals, how would they reconcile their roles as evaluators (assessors) and mentors (guidance and support). Discussion on the issue of journals was intense, but relatively short; the minutes of the SBPG of 5 April recording that 'trainee journals would not be submitted as part of their assessment'.

These were the main issues considered at meetings of the SBPG, and by other participants directly involved in the 'school-based' program (Subject Examiner, liaison lecturers, trainee teachers and classroom teachers). Discussion and clarification of issues like these had been anticipated, particularly in view of the limited time for planning the previous year and the emphasis on 'collegiality' and 'negotiated curriculum' which had been defined as characteristics of the program. What had not been anticipated were the difficulties encountered in reconciling different assumptions held by participants about the implementation of the program - such as the role of trainee teachers in schools, and the definition of structures and processes - and the reluctance of many trainee teachers
the accept the challenges presented in the program to take major responsibility for their own learning.

The delays associated with the resolution of many issues created difficulties for many trainee teachers in the school setting. Two trainee teachers, both considered by classroom teachers and University staff to have been very successful participants, were particularly critical of the program. One commented that:

I haven't enjoyed it. I enjoyed the teaching aspect with the children. That was great. But I felt we were just guinea-pigs, shipped out to schools. The schools said they welcomed us but you still got the feeling that they didn't. You felt like you were under their feet and you were just being used. We were just lap-dogs. I think if it was more organised it would have been a lot better. At the four schools everyone seemed to have problems. There were a lot of problems at different schools that I know of. Ours was probably one of the better ones but it still made the year really difficult. [TT2]

The other trainee teacher [TT] was also scathing in her assessment of the program:

I think they shouldn't have the program next year. They should stop and take a look at what happened this year rather than try and run another program next year at the same time as trying to evaluate this program. They should just put a hold on it, re-focus and see what really needs to be done for the following year. There's so much that went wrong this year administration-wise, the schools involved, everything. It needs to be a lot more planned the year before it happens. [TT4]

These extracts from interviews record the frustrations which many trainees teachers experienced. Trainee teachers were at the intersection of different views about the program, held by some classroom teachers and University staff, and found it difficult to establish their role within schools. Many did not welcome the opportunity to 'negotiate' the program; they wanted clearly defined guidelines so that they could 'get on with it'. They were critical of the uncertainties about the major project, a more complex piece of work than anything they had attempted before, and particularly anxious to 'get going' on something which counted so much in terms of assessment. For trainee teachers, discussions about this 'experiment' in 'school-based teacher education' held little interest; after three years as 'guinea-pigs' they wanted a clear statement of what they had to do and unfettered opportunities, without lengthy discussions, to get on and do it.
This was the situation in which the electronic network was introduced and operated. The following section outlines the actions taken to introduce the network, and the responses of participants to these actions, within the 'school-based' program. This provides the context for a detailed examination later of the factors influencing participation by trainee teachers (Chapter 5), classroom teachers and University staff (Chapter 6).

THE ELECTRONIC NETWORK - 1995

At the start of the school year (February), the microcomputer equipment was located in schools. Technical problems with telephone lines were quickly resolved with the telephone company concerned.

Familiarisation of participants with the network, and the procedures used to contact 'The Conclave', commenced immediately. The Computer Co-ordinator (author) met (without difficulty) with small groups of trainee teachers, in the schools in which they had been placed, to complete this introductory program. Training classroom teachers proved to be a more difficult task; restricted release time, at different times during the week, necessitated frequent visits to schools to in-service teachers individually. University staff were introduced to the network individually via their desktop microcomputer. Other interested participants, including several classroom teachers, were in-serviced individually.

The introductory program consisted of: (a) an explanation and demonstration of features of the FirstClass software presented in the User Guide (Appendix A), followed by opportunities for participants to use the software themselves to contact 'The Conclave'; (b) a discussion of the ways in which 'The Conclave' might be used in the 'school-based' program, based on the suggestions presented in the Participant's Folder; and, (c) the creation of individual user accounts before participants dispersed.

No conditions about frequency (minimum or maximum contacts) or purposes (contributions to conferences) were placed on the use which participants might make of the network.

Participants responded positively to the training program. The software was considered to be easy to use, and the suggestions presented in the Participant's Folder were considered interesting and feasible.

After the training programs, the Computer Co-ordinator was confident that trainee teachers and University staff were familiar with the basic procedures needed to contact 'The Conclave' successfully (later confirmed in interviews reported in Chapter 5 and 6).
However, a great deal less confidence was felt about classroom teachers successfully doing this. Only two of the fifteen teachers introduced to the network were confident using microcomputers and had experience with communications software; the others appeared to lack basic familiarity with hardware (eg, using a mouse) and software (eg, opening folders, command buttons). As a result, offers were extended to repeat the training program. Later in the year, several teachers at one school accepted the offer, after encouragement from the liaison lecturer to do so.

Despite the training provided, and the initial reports by teachers that they were confident with the software, lack of familiarity with microcomputers was almost certainly a factor in the limited participation by teachers in network conferences. Seven of the eight teachers interviewed at the end of the year reported that they were at a 'basic' level (rather than a 'higher' or 'advanced' level like most trainee teachers and university staff), and that limited time available during the year had prevented them from developing the skills needed to access the network confidently. The extent to which teachers were competent to use microcomputers, and the impact which this had on network participation, is discussed more fully in Chapter 6.

When the 'school-based' program commenced, there were no requirements specified about the frequency and nature of usage of the electronic network by participants. However, since the 'school-based' program was based on premises about a 'negotiated curriculum', the Computer Co-ordinator adopted the view that questions about 'how', and 'why', the network might be used would also be part of the 'negotiated' experiences in the program. The ways in which the network would be used would develop with the program, with participants inventing their own uses for the medium. However, this was not a laissez-faire stance; suggestions about using the network were made (in meetings of the SBPG, and informally) when appropriate.

The previous section in this chapter outlined many of the issues which arose, particularly in the initial stages (Term 1) of the 'school-based' program. The limited time to discuss these issues in SBPG meetings (8-9am), and the difficulties of contacting trainee teachers to arrange meetings, soon lead to suggestions about using the network for 'discussion' purposes. In the case of journal writing, for instance, the decision was made at the 15 March meeting of the SBPG that 'we will begin a conference on the FirstClass computer network where we can discuss this'. A 'closed' conference called 'Liaison Lecturers' was created (February) to provide a forum in which liaison lecturers, and School of Education staff involved in the 'school-based' program, could discuss issues about the program. The conference 'Projects', in which trainee teachers could place outlines of the 'research proposals', was created (March) at the request of the Subject Examiner.
Hence, in the initial stages, conferences on the network were created in response to the perceived need for further opportunities to discuss relevant issues in the program.

At the same time (March), the Computer Co-ordinator took the initiative to create a conference called 'Assessment'. The introductory message stated:

I thought this conference might be a suitable starting point to get some discussion going about assessment in primary schools. This looks like being a 'hot topic' this year, especially with the introduction of KIDMAP and the LAP ('Learning Assessment Program'). Contributions are very welcome. I will 'moderate' this conference. This does not mean that I want to direct discussions but I will try to model one method of managing online activities as we go along.

This conference, based on personal research interests, was created with the specific purpose of encouraging other School of Education staff to introduce, and take a major role in contributing to, conferences based on research, or other, interests.

Brief progress reports about the establishment of the network, and the training of participants, were given at initial SBPG meetings (15 February and 15 March). The minutes of the meeting of 5 April record that the Computer Co-ordinator:

spoke of the disappointing usage of computers by school staff. This point will be elaborated upon next meeting.

However, while 'computer networking' appeared as an agenda item at subsequent meetings (10 May, 17 May), this topic was not discussed until the 31 May meeting of the SBPG. This was due to the discussion of other issues about the 'school-based' program (outlined in the previous section of this chapter).

The 31 May meeting was entirely given over to discussion about the network. The Computer Co-ordinator described the network which had been established, presented statistics on usage during April, and commented that: (a) messages 'have basically been personal messages', (b) 'conference topics have been limited', and (c) the Subject Examiner and Computer Co-ordinator 'seem to be the only University Staff accessing the network at this stage of the program'.

---

1 The April statistics were 151 logins, 95 messages created, and 13 messages delivered to conferences.
The minutes also record that 'ideas were generated to improve the use of the computer network with Trainees, School Staff and University Staff. The suggestions made, and the subsequent actions (if any) taken (enclosed in square brackets) were:

- encouraging trainee teachers to contribute regularly to conferences. [No suggestions were made on how this might be done.]

- encouraging primary school children to communicate on the network. [A conference called 'Kids Corner' was created in August, and accounts set up for primary school children (n=10), at the request of teachers in two schools. Much of the work involved in assisting children to contribute messages was due to the efforts of a work experience student who, while placed in one school, was in telephone contact with a teacher at the other school. The conference attracted 17 messages until September, when the work experience student left the school.]

- distribute three or four pages on a topic for discussion which would 'only remain on the network for a limited time, eg, 5 days'. [This suggestion was not implemented by any participants.]

- advise lecturers in (second semester) curriculum subjects of the trainee teachers enrolment in subjects as a way to 'encourage more University Staff to communicate via the network'. [The Computer Co-ordinator sent (in June) a memo to all School of Education staff responsible for second semester subjects, inviting them to use conferences on 'The Conclave' to discuss concepts and issues examined in their curriculum subjects. Only one member of staff responded; the idea was dropped (by mutual agreement) when it was discovered that no trainee teachers were enrolled in his subject! A conference on 'Computers' was established by the Computer Co-ordinator, who was responsible for the fourth year subject 'Computers in Education' in which five trainee teachers had enrolled. This conference attracted 15 messages between July and September.]

This was the only meeting of the SBPG for the year at which issues about the electronic network were discussed in some detail. Hence the SBPG, retained in 1995 for the implementation of the 'school-based' program, devoted little time to discussing issues associated with the network and had virtually no impact on shaping the ways in which the network was used.

However, a campus meeting with trainee teachers in early May about the network did have a significant impact, both in shaping the network and in influencing the interactions of trainee teachers (in particular) on it for the remainder of the year.
The discussion about the network occurred at one of the (infrequently) scheduled on-campus seminars which formed part of the 'school-based' program. It was an initiative of the Computer Coordinator, who was keen to obtain 'feedback' about the network, and give trainee teachers the opportunity to hear a colleague (from the Open University) talk about the use of a network (also using FirstClass software), in the initial (distance) teacher education course at this university.

After the presentation on the Open University network, trainee teachers were divided into three groups and asked to discuss, and record, their ideas about the following issues:

- the benefits of the network for trainee teachers;
- the problems they had experienced with the network;
- how the network could be used more effectively.

Similar reports addressing these issues were presented by each group.

The network was considered to be useful for individual communication with trainees at other schools, particularly about projects. The 'Staffroom' conference was also useful for 'chit-chat', information about in-service programs and other notices.

All groups reported that additional training about the network over a longer period would be helpful. As one group put it, 'one quickie was not enough!' The topics for conferences were not considered 'interesting' and, surprisingly, all groups suggested that conferences should be based on 'key learning areas' (presented in a recently released primary school curriculum statement).

Two days later (4 May) the Computer Coordinator added the following curriculum conferences to 'The Conclave' - 'Maths', 'Health & PE', 'LOTE', 'Technology', 'English', 'Art/Craft', 'Music', 'SOS' and 'Science'. An offer was also extended to respond to individual requests for additional training in using the software.

One group reported that lack of 'immediate feedback' (delayed replies), and the novelty of electronic communication, were 'problems'.

One suggestion from this meeting, about using the network effectively, was particularly significant in terms of participation later. The notes written by one group stated:
[Set up a] school based program conference to discuss problems with the program. Avoid our name being on criticisms - ie, an account for anonymous calling.

This suggestion generated a great deal of discussion at the meeting. It was strongly supported by other trainees present. The Computer Co-ordinator left the meeting convinced that a feasible way to implement this suggestion should be found.

A conference called 'Course Comments' was created two days later (4 May). The introductory message, written by the Computer Co-ordinator, explained the purpose of the conference and the way in which anonymous comments could be submitted:

This is a conference in which you can place comments about the 4th year school-based program and this network. You can place comments (a) under your own name, or (b) use the fictitious account Mary Smith (password = education). If you use the Mary Smith account messages cannot be traced to any individual. Since this account could be abused, the RULES are:

1. you can make any comments (critical or positive) you like about the school-based program but constructive comments would be preferred;
2. you must NOT make any abusive comments about individuals.
I will monitor this conference and delete any messages which do not follow these rules. I will delete the conference if the rules are abused too often.
After saying that, it would be great to get your comments as we go along (rather than try to recall them at the end of the year). Please try to contribute.

The 'Course Comments' conference, often called the 'Mary Smith' conference, was well supported (67 messages, the last submitted on 19 September)\(^1\). The issues presented in messages were also discussed in other forums - meetings between liaison lecturers and trainee teachers (discussed in Chapter 5), trainee teachers informally, and University staff (discussed in Chapter 6).

In interviews with trainee teachers at the end of the year, aspects of this conference were often discussed. The conference, and the anonymous account with which it could be accessed, proved invaluable in exploring, particularly with trainee teachers, issues relating to participation on an electronic network.

No further changes were made to the conference structure for the remainder of the year.

---

\(^1\) The number of participants who used the 'Mary Smith' account cannot be determined. Some (n=6) contributors to the 'Course Comments' conference used their own accounts.
CHAPTER 3  

LITERATURE REVIEW

INTRODUCTION

In this chapter the research literature on electronic networking (and computer conferencing specifically) is reviewed, and the location of this study within the literature is established. Figure 3.1 presents a diagrammatic pathway through the literature reviewed.

Figure 3.1 Structure of literature review of CMC

1  The idea of presenting a diagramatic pathway through the literature reviewed was obtained from Mason (1989b).
1. DEFINITIONS OF COMPUTER-MEDIATED COMMUNICATION (CMC)

CMC can be defined as 'human communication augmented by computer' (Zorkoczy, 1989a: 260). Communication is achieved using microcomputers, with appropriate software installed, which have been connected to a network installed at one location, or by using modems connected to telephone lines at remote locations. It can take two forms - synchronous (real time) or asynchronous (delayed) communication.

1.1 Synchronous

An example of synchronous communication is 'telematics', where microcomputers and other equipment are used for communication between two (or more) locations at the same time (Evans & Nation, 1993; Hill, 1991; Hill et al, 1991; McLoughlin et al, 1997; Reid, 1990).

Telematics uses new technology to replicate traditional teaching/learning activities. It has been used successfully with primary (Stacey, 1992), secondary (D'Cruz, 1990; Margitta, 1989) and tertiary students (Olejnik & Wang, 1992; Tuckey, 1993). Synchronous communication like telematics is outside the scope of this thesis.

1.2 Asynchronous

Asynchronous electronic communication does not require participants to be present and active at the same time. Examples include administrative systems, library access, online journals, electronic mail, bulletin boards and computer conferencing (Garrison, 1989:80-1; Kaye, 1989:4-5).

2. TYPES OF COMPUTER-MEDIATED COMMUNICATION

2.1 Administration

Administrative uses of CMC primarily meet accounting and record-keeping needs. Future applications include the delivery of print materials and computer-assisted

2.2 Library services

Library functions of CMC involve accessing information in electronic databases. Information stored on the host computer can be accessed directly and saved to disk. Alternatively, the database can be accessed remotely by attaching a modem to the client microcomputer and using telephone lines to connect with the computer on which the database is stored. Required information can then be downloaded and saved on the client microcomputer. Accounts of the use of online information services of this type with primary and secondary students can be found in Irving (1991) and Rigby (1992).

2.3 Online journals

Online journals are delivered automatically to a subscriber's electronic mail account. They can then be read as an electronic message, saved to disk or printed for later reading (Romiszowski & de Haas, 1989:8).

As Garrison (1989:81) notes, the use of CMC for administration and access to electronic databases involves 'essentially one-way modes of communication since there is no real dialogue where meaning can be negotiated'. This is also true for online journals and other document delivery services. Therefore, these types of asynchronous transactions have been excluded from this study.

2.4 Electronic mail

Electronic mail is a medium for exchanging messages asynchronously between individuals. Case studies of the use of electronic mail have been completed which profile users, identify factors which influence usage and assess its perceived effects in academic communities (Cook & Ridley, 1990; D'Souza, 1991; Grabowski et al, 1990; Lowry et al, 1994; Rice & Case, 1983; Wilson et al, 1994), organisational settings (Safayeni et al, 1988; Sproull & Kiesler, 1986), distance education courses (Cornish et al, 1987; Dekkers & Cuskelly, 1990; Frost & Roberts, 1990; Latham et al, 1987) and tutoring 'at-risk' students (Ross et al, 1989).
Examples in teacher education include (a) student teachers responding to secondary school students' requests for information (Austin, 1995; Meadows, 1992) and, (b) student teachers maintaining contact with university supervisors during the practicum (Burlaw, 1993).

While electronic mail is mainly used for individual messaging, a restricted form of group-based communication is also possible. This is achieved through the use of 'distribution lists' where a message addressed to a 'group mailbox' can be distributed to multiple recipients linked to this mailbox. Group-based electronic mail has some relevance to this thesis for two reasons. First, since this form of communication has some similarities with computer conferencing, the perceptions and experiences of participants may be applicable to this thesis. Second, some of the problems of using electronic mail in this way highlight the advantages of using specialised computer conferencing software for group-based communication.

Only brief reports on the use of electronic mail in place-based undergraduate teacher education courses (all Australian examples) were located (Iles, 1996; McGill & Jessup, 1995; Naidu & Barrett, 1995).

Romiszowski & de Haas (1989) used distribution lists to enable university students, meeting face-to-face in groups at separate locations, to communicate using electronic mail. They used 'seminars' to structure electronic communication on three occasions.

In the first seminar, participants were invited to comment, for a period of one month, on an invited paper 'carefully planned to focus attention on a relatively narrow band of issues' (p.10). The results were disappointing; student participation was low and the discussion which did occur 'was quite different from the intentions defined in the initial seminar'. Romiszowski & de Haas (1989) suggested that the chronologically sequential structure of the conference, and the asynchronous nature of communication, may have lead respondents to reply only to the latest message rather than the general framework of the discussion.

Changes were made in the second seminar. An attempt was made to design 'a seminar topic that would be of intrinsic interest to the target group' (p.11). A shorter, and more focused, seminar paper was selected to initiate discussion. The length of the
seminar was increased to 'two to three months' and the size of the participant group was enlarged.

Again, the outcomes were 'not as all as expected . . . the number of actual participants who contributed specific content-related messages was smaller than on the previous occasion'. Several messages by a conference moderator were needed to promote a 'significant level of interaction' and the discussion 'rapidly drifted away from the expected theme' (p.11). As a result, 'several early participants dropped out of the seminar discussions, discouraged by the lack of response to their messages' (p.12).

In the third seminar, group electronic mail was more closely related to course objectives. Participants were required to discuss seminar papers on selected topics and their use of the medium was given 'some weighting in the course grading system' (p.12). The researchers considered outcomes in this case to be much more favourable:

Students could focus the discussion of their paper to a very precise degree, by concentrating on one topic and by building in stimulus questions/challenges for their colleagues to respond to. (p.12)

When the outcomes were compared with the first and second seminars, discussion was 'much richer and deeper', a 'more focused experience' which compared 'very favourably with that usually obtained in a classroom based seminar discussion' (p.12).

The report by Romiszowski & de Haas (1989) illustrates some of the problems which can occur when electronic networks are used for group communication. These include low participation rates, irrelevant messages and the linking of message contributions with assessment to maintain participation. The need for 'active' moderation to prevent discussions 'drifting away from the intended direction' (p.13) appears to indicate that the medium may only be useful when teachers exercise control over discussions, an undesirable situation in learning activities where initiative and independence from learners is expected. Moreover, the apparent lack of structure can make it 'very difficult to know where you are and what is going on' (p.13) in electronic discussions of this type.
These reported problems with the structure of discussions, however, can be largely attributed to the medium used. Group-based electronic mail does not have the options available in specialised computer conferencing software to enable participants to select conferences (the distribution lists must be established in advance) or to organise messages (such as placing social communication in one conference and content-related messages in another). While there may be some educational value, as Romiszowski & de Haas (1989) suggest, in giving students some 'organizing tools' to enable them to do 'their own structuring', the process can be tedious and time-consuming, especially with lengthy sequences of electronic mail messages.

Whereas the case studies reported by Romiszowski & de Haas (1989) focus on features of the medium, other case studies have examined the characteristics of participants using electronic mail. These have been based on communication in large organisational settings (Siegal, et al, 1986; Sproull & Kiesler, 1986); hence, the findings are not directly applicable to this case study. However, these studies raise important issues about the ways in which social context cues affect information exchange (who exchanges information with whom) and content (what information is sent and received) which may need to be considered in this case study. Hence, selected research of this type is briefly reviewed here.

Sproull and Kiesler (1986:1495) have pointed out that social context cues have been found to affect information exchange in face-to-face meetings. These context cues include organisational position and situational variables such as 'the relationship between senders and receivers, the topic of the communication and the norms or social conventions appropriate to the situation'. Communication patterns are modified once social context cues are perceived:

People adjust the target, the tone and verbal content of their communications in response to their definition and interpretation of the situation. Typically, when social context cues are strong, behavior tends to be relatively other-focused, differentiated and controlled - when social context cues are weak, people's feelings of anonymity tend to produce relatively self-centered and unregulated behavior. That is, people become relatively unconcerned with making a good appearance . . . Their behavior becomes more extreme, more impulsive, and less socially differentiated. (Sproull & Kiesler (1986:1495-6).
While mediated communication of any type reduces social context cues, Sproull and Kiesler (1986) found that communication by electronic mail, in a large organisation where these cues were weak, resulted in similar behaviour to comparable face-to-face situations. This behaviour had 'a substantial deregulating effect on communication', increasing both the number of recipients and the amount of information exchanged.

These findings may be relevant to the research completed in this case study. Here, social context cues were strong. The status of participants (university lecturer, trainee teacher, classroom teacher) was known and could be anticipated to affect relationships between senders and receivers, the topics discussed on the electronic network and the communication behaviour exhibited - other-focused (rather than self-centred), controlled (rather than unregulated) and socially differentiated (dependent on the status of the person(s) with whom messages were exchanged, or the conferences to which messages might be contributed).

Therefore, it was considered important in this study to explore the extent to which social context cues influenced information exchange in computer conferences on the network. To do this, issues about communication behaviour in relation to conferences - the number of messages contributed and the factors which influenced participation, were explored in interviews with participants. These data are reported in Chapter 5 and 6.

Only one example of the use of group-based electronic mail with student teachers was found in the literature (Post, 1991). At The Ohio State University, group electronic mail has been used to (a) 'increase communication' between student teachers, cooperating teachers and university supervisors; (b) 'promote student's reflection upon critical incidents in their teaching'; (c) provide instructional materials for classroom activities; and, (d) provide 'a forum . . . to help student teachers solve problems' (p.57).

The preliminary report on this project contains only limited information about outcomes. The main use of electronic mail by student teachers was related to the completion of required 'assignments' and questions posed by university supervisors. However, there were also 'some requests for lesson information that drew responses from all involved groups' (p.57).
Differences were perceived between student teacher's use of electronic mail and their contributions in face-to-face discussions:

Large differences in student usage of electronic mail did not seem to be linked to past observation of student classroom behavior. Some of the students who used electronic mail the most seemed to be the quietest ones in classroom discussions. (p.57)

It is significant that the medium was found to influence the involvement of some student teachers who were reluctant to contribute in classroom discussions but the reasons for these differences are not examined.

Practical advice on using electronic networking for this purpose included (a) familiarising student teachers with electronic mail before the practicum; (b) involving others not directly concerned with student teaching in discussions; and, (c) choosing topics which encouraged cooperating teachers to contribute to online discussions.

2.5 Bulletin Boards

Bulletin boards enable users to send and receive electronic ('private') mail. Additional features facilitate group communication. Messages can be downloaded (from the host computer to the user's microcomputer) or uploaded (by the user to the host computer). Messages uploaded by users can be made available (by the bulletin board administrator) for other users to download. This feature enables information to be exchanged between users. Bulletin board software also enables users to send 'public' mail and these messages, filed chronologically, can be read by all subscribers. Various options are available to enable users to choose the most convenient way to read public messages.

Bulletin boards have been successfully used to facilitate communication between community groups (Hudspeth, 1990), primary and secondary students (Walters, 1990) and tertiary distance education students (Gardner & Tillman, 1988; Pearson, 1993, 1994a, 1994b). In graduate programs, electronic bulletin boards can support 'seminar-level' discussions and promote quality educational interactions between course participants (Kearsley et al, 1995; Pearson, 1994b; Wiebe et al, 1995).
However, difficulties in following conferences and organising messages are
sometimes experienced by users. Distinct conferences cannot usually be created with
bulletin board software (all 'public' messages are submitted to the one 'shared space')
and sequences of messages may include many messages which are unrelated to
discussion topic(s). While participants can complete their own structuring of messages
(such as filing messages under conference headings as messages are downloaded), the
processes involved can be onerous, especially with lengthy sequences of messages.
The 'public' message option does not usually enable users to control the placement of
their messages in specific conferences. Because of this limitation, bulletin board
software has not been used extensively for educational discussions and student
interactivity.

2.6 Computer Conferencing

Computer conferencing, like electronic mail, is asynchronous communication.
Messages are addressed to conferences (rather than individuals, as in electronic mail)
where they can be read by all members of the conference. Members of the conference
do not have to contribute or read messages at the same time. Messages can be
downloaded, printed and considered when it is convenient to do so. Contributions can
be drafted and edited off-line, and then added to the conference. All messages are
stored by the conference software so that the transcript of the 'discussion' (individual
messages) become a valuable record of the interactions which have occurred.

Numerous examples of computer conferencing software exist. Some widely used
titles are CoSy, PortaCOM, EIES, Participate (Parti), NotePad, VAXnotes and
Confer (Meeks, 1985; Sorensen, 1991). Recently developed software, like the
FirstClass software used in this case study, overcome major limitations encountered
by users of these software (eg, clumsy procedures to operate the software, text-only
messages), featuring an easy-to-use 'graphic user interface' and the capability of
including diagrams (graphics) in messages (see Chapter 2). Some situations in which
computer conferencing has been used are described in the following section.
3. CONFERENCING CONTEXTS

A review of the literature revealed that electronic networking has been widely used in community, business and educational settings. These applications are discussed in the following sub-sections.

3.1 Community networks

Electronic networks at local, regional (national) and global (international) levels have also been used by groups for various purposes (Mason, 1993a; Rheingold, 1993; Wingfield-Stratford, 1989). Interesting applications of CMC include ‘SeniorNet’, providing information, counselling and social communication for older adults (Furlong, 1989), and the Nordic Tele-Cottages network for community-based education and training (Albrechtsen, 1987).

These applications have not been reviewed in detail here since reported outcomes may not be relevant. The participants on these networks, and the purposes for which the networks are used, obviously differ from the initial teacher education course in this case study.

3.2 Business applications

The use of CMC in large organisational settings has been extensively investigated. A review of theoretical concerns and organisational applications has been provided by Rice (1990). This literature has not been reviewed here since the focus of studies (such as comparisons between face-to-face and electronic communication), the methodology followed (experimental and control groups), the subjects involved and the research questions investigated, are not relevant to this case study.

3.3 Education

The educational applications of computer conferencing include K-12 schooling, place-based tertiary teaching, distance education and teacher networks (Burge, 1992). Examples from each of these settings are examined in Section 4. The review of this
literature notes outcomes which are potentially relevant to the case study investigated in this thesis.

4. APPLICATIONS OF COMPUTER CONFERENCING

4.1 K-12 schooling

Many electronic information services providing access to databases are now available to primary and secondary students. An evaluation of student use of NEXUS (developed by the South Australian Education Department) by Rigby (1992), and a similar information service in the United Kingdom (Irving, 1991), document the educational benefits which can accrue when students have access to information unavailable locally.

While the use of CMC in K-12 schooling is outside the scope of the research completed for this thesis, it is worth noting the successful use of the medium for cooperative learning activities. As Wells (1993:81) comments:

one of the most significant educational resources is other children. CMC is being used . . . to support collaboration between classes of children across time zones, cultures and continents.

Cooperative learning activities mediated by computer networking have been a feature of educational projects on the AT & T Learning Network in the USA (Riel, 1990, 1993). Here, teachers and students are grouped in 'learning circles' - 'groups of classrooms from diverse cultural and geographic regions' - and engage in 'research on society's problems and global issues, in comparisons of historical, geographic, and environmental concerns, and in sharing local news, events and opinions with their peers' (Riel, 1990:1023). Another strategy - the 'electronic field trip' - has been used when students interact with experts (eg, scientists in Antarctica) in remote locations (Riel, 1995).

Learning circles and electronic field trips involve cooperative action to plan projects, collect and analyse data, discuss ideas and publish findings. These, and similar projects (Levin et al, 1989; Milner, 1988) have demonstrated that CMC can be a highly motivating medium for learning for primary and secondary students.
4.2 Place-based undergraduate courses

CMC has also been used in place-based undergraduate courses where online communication has replaced some face-to-face teaching. These are usually known as 'adjunct' or 'mixed-mode' applications of CMC (Hiltz, 1986, 1990).

It was considered to be important to review reports of mixed-mode applications here for two reasons. First, participants in these mixed-mode applications would have had similar levels of experience with face-to-face teaching as trainee teachers in this case study, and reports about these applications may include relevant insights about how these students view computer conferencing. Second, it could be anticipated that computer conferencing in both mixed-mode and initial teacher education courses would be used for similar activities (eg, discussion of prepared papers or projects). Hence, reports in the literature might provide insights into those activities which have good and poor outcomes in mixed-mode applications which could be usefully applied to computer conferencing in the 'school-based' program.

A substantial research project which compared courses offered fully or partially online with those based on face-to-face methods was completed at the New Jersey Institute of Technology (NJIT) from 1985 to 1987 (Hiltz, 1986, 1990; Hiltz & Turoff, 1990, 1993).

Online courses were taught using a 'virtual classroom' (VC), a computer-mediated communications system called EIES (Electronic Information Exchange System), and compared with courses taught in traditional classroom (TC) settings. 'Mixed mode' courses, which contained elements of VC and TC, were also included in this study. Quasi-experimental research designs and case studies were used. The primary research design was based on:

matched but 'nonequivalent' sections of the same course taught in the Virtual Classroom (VC) and in the traditional physical setting. The same teacher, text and other printed materials, and midterm and final exams were used; the classes are 'nonequivalent' because the students were able to select the delivery mode. (Hiltz, 1990:135)
A variety of methods were used to measure student perceptions of course content, the quality of instruction and course outcomes in online, traditional and mixed mode courses.

Despite methodological difficulties in holding constant all features of courses except the mode of delivery (VC, TC or mixed), and implementation problems including 'active resistance from many faculty members to allowing this experiment to proceed on their campus' (Hiltz & Turoff, 1993:477), the outcomes were considered to be 'generally positive, in terms of supporting the conclusion that the VC mode of delivery can increase access to and effectiveness of college-level education' (Hiltz, 1990:166).

Numerous hypotheses were investigated in the NJIT project. The following passage summarises two hypotheses and findings which are particularly significant for this case study in this thesis:

H2: Students will report that the VC, as compared to the TC, improves the overall quality of the learning experience.

Though the 'average' results supported these predictions, there was a great deal of variation, particularly among courses. Generally, whether or not these outcomes occur is dependent on a large number of interrelated variables, including variations among institutional settings, variations among courses, and differences in student characteristics, as well as mode of delivery (totally on-line or mixed mode).

H3: Those students who experience 'group learning' in the Virtual Classroom are most likely to judge the outcomes of on-line courses to be superior to the outcomes of traditional courses.

Those students who experienced high levels of communication with other students and with their professor (who participated in a 'group learning' approach to their course work) were most likely to judge the outcomes of VC courses to be superior to those of traditionally delivered courses. (Hiltz & Turoff, 1993:477)
While many of the findings were 'mixed and course-dependent' it is significant that 'the extent of collaborative learning was highest in the mixed-mode courses'. These courses were also among those most likely to be rated as 'better' than TC courses in terms of 'learning more' and 'getting more out of the course' (Hiltz, 1990:167). This suggests that the mixed-mode option, used in the 'school-based' teacher education course investigated in this case study, can enhance educational experiences, providing advantages which are unavailable in programs offered exclusively in face-to-face and online only modes.

In the NJIT research it was found that while 'the average student who participated in this experiment felt that both access to and the quality of the educational experience were improved' (Hiltz, 1990:169), this was not necessarily the case for all students and staff. Many lacked motivation to participate in online coursework components:

Students (and faculty) report that they have to spend more time on a course taught in this mode than they do on traditional courses. Students also find it more demanding in general, since they are asked to play an active part in the work of the class on a daily basis, rather than just passively taking notes once or twice a week. For some students, the VC can be perceived as an imposition rather than an opportunity. (Hiltz, 1990:168-9)

It was also found that students who were 'deficient in basic skills', and those with inadequate access to equipment, also performed poorly in online courses:

Students who are motivated to explore the VC are self-disciplined, and have average or better quantitative and verbal skills (as measured by tests such as the SAT) are likely to experience superior outcomes, compared with traditional courses. Students who lack this motivation and basic college-level skills, or who must travel to use a computer terminal for access, are more likely to drop out of an online course, to participate more irregularly, and to perform more poorly than they would in a traditional course. (Hiltz, 1990:169)

More recent research with mixed-mode applications of CMC at Indiana University (Bloomington) reported similar outcomes to the NJIT study. Here, computer conferencing was introduced in an attempt to reduce 'anonymity and passivity among
the students' (Hansen, et al, 1993:3) and 'to facilitate collaborative learning and enhance social interactions' in large college classes (p.1).

The use of computer conferencing in these classes was in the initial stages when an evaluation was completed. It was found that computer conferencing reduced the 'feeling of anonymity' and contributed to 'a sense of community' in some large undergraduate classes but problems were experienced in extending it to all classes. The evaluators concluded that:

Important problems . . . have yet to be addressed if the medium is to reach its full pedagogical potential. Besides issues of access and ease of use of the technology, the traditional structures of university teaching and learning create the biggest hurdles. Instructors will have to rethink their assumptions about teaching, and students will have to confront their entrenched expectations about classroom learning. (Hansen, et al, 1993:14)

Hansen, et al (1993) reported that instructor's 'distrust . . . [of] students' abilities to contribute significantly to course content', their 'orientation toward knowledge transmission . . . always implying right or wrong answers' and their lack of recognition of the social nature of learning, were some assumptions about teaching in large undergraduate classes which needed to change before the full potential of computer conferencing as an interactive communication and learning medium could be realised.

On the other hand, students often lacked the skills needed to collaborate effectively. For instance, when faced with tasks requiring group consensus, students:

quickly adopted an answer but failed to explore the issues. There was rarely an element of questioning, no struggle for a consensus, and little support from group members who had problems participating. (p.7)

Students were often critical of the additional workload which computer conferencing added to course requirements, lower individual grades obtained for collaborative activities and the difficulty of finding something new to add to conferences which contained numerous messages.
Computer conferencing has also been trialled in initial teacher education at the University of Michigan (Harrington 1992, 1993, 1995a, 1995b; Harrington & Hathaway, 1994). Here, computer conferencing has been used in a compulsory subject for elementary education majors to 'foster the development of critical reflection in prospective teachers' (Harrington, 1992:67). To encourage 'undominated dialogue', students were given 'anonymous identification numbers' so that the authors of messages could not be identified by other students. Participation in conferences was not compulsory.

The extent to which faculty and students participated in conferences was not reported. However, students who did contribute posted 25 messages (on average) throughout the semester.

It was concluded that computer conferencing had 'significant potential' for facilitating reflective discussions on course topics:

> characteristics of computer conferencing make it uniquely suited to generating the kinds of discussions that allow students to begin to develop the habits of mind and dispositions that lead to critical reflection. (Harrington, 1992:67)

These reports reveal that computer conferencing can facilitate collaborative learning and enhance communication for students enrolled in undergraduate courses in which face-to-face teaching is the usual mode of course delivery. However, the variable and course-dependent outcomes indicate that not all students (and staff) view computer conferencing as a beneficial innovation. For some undergraduate students, motivation (time and effort needed), access to equipment, academic and groupwork skills and the ways in which the medium was used in coursework learning activities, can influence participation in computer conferencing.

The implications of these findings about computer conferencing in undergraduate courses are difficult to assess in relation to this case study. Student characteristics (eg, years of tertiary study) and program features (eg, purposes for introducing computer conferencing) obviously differ in these courses and the 'school-based' program. However, the importance attributed to student motivation and skill levels in these

---

1 However, 'faculty knew who was assigned which number' (Harrington, 1992:71).
evaluations of undergraduate courses indicates that these may be important factors affecting participation. Hence, it was decided to investigate these student characteristics in this case study. The ways in which this was done - student ratings of the 'school-based' program and assessments of student's academic performance in the preceding three years of the course - are outlined in the following chapter in which methods used and data collected are described.

4.3 Distance education

There have been numerous applications of computer conferencing in distance education courses, the medium introduced to ameliorate the location, time and access constraints to communication between participants which are inherent in courses offered in the off-campus mode.

Distance education courses can be structured in many ways (Kaye, 1989:6-8; Mason & Kaye, 1990:15-16). Some universities, such as the British Open University (Mason, 1989a, 1989b; Thomas, 1989c) and Athabasca University in Alberta (Van Duren, 1989) use CMC to supplement multi-media course materials in subjects with large (over 1000) annual student enrolments. Other distance education courses (Burge, 1994; Davie, 1988, 1989; Harasim, 1987) are offered totally online to small groups of students enrolled in higher degree courses. There are also 'mixed-mode' institutions, such as the University of Guelph in Ontario (McCready, 1989) and the University of Victoria in British Columbia (Muzio, 1989), where CMC is used in distance education versions of on-campus courses.

Other distance education providers which have used CMC in course delivery include the Jysk Aaben University (Jutland Open University) in Denmark (Bang & Moller, 1990; Christensen, 1990; Dirckinck-Holmfeld, 1990; Nipper, 1989), the NKI and NKS colleges in Norway (Fjuk, 1993; Paulsen, 1989, 1990; Rekkedal, 1993; Soby, 1990), Deakin University in Australia (Evans & Newell, 1993; Reid et al, 1995) and EuroPACE, a consortium of industrial and university sites offering advanced and continuing education in Europe (Mason, 1993a; Zorkoczy, 1989). North American examples include the Electronic University Network (EUN), the New York Institute of Technology (NJIT), Connected Education and the Western Behavioral Sciences Institute (WBSI) (Feenberg, 1993; Haile & Richards, 1984; Meeks, 1987; Osgood, 1986). Other descriptions of the use of CMC in distance education courses are

The widespread application of CMC in the field of distance education has been based on the perception that CMC can facilitate interactive communication in the learning process between course participants. This enables new course development and maintenance 'models' to be used in distance education courses.

For instance, some writers (Henri, 1988; Nipper, 1989) refer to 'third-generation' distance education models which are considered to be distinctly different from 'first-' and 'second-generation' models. According to Henri (1988:89):

> The first- and second-generation models correspond respectively to correspondence courses and to distance teaching that makes use of the traditional media. The essential features of these two models are the relatively slow, scattered and limited nature of the interactions involved; the essentially individual nature of the learning procedures, in which the student assimilates knowledge by making use of the instructional and supervisory resources made available to him; and the limited role assigned to truly interactive communication (occasional face-to-face encounters and telephone calls).

Third-generation distance education provides the possibility of 'a fully interactive process of communication . . . in which the learning process is sustained by the dynamic of the social processes involved' (Henri, 1988:89).

Similarly, Harasim (1989:50) argues that 'online education' (that is, computer conferencing) 'represents a unique domain for educational activity'. While computer conferencing shares attributes with both face-to-face and distance learning, Harasim considers online education to be a new 'domain' for collaborative learning:

> Theoretical or practical models drawn from either domain are not themselves adequate to inform or explain activities in on-line education. It is necessary to approach on-line education as a distinct and unique domain. The group nature of computer conferencing may be the most fundamental or critical component underpinning theory-building and the design and implementation of on-line educational activities. (Harasim, 1989:51)
Other writers have predicted that CMC may lead to 'a new educational paradigm' based on a combination of features from classroom-based and distance education pedagogies. The 'convergence' (Hall, 1996) of these traditional methods and technology will enable new models, based on discussion, collaborative work, active learning and a 'sense of community', to emerge in distance education courses (Garrison, 1997; Mason & Kaye, 1989:23).


DT200 is a second year undergraduate distance education course with annual enrolments of over 1000 students. About 70 part-time tutors at regional centres provide student support, mark assignments, lead face-to-face tutorials and moderate online conferences (Mason, 1989a:121). The online component of the course uses the CoSy conferencing system, originally developed at the University of Guelph in Ontario, Canada.

The course is presented using print and other media. Computer conferencing is used to give students practical experience of the medium and to provide tutorial support. As part of assessed course requirements students complete an evaluation of CMC, based on questionnaire data collected from students, the content of conference messages, and readings presented in course materials. Tutor moderated conferences (25 students) discuss assignments, practical work and course issues. These are 'closed' conferences, designed to create 'a contained discussion area where students, having met at face-to-face tutorials, would feel confident to participate' (Mason, 1989a:118). Other 'open' conferences provide opportunities for all students, tutors and Open University staff to discuss course issues.

An evaluation of computer conferencing in DT200 in the introductory year (Mason, 1989a, 1989b) found a variety of views amongst students about the value of the medium. It was reported that 'about 60 to 70% of students returning questionnaires found conferencing less effective for contacting their tutor, getting help, socialising
and saving time and money in travelling'. Telephone costs and technical difficulties in accessing CoSy also restricted participation. There was a 'lack of significant activity in the 65 tutor conferences and the nature and amount of activity in the "national" conference' (Mason, 1989a:130). Other factors inhibiting student involvement were 'information overload' created by large numbers of messages, 'lack of time' to deal with these messages, and anxiety about sending messages to large public conferences. Relatively few students considered that the medium met social needs; 'only 157 of the 847 students [who returned questionnaires] said that conferencing was as good or better a means of 'socialising' as a face-to-face tutorial' (Mason, 1989a:134).

The main inhibiting factor in student participation was the limited role which computer conferencing played in coursework activities and assessed requirements. Students focused on compulsory requirements and ignored these optional conferencing sessions.

The evaluation (Mason, 1989a:145) concluded that:

> A balanced summary of the impact of CMC on this course in the first year would have to conclude that for the majority of students, tutors and course team members, computer conferencing was an interesting but marginal activity.

However, there was also evidence of high levels of involvement in computer conferences by some students. Data collected revealed that 'nearly 350 students of the 875 who uploaded the questionnaire found conferencing as good or better a means of getting help or moral support as telephoning their tutor' and 'nearly 375 could say that conferencing was as good or better a medium for intellectual exchange as a face-to-face tutorial' (Mason, 1989a:123). System-generated statistics for time online revealed that 1157 students used CoSy for more than one hour. Conferencing was also used for socialising with 52 conferences 'containing anywhere from 2 to nearly 1000 messages' (Mason, 1989a: 135). Interview data from students who used the medium extensively was also very supportive of conferencing in distance teaching and learning. This evaluation also concluded that:
For the committed or 'converted' minority ... there is little doubt that this medium was an exciting, innovative and satisfying way of participating in distance teaching and learning. (Mason 1989a:145)

Another Open University course to incorporate computer conferencing has been B885 ('The Challenge of the External Environment'). According to course materials, B885 was designed 'to make major use of computer conferencing as a central, integral part of its teaching' (Pearson & Mason, 1992:2). These uses included discussion of tutorial topics, case discussions, tutor-marked assignments (TMAs) and expert (guest) conferences. TMA02 specifically encouraged groups of 2-5 students to use CoSy to analyse data presented in case studies and prepare scenarios of possible outcomes. Marks awarded by regional tutors for this TMA were based on both group and individual use of computer conferencing.

An evaluation of this course (Pearson & Mason, 1992) revealed that CoSy was used extensively. Interest in the medium was high, with 68% of students (n=460) joining CoSy, 42% contributing messages and 25% reading only. Students made substantial use of CoSy to complete TMA02 and expert conferences were well supported with high numbers of students following the discussions in these conferences.

However, not all the expectations for introducing computer conferencing in B885 were fulfilled. While students made extensive use of CoSy until the submission date for TMA02, only limited use was made of conferencing for other TMAs and course issues.

These evaluations of DT200 and B885 indicate that large numbers of distance education students have participated in computer conferences when these have been part of course activities. Some students have used computer conferencing extensively and comment enthusiastically about the academic and social benefits of increased communication. This is sufficient justification for the inclusion of CMC in courses of this type. However, it would appear that the full potential of the medium has not been realised because computer conferencing has essentially been used in a marginal way, introduced to overcome some of the limitations of courses heavily based on print-based materials rather than as part of a new model for course delivery in distance education. As Kaye (1992b:95) notes:
the realization of the full educational potential of CMC in the Open University context would require the development of a new type of course design, with less emphasis being placed on pre-packaged materials, and more emphasis on the role of the tutor and on the contributions which students can make from their own knowledge and experience.

Kaye suggests that this new course design would take the form of an 'electronic seminar' based on extended discussion and collaborative work. This model would be particularly suited to postgraduate and specialist courses with low enrolments. In the remainder of this sub-section, some applications of this type are reviewed and the implications noted in relation to this case study.

Examples of distance education courses delivered entirely online include graduate courses at the Ontario Institute for Studies in Education (OISE) (Davie, 1988; Harasim, 1987), doctoral degrees in either clinical psychology or human organisational development offered by the Fielding Institute in Santa Barbara, California (Hansen & Gladfelter, 1995), and the Online Education and Training (OET) courses jointly run by the Open University and the London Institute of Education for teachers and trainers interested in conferencing technology (Mason, 1993b; Steeples et al, 1994).

Online activities in these courses have been designed to capitalise on the potential of CMC for group interactivity and collaborative learning. These include seminar discussions based on online presentations, debates, brainstorming exercises, working groups, collaborative writing tasks and plenary discussions. These courses have focused on conceptual content or issues, involving analysis, synthesis and evaluation rather than technical skills and mastery of detail in which the intellectual demands are mainly of the recall or application type (Hansen & Gladfelter, 1995).

Online courses of this type have many of the advantages previously noted in other distance education applications. Furthermore, published evaluations have been overwhelming positive about the quality of student experiences and course outcomes. For instance, students (typically in groups of 8-10) in online seminars conducted by the Fielding Institute valued the 'comradeship' (sic) which developed amongst participants and reported that they felt a 'greater sense of belonging to the program'
than in residential courses. They also enjoyed the academic challenges inherent in online collaborative work:

[Students] appreciate the diverse, scholarly perspectives represented, the timely nature of the feedback, and the opportunity to have an on-going dialogue with their critics. (Hansen & Gladfelter, 1995:7)

Characteristics typical of graduate students also contributed to the success of online activities. Students were highly motivated by the medium, choosing courses using this medium instead of residential courses. They were computer literate, and technical aspects of network connection did not pose difficulties. They also brought an 'academic orientation' to their graduate study which contributed to online activities. As Hansen & Gladfelter (1995:9) comment:

Fielding students are adult, Ph.D. candidates - mostly mature, self-reliant, successful professionals who, for a variety of reasons, desire further academic knowledge and credentials. They often bring a wealth of experience and wisdom to their studies and a willingness to tackle conceptual quandaries and real-world dilemmas. These attributes may be singularly suited to the student-centered, collaborative, more democratic and less-status orientated academic environment created in a typical CMC session.

The evaluations of both undergraduate distance education courses, where computer conferencing has been used to complement printed materials, and graduate courses offered totally online, have indicated the potential of the medium in distance education. Successful use appears to be heavily dependent on two factors - student characteristics and the nature of online activities. Those students most likely to use the medium are mature and self-directed, with well-developed research and writing skills. They are also computer literate and have ready access to necessary equipment. The outcomes of computer conferencing are rated most favourably by participants when collaborative learning strategies are used, where the focus is on procedural (conceptual, problem-orientated) rather than declarative (mastery of content) knowledge, and where the knowledge examined is based on personal research and experience.

These conclusions indicate that computer conferencing has the potential to be used successfully in a school-based initial teacher education course. Participants in such a
program, successful classroom teachers, fourth year trainee teachers or university teacher education staff have both the experience and the interest needed to contribute to computer conferences about teaching. School-based teacher education programs present opportunities to examine teaching concepts and issues and to discuss the 'real-world dilemmas' which confront teachers in their classroom interactions with children. These evaluations indicate that this is more likely to occur in online collaborative work about aspects of teaching rather than through structured courses in which computer conferencing is assigned an adjunct role in support of other activities or materials.

In the remainder of this sub-section, specific applications of computer conferencing involving experienced, beginning, and student, teachers are reviewed.

4.4 Teacher networks

4.4.1 Experienced teachers

Literature in the field of CMC often includes (brief) descriptions of electronic networks for teachers. These networks illustrate the range of uses of the medium - as a teaching tool for classroom-based activities with pupils, as a forum for inservice education programs, and as a support and discussion network for teachers in the field (Mason, 1991a). Examples of each of these applications are briefly described here. Other electronic networks for teachers, such as GC EduNET in Georgia (USA) (Wolpert & Lowrey, 1991), which are mainly electronic information services providing access to library resources, teaching materials and microcomputer software, are not discussed.

Electronic networks used by teachers for telecommunications projects with pupils are outside the scope of this literature review. However, it is worth noting that teachers often rate their own learning and contacts with other teachers as important outcomes of these projects. For instance, Riel (1993:235) found that when teachers involved in learning circles on the AT & T Network 'were asked to list the most important educational benefit of their participation, they placed their own professional development as more significant than the enhancement of student learning'.
Electronic networks have also been used in structured professional development courses, as an adjunct to printed materials and residential seminars. Here, computer conferencing is used for discussions about course content and issues, and to provide opportunities for collaborative projects. This is similar to the ways in which the medium has been used in many distance education courses.

North American examples in the literature include inservice training courses on the Big Sky Telegraph network in Montana schools (Odasz, 1992), science education programs for teachers from the Fairleigh Dickson University and the New Jersey Institute of Technology (Kimmel, et al, 1988), the LabNet project for K-12 science teachers hosted by America Online (Muscella & DiMauro, 1995; Spitzer & Wedding, 1995), independent study courses for teachers on telecommunications and information access provided by The University of Oregon and the International Society for Technology in Education (Schrum, 1992), and competency-based courses for vocational teachers sponsored by The Ohio State University (Norton & Stammen, 1990; Torres, et al, 1991).

European examples include the 'Staffroom' conference on CAMPUS 2000, a forum for general issues of interest to teachers in the United Kingdom (Mason, 1991a), and the PLUTO European Network project (Longworth & Gwyn, 1989).

Electronic communication as a support and discussion network for teachers is the application which most closely resembles the potential use of the medium in the 'school-based' program which provided the context for the research reported here. Several examples have been reported in the literature. These include the Science Teachers' Network trialled by the Educational Technology Centre at the Harvard Graduate School of Education (West & McSwiney, 1985), the European PLUTO project (Longworth & Gwyn, 1989) and the TeleNex network for English language teachers in Hong Kong (Lai & Ki, 1995; Tsui, 1995). Initial attempts to develop networks for these purposes in Western Australia (Keep, 1993) and New Zealand (Stewart, 1993) have been reported.

The largest (over 100 sites) and most sophisticated example is the School Renewal Network developed by the National Education Association (NEA) based in Washington, DC (Castle et al, 1990; Castle, McClure & Gillingham, 1991; Watts & Castle, 1992; Livingstone, 1991). This network provides teacher resources and
electronic mail, but it has promoted computer conferencing ('dialogic networking') to provide 'professional development, new learning, the dissemination of research and the transformation of schools' (Watts & Castle, 1992:685). In the 'Mastery in Learning Project' (and other innovative projects), participants in schools and teacher education institutions have exchanged knowledge and experience on topics related to school 'restructuring' and 'renewal'.

Using PStnet (People Sharing Information Network) computer software, 'dialogic networking' is organised into conferences, topics and sub-topics. An example of the conference structure and content (subject to change according to the interests and needs of participants) has been provided by Watts and Castle (1992:686):

The current conference structure includes 10 topics deemed critical to school restructuring: thinking, instructional strategies, school/classroom organization, curriculum, positive school climate, at-risk students, parent/community involvement, networking/technology, restructuring and student assessment. There are several sub-topics under each category and, within each sub-topic, hundreds of strands of dialogue on various issues, problems, and ideas.

An 'extremely significant' innovation has been the assignment of a 'prominent researcher' to each of the ten conference topics on the School Renewal Network. Despite misgivings about such a move (given the difficulties which teachers often experience in dealing with educational research), the linking of researchers and practitioners has been successfully based on 'the needs of users without the trappings of status and hierarchy'. According to Watts and Castle (1992:686):

Explorations of research, reflective dialogues on professional issues, and the sharing of experience are now everyday events on the School Renewal Network.

Moreover, networking has fostered 'individual affirmation, a sense of faculty/nness, and informed decision making' which has impacted on school restructuring and renewal.

From the experience gained on the School Renewal Network over a four year period, Watts and Castle (1992) have identified six conditions which facilitate teacher
participation in dialogic networking. Since the 'school-based' program in this case study attempted to involve teachers in reflective dialogue with peers, trainee teachers and university teacher educators these conditions were considered worthy of note here and incorporated, where applicable, into the design and maintenance of 'The Conclave'. The six conditions are briefly described in the following paragraphs.

(i) small personalised 'affinity' groups, 'likely to find a common, manageable focus for in-depth dialogue' should be encouraged.

Watts and Castle (1992) reported that teachers unaccustomed to reflective dialogue with peers, and uncomfortable with new technology, were hesitant about engaging in discussions with strangers on a large, impersonal network. They considered that:

Support and trust have to be built if reflective dialogue is to occur. Once a supportive climate is established, participants begin to challenge one another to ask bigger and harder questions. (Watts & Castle, 1992:687)

(ii) the technology should be 'humanized' with face-to-face site meetings, the sharing of participant's photographs and occasional telephone calls.

(iii) network facilitators are needed to provide various forms of advice. First, technical assistance to bring teachers unfamiliar with the technology onto the network. Second, conversational facilitators 'to help participants talk across role groups, frame issues, follow up on unanswered questions, summarise discussions, engage reluctant contributors, develop conventions (general rules for common use), and deepen the dialogue' (p. 687). This helps inexperienced users, who tend to write short, non-specific messages, frame messages which further discourse on the network. Third, 'local outreach' facilitators to develop structures and processes for training, disseminating information, and discussions about, and contributions to, the network. This was considered to be an important role where network participation was restricted to one microcomputer workstation.

(iv) the structures of the network should be 'empowering' - that is, the network should be easy to use, the focus of topics should be clear and 'all users should be considered equal in terms of their contributions to the dialogue, their access to information, and their input on network development' (p. 688).
(v) the network should take advantage of 'the principle of distributed expertise' with practitioners learning about 'the use of research and its adaptation to local contexts' and researchers learning about 'the myriad factors that discourage the use of research in schools' (p. 688).

(vi) Access to the network should be maximised. Watts and Castle (1992:688) consider that 'a sense of purpose, a belief in the network's relevance, and a willingness to take risks are important predispositions for active participation'. More practical, but important, factors include the location of hardware and the amount of time which teachers have to use it. Access to microcomputers at home was also found to increase network participation.

The successful partnership between researchers and practitioners in computer conferences, and the collegiality and collaboration between teachers on 'issues of substance' on the NEA School Renewal Network are particularly relevant to this case study. These outcomes indicate that teachers, with appropriate encouragement and support, can contribute to, and learn from, collaborative activities of this type. Productive partnerships between teachers and researchers can be developed. The NEA experience indicates that computer conferencing can be an effective medium for discussion on research, professional issues and classroom practices.

In the 'school-based' program, teacher trainees comprised the third grouping of participants. In the remainder of this sub-section, relevant literature about the use of computer conferencing with beginning and preservice teacher education students is reviewed, and the potential of the medium to contribute to the process of learning to teach is examined.

4.4.2 Beginning teachers

Two examples of electronic networking to provide induction support for first year teachers were found in the literature. One example was the Beginning Teacher Computer Network (BTCN) at the Harvard Graduate School of Education at Cambridge, Massachusetts (Beals, 1991, 1992; Merseth, 1991). This network provided guidance and support to education graduates (n=39) who obtained teaching
appointments, in dispersed locations, in middle and high schools in the year following graduation.

The network was designed to provide 'personal, emotional and technical support to beginning teachers' (Merseth, 1991:142). University faculty, graduate assistants and occasional invited experts joined beginning teachers in discussions about curriculum and teaching skills and strategies.

Beginning teachers were lent the necessary equipment and software for the initial year of teaching and used a toll free telephone number to contact the network.

Data collected in 1988 from a mail survey, software-generated statistics and structured interviews (n=10) revealed a little of the extent and nature of participation on the BTCN. Message counts were high (4200 messages for the year) and constant (108 messages each week), but separate counts for private (individual) and public (conference) messages, and for faculty and beginning teachers, were not provided. Hence, the extent to which beginning teachers used the conferencing facility to discuss curriculum and teaching issues cannot be determined.

However, data from questionnaires and interviews revealed that 'moral support', 'keeping in touch with friends' and 'reduce[d] feelings of isolation' were perceived as more important than discussions about curriculum and teaching issues. Merseth (1991:144) commented that:

The most striking result is that participants reported that the network was most effective in providing participants with moral support. All three needs related to formal teaching techniques - lesson and curricular planning, improving classroom management, and sharing teaching techniques - were rated significantly lower than was the network's effectiveness in providing moral support.

These data indicate that the BTCN provided 'moral support' for beginning teachers when messages remained confidential (available only to university faculty and beginning teachers) and where relationships had been established in the preservice teacher education course in the previous year. The extent to which electronic
networking was used as a forum for discussions about curriculum and teaching issues would appear to be uncertain.

Another network, sponsored by Boise State University Department of Teacher Education, for first-year teachers (n=25) appears to have much more successful in fostering discussions about teaching problems:

a teacher might post a message asking for suggestions for field trips or methods of incorporating cooperative learning in the classroom. Other teachers respond and each suggestion often seems to trigger even more ideas. The resulting information and interaction is rich and valuable. (Singletary & Anderson, 1995:142)

This network was also reported to have encouraged reflective approaches to teaching and problem-solving:

The process of posting a question or describing a difficult situation in a discussion forum and then waiting and reading, and perhaps responding to the comments of other participants over a period of days or weeks seems to produce significant analysis, reflection on the teaching process, and problem solving. (Singletary & Anderson, 1995:145-6)

Unfortunately, the reasons why this network was successful in attracting participation and in fostering reflective approaches were not analysed in this report.

4.4.3 Initial teacher education

Electronic networking in initial teacher education courses is briefly mentioned in Attwood (1994), Collis (1995), and Levin (1994). More detailed reports were also located in the literature.

At the Curry School of Education at The University of Virginia, an electronic network known as 'Teacher-LINK' has provided electronic mail and discussion forums for teachers, student teachers and education faculty (Bull, et al, 1989, 1992). Participants were provided with laptop computers, telephone lines were installed in each teacher's classroom and access to the network provided for student teachers at the university
and in some dormitories. Student teachers were reported to have used the network during teaching internships to 'share a lesson plan with an advisor, obtain support from peers during a stressful period, and share ideas with one another' (Bull, et al, 1989:28) but information about the extent and nature of educational discussions was not reported. Teacher-LINK would appear to have been more extensively used for instructional applications and not as a forum for conferencing between teachers, student teachers and teacher education faculty.

Another application - 'MICH:TeacherEd' - at the University of Michigan (Canning & Swift, 1992) has also been used for computer conferencing between student teachers, teacher education faculty and 'mentors' (classroom teachers). Participation in conferencing was a requirement for student teachers during the internship. Typical conference topics were 'teaching strategies', 'classroom activities', 'student motivation' and 'classroom management'.

Data collected revealed high levels of participation in conferences. For instance, during one term, 151 participants spent 745 hours online and subscribed 2223 messages to conferences. Student teachers were reported to be 'very positive' about the 'usefulness' of conferencing and its contribution to their 'professional growth and development'. However, they were critical of limited participation by mentors and university faculty.

A large scale application of electronic networking has been a feature of the postgraduate course in initial teacher education (PGCE) at the Open University (UK) since 1994. In this course, 1,100 distance education students (primary and secondary), each provided with a microcomputer for the duration of the course, have used computer conferencing to discuss classroom management, assessment, teaching resources, employment and other concerns related to teaching. Initial reports (Selinger, 1994, 1996a, 1996b) based on surveys indicate that students (n=553) find 'getting information' (67%), 'moral support' (42%), 'keeping in touch with students' (37%), 'reflection' (33%), 'keeping in touch with tutor' (25%), 'sharing teaching resources' (18%) and 'help with planning' (16%) the 'Valuable/Fairly Valuable' benefits of the network. In another survey, 36% of 262 students considered 'the subject conferences the most valuable'. Enhancing conferences with guest speakers, discussion of seminar papers and tutor-initiated topics are currently being trialled (Selinger, 1996b:4).
At the University of Alberta (Edmonton), student teachers (n=4) in 1992 were provided with laptop computers, printers and electronic mail accounts (including access to the Internet) for personal use during the field experience component of the undergraduate (secondary) course. It was expected that access to this equipment would:

encourage peer-support groups and collaborative planning through Email and computer conferencing; one-to-one communication with university supervisors and reflective journaling through both individual, peer-group, and whole group computer conferencing; the establishment of relationships with teachers and classrooms before and after the practicum; and the use of information resources, such as Internet, in the preparation of teaching materials and in the actual teaching accomplished in the classrooms. (Campbell, et al, 1995:292)

Since some of these anticipated uses of the network were similar to those envisioned in the 'school-based' program investigated in this case study, the outcomes of this project are of particular interest.\(^1\)

Despite experience with the network before the practicum, and access to 'a mentor/coach who would work to develop a more personal, peer relationship both in person and electronically' (p. 296), electronic communication was not maintained during field experiences:

we encountered resistance to using the technology in the actual school setting. Frequency of communications fell off almost as soon as the practicum began and ... eventually disappeared entirely. (Campbell et al, 1995:297)

Reflecting on the outcomes of this project Campbell et al (1995) noted that the nature of 'partnership arrangements and collaborative agreements between universities and schools systems' were fundamental to the use of new technology:

\(^1\) The author of this thesis recognises that the small sample (n=4) investigated by Campbell, et al (1995) makes it difficult for generalisations from this study to be considered robust.
The promise of communications technologies in teacher education will become the reality only if universities and schools can successfully recast their relationships. (Campbell et al, 1995:302)

Four components of partnering - 'forming alliances', 'capacity for change', 'permeable boundaries', and 'co-operative enterprise' - were considered to be particularly important in the adoption and use of new technology.

First, alliances needed to be formed which benefited all participants - universities, schools and student teachers:

In some form the universities, the schools, and the student teachers must form an alliance that is value-added for all three parties. These alliances must be formed to solve commonly held problems and exploit mutual opportunities. Teacher education that involves these three groupings is not a borderless, seamless enterprise but the advent of these communication technologies is moving us inexorably toward it. (Campbell et al, 1995:302)

Second, the parties needed to capitalise on technological opportunities and change existing educational practices:

An impediment in fuller utilization of the technologies is the obvious immaturity of the parties to conceptualize the opportunities to do better. There seems little doubt that these partnering technologies could have far-reaching impact on teacher education practices, but that contrasts sharply with the capacity of all parties to absorb such potential changes. Education in general and teacher education in particular have always operated as hierarchic systems, that is, some part of the system provides the executive function... [This is not] a useful model for functioning in the introduction of technologies that enable participants to do things that they have historically not been able to do. It is not a useful model because there is no one there to provide the executive function. (Campbell et al, 1995:302-3)

Third, permeable boundaries between the participants are needed if successful partnering using new technology is to occur:
When the participants in the educative process are independent actors with definitive functional boundaries, many of the real or potential capabilities of individuals are not fully utilized. With the openness and integration of function that is possible in these new communications technologies, individuals and small groups are empowered to act and create value in the educative process. (Campbell et al, 1995:303-4)

Fourth, participants needed to form a 'co-operative enterprise':

the promise of the new communication technologies will be realized only when the participants are willing and able to form a co-operative enterprise. This will be a co-operation borne not of obligation or derived from moral principles but emerging from mutual self-interest. (Campbell et al, 1995:304)

These comments on shared commitment to (re)defined educational practices, more relaxed functional boundaries between the responsibilities of participants and a co-operative enterprise based on mutual self-interest were considered to be particularly relevant when the nature and extent of use of the electronic network investigated in this case study was assessed. Hence, the work of Campbell et al (1995) is considered further (Chapter 7) when conclusions reached in this case study are discussed more fully.

CONCLUDING COMMENTS

This chapter has reviewed numerous applications of computer conferencing and identified those factors which impact on the use of the medium in other contexts. The limited number of applications in teacher education, including initial teacher education, has been noted. Hence, this case study, in drawing on the work of other researchers, also extends knowledge in the field. There are three ways in which it might be considered to have done this. First, data presented and discussed provides information on which the efficacy of the medium in initial teacher education can be assessed. Second, the investigation of computer conferencing in initial teacher education enables ideas held about the medium to be tested and evaluated in a new field. Third, in focusing on the use of computer conferencing in initial teacher education, the case study directs attention to potential uses of the medium in professional education and training in other fields (nursing, social work, medicine). This will increase awareness
of the potential of computer conferencing beyond the educational applications (adjunct and distance modes) which have now been extensively investigated and reported.

In the next chapter, the research questions used to focus this case study are outlined and clarified. The methodology used to investigate these research questions are also elaborated.
CHAPTER 4  RESEARCH QUESTIONS AND METHODOLOGY

INTRODUCTION

In previous chapters, the context of this case study has been developed and discussed. In Chapter 1, the theoretical framework for the research completed in this case study was outlined by drawing on perspectives about school-based initial teacher education, and the potential of electronic networking for sharing ideas about teaching (audience and notation) and learning from experience (reflection). The intended ('first level') and unintended ('second level') effects of the application of new technology were also recognised. In Chapter 2, the planning and implementation of the specific 'school-based' initial teacher education course, which provided the context for this case study of electronic networking, was outlined. In Chapter 3, the location of this case study within the research literature on electronic networking was identified and clarified.

With the location of this case study established within theoretical perspectives, a specific context, and other research in the field, it is now appropriate to state the research questions which were investigated in this case study. This chapter is also an appropriate place to outline the research design followed, data collection techniques used, the ways in which data was analysed, and the ethical issues involved in the research which was completed. Where necessary, issues arising about these aspects are discussed, and justifications provided for decisions taken.

RESEARCH QUESTIONS

The strategic question investigated in this case study can be stated in the following broad terms:

What were the 'first level' and 'second level' effects of introducing electronic communication in an initial teacher education course, and how can these be explained?

First level effects relate to 'efficiency' or 'productivity' benefits. Hence, the research investigated whether the perceived benefits of computer communication were evident
in this example of electronic networking. The following research questions were investigated:

**audience**
- Did a public audience exist on the electronic network?
- Was this audience comprehensive? Did it include teachers, trainee teachers and university tutors?
- Was 'active' participation (contributing messages) evident?

**notation**
- Was the network used to record ideas and discussions about teaching?
- What was the content of messages on the network?

**reflection**
- Was the network used to share information about curriculum and teaching?
- Did examples of collaboration between participants emerge?
- Were multiple perspectives about curriculum and teaching evident in messages?

Second level effects result from changes in attention, social contact and interdependence. The following research questions were investigated:

- What was the impact of the network? What were the advantages and disadvantages of network participation?

- What were the contextual factors which influenced participation with the network audience and the notation of ideas about teaching?

- What is the potential of electronic networking? How could perceived benefits be enhanced and restrictions minimised?

In investigating these questions, perspectives were sought on the factors involved in integrating electronic networking into initial teacher education courses (which might also be relevant in education and training in other professional fields). Specifically, it was anticipated that insights about the characteristics of courses which could utilise the opportunities presented by electronic networking, and the skills required by participants to capitalise on these opportunities, would emerge from the case study. In
addition, the research completed would present an opportunity to examine the extent to which characteristics of the medium - such as text-based communication and the archiving of messages - were considered to be advantages or disadvantages when used in a course of professional education and training.

RESEARCH DESIGN

In order to investigate the use of computer conferencing, several research designs were considered.

Empirical experimentation has been used to investigate various aspects of computer-mediated communication. For instance, Kiesler and associates (Kiesler, et al, 1984; Kiesler & Sproull, 1992; Siegal et al, 1987) have used standard experimental designs involving random assignment of subjects to control and experimental groups to investigate participation, interaction and decision-making among face-to-face and computer-mediated groups in laboratory conditions. Similar studies in terms of methodology and content have been reported by Adrianson & Hjelmquist (1991), Lea and Spears (1991) and Weisband (1992).

Experimental methodologies were not considered appropriate to the proposed research because randomly assigning students to 'matched' courses was neither ethical nor feasible (Hiltz, 1990:152; Mason, 1992a:111), even if it had been assumed that this was possible in non-laboratory conditions.

Three other designs 'relevant to evaluating student outcomes from telecourses' (attributed to Shavelson et al, 1986) have been identified by Hiltz (1990:153):

1. 'Uncontrolled Assignment to Form Nonequivalent Groups', in which students self-select into tele-courses or traditional courses. 'Before' and 'after' knowledge and skills are measured.

2. 'Patched-up Design' is 'appropriate when institutions regularly cycle students through the same course, such that students from one cycle can serve as a control group for students from another cycle'.
3. 'Case Study Methods' provide narrative (descriptive and qualitative) accounts.

'Uncontrolled assignment to form nonequivalent groups', or 'quasi-experimental design' (Cohen & Manion, 1985:192), was chosen by Hiltz (1990) in her study of courses taught using the 'virtual classroom' and 'traditional classroom' modes of delivery at the New Jersey Institute of Technology (see Chapter 3). The same design was used by Black et al (1983) in a study (reviewed later in this chapter) of discourse on an electronic message system and in a regular classroom.

In planning the 'school-based' program, the Planning Committee decided that four schools would be invited to participate. Microcomputers, and access to 'The Conclave', would be available in each school. Hence, quasi-experimental designs were never an option which could be considered.

The 'patched-up design' was never a practical design. It is not an appropriate design to investigate the research questions in the present form.

The 'case study method' was considered to be the most appropriate way to investigate the use of the electronic network in the 'school-based' program. This methodology has been used extensively in other investigations of computer conferencing applications (Davie, 1988; Harasim, 1987; Mason, 1989b).

Case study research uses observational techniques to describe and interpret events in a specific case (or cases). It has been described by Cohen and Manion (1985:120) in the following terms:

the case study researcher typically observes the characteristics of an individual unit - a child, a clique, a class, a school or a community. The purpose of such observation is to probe deeply and to analyse intensively the multifarious phenomena that constitute the life cycle of the unit with a view to establishing generalisations about the wider population to which that unit belongs.

Participant observation, in which 'the observer engages in the very activities he [or she] sets out to observe' (Cohen & Manion, 1985:122), was used in this case study.
This method of observation provided direct experience with the situation being investigated and significant opportunities to collect data about it.

In relation to the 'school-based' program and the electronic network ('The Conclave'), participant observation was possible in a variety of ways: students and classroom teachers were observed as they learnt about, and initially used, features of the communications software; messaging and conferencing on 'The Conclave' was constantly monitored (as Administrator of the network); student meetings about the 'school-based' program were attended; and periodic visits were made to each school site to talk with trainee teachers and classroom teachers about the electronic network and to provide assistance, as requested, about projects developed by trainee teachers. Other data became available through participation in regular meetings of the Planning Committee responsible for the development and co-ordination of the 'school-based' program, and from informal discussions with colleagues (university staff and liaison lecturers) and trainee teachers about their involvement in the program and their experiences with electronic networking.

While participant observation can provide extensive data, collected over an extended period and from various sources, the subjective nature of these data must be recognised. Cohen and Manion (1985:125) have reported that:

> The accounts that typically emerge from participant observations are often decried as subjective, biased, impressionistic, idiosyncratic and lacking in the precise quantifiable measure that are the hallmark of survey research and experimentation.

These concerns may arise as a result of the observer's close involvement with participants over an extended period:

> Fears that the observer's judgement will be effected by his [or her] close involvement in the group relate to the internal validity of the method. How do we know that the results of this one piece of research represent the real thing, the genuine product? (Cohen & Manion, 1985:125)
In this particular case study, the researcher was closely involved in the events he was seeking to investigate and report. This involvement, outlined in more detail in Chapter 2, included:

- chair of a committee of teacher education staff which initially discussed the fourth year 'school-based' program and drafted the subject proposal subsequently approved by University committees;

- member of the Planning Committee which implemented the 'school-based' program and co-ordinated its development;

- developer, and Administrator, of the electronic network. This role included setting-up and maintaining microcomputer equipment in schools, creating individual accounts, initial inservice training of participants and assistance (as required) with using the network, and maintaining the network (eg, creating user accounts, setting-up conferences, uploading documents).

Given this close involvement of the researcher in the events which would be described and interpreted, attention was given to the internal validity of the research which would be completed.

In an effort to overcome concerns about the representativeness of reported events and the interpretations placed on them, case studies can ensure that all participants are included. Kling (1987) recommends that social analyses of the adoption, development and use of computer technology should draw 'large boundaries' to include all significant participants. Case studies can also make use of collaborating sources of information, as Waggoner (1992b:142) notes:

> The single case study method can accommodate a wide variety of quantitative and qualitative information that impact upon and that emerge from the examination of a contemporary phenomenon in its real-life context.

The inclusion of additional sources of information has been a feature of case studies of computer conferencing applications (Davie, 1988; Harasim, 1987; Mason, 1989b) and it was decided to follow a similar approach, and use similar sources, to ameliorate internal validity in the case study of the 'school-based' program. The additional data
used, and issues concerning their collection and interpretation, are clarified in the following section.

DATA COLLECTION

In addition to observations collected as a participant, other data used in this case study originated from six sources: (i) software-generated statistics; (ii) printed documentation; (iii) University sources; (iv) questionnaires; (v) interviews with participants; and (vi) content analysis of conference messages.

(i) software-generated statistics. Software compiled statistics on (a) user contacts with the network, and (b) the number and frequency of messages sent, were tabulated. These data provided quantitative data on the usage made of the network.

(ii) printed documentation. Printed sources of information about various aspects of the 'school based' program used were:

- documentation about each school site originally submitted by schools to support 'expressions of interest' in joining the 'school based' program;

- minutes of meetings of the Planning Committee which developed and co-ordinated the 'school-based' program;

- the Participant's Folder issued to all participants;

- a User Guide to the 'The Conclave' (Appendix A);

- published accounts about the 'school based' program.

Many of these printed sources were used extensively in the preparation of Chapter 2.

(iii) University sources. Academic transcripts for each trainee teacher were obtained from University records if the trainee teacher agreed and signed a formal release. Letter grades awarded for subjects completed in the previous three years of the course were assigned a numerical value and a listing of students in ranked order was prepared.
(vi) questionnaires. Quantitative data from responses to printed questionnaires (Appendix B) distributed to all participants were also gathered. All participants received Sections A to D of the questionnaire. Trainee teachers also received Section E containing questions about the 'school based' program.

Items on the questionnaire were designed to collect data related to research questions. Published questionnaires (Hiltz, 1990; McConnell, 1990) were used as a guide in the writing of specific items.

Section A (Items 1-4). These items sampled attitudes to the use of microcomputers since it was anticipated that personal predispositions towards this technology might influence use of the electronic network.

Section B (Items 5-10). These items sampled opinions about the value of training and documentation about the network.

Section C (Items 11-14). These items provided data about the communications software used and user's assessments of their degree of familiarity with it.

Items in Sections B and C were included because it was anticipated that assessments about (a) the ease of using the software, and (b) initial training and help available, would influence usage of the electronic network.

Section D (Items 15-28). These items focused on the conferencing feature. In this section, users were asked about their perceptions of the value of the medium and the factors which influenced their participation in conferences on the network. These items provided data on participation and the effectiveness of the medium.

Section E (Items, 29-36, trainee teachers only). These items were designed to gather data on students' subjective assessments of the 'school based' program. These items sampled students' interest in the program, the activities they completed, the workload involved and the perceived benefits of the time spent in schools. These items were included because it was considered that assessments about the total program might be important in influencing the extent to which trainee teachers were willing to become
involved in specific parts of it; that is, positive assessments of the program would lead to higher levels of involvement in electronic networking than negative assessments.

The methods used to analyse questionnaire data are outlined in the following section (Data Analysis).

(v) interviews with participants. Face-to-face interviews were recorded with 77% (n=20) of trainee teachers, 67% (n=8) of classroom teachers, and 80% (n=4) of university staff who had been assigned user accounts on 'The Conclave' and who could be contacted. All participants contacted agreed to be interviewed. Transcripts of interviews were prepared.

It was decided to interview as many participants as possible (rather than a predetermined selection) because: (a) it was practical to do so, and (b) a potentially more detailed and varied database of participants' views would become available from which generalisations could be developed and supported about this application of electronic networking.

The purpose of the interviews was to explore the circumstances which influenced participation on 'The Conclave' and perceptions about the value of the medium in a 'school based' program. Six questions, related to the research questions (outlined at the start of this chapter), were formulated. These questions were:

- In what ways, and to what extent, did you use 'The Conclave'? [Audience]
- What factors influenced your participation on the network? [Audience]
- What were the benefits to you of having a network like this available? [Notation]
- What were your impressions about the conferences on 'The Conclave'? [Notation]
- What features of the medium make it an effective or ineffective way to discuss issues which might arise in a 'school based' program? [Reflection]
- In what ways could electronic networks be used more effectively in a 'school based' program? [Second level effects]

At the conclusion of each interview brief notes were made about the ways in which the interview had proceeded. Issues which emerged, which might be raised in other interviews, were also noted. Hence, the questions formulated in advance were used as a guide to the way in which the interview was structured; the actual questions asked...
also influenced by understandings arising from the analysis of previous interviews and issues introduced by interviewees.

Transcripts of interviews were prepared. The methods used to analyse these transcripts are outlined in the following section.

(vi) content analysis of messages. Printed copies were made of all conference messages. A discussion of different approaches to 'content analysis', and the method used to analyse messages in this case study, are included in the following section (Data Analysis).

DATA ANALYSIS

Questionnaire Data

Conventional means were used to analyse and present questionnaire data. The responses to each item on the questionnaires returned were entered on a spreadsheet. Totals and percentages were calculated (using appropriate formulae), and then charted. These charts, which present the responses of trainee teachers, classroom teachers and university tutors separately, are displayed in Appendix C.

Interview Data

Transcripts of interviews were analysed using NUD•IST (Non-numerical Unstructured Data Indexing Searching and Theorizing), computer software designed to facilitate searching and indexing of unstructured data for qualitative analysis (Qualitative Solutions & Research, 1994; Replee Pty Ltd, 1992). Software of this type is now widely used in managing and categorising qualitative data (Bryman & Burgess, 1994; Fielding & Lee, 1991; Holbrook & Butcher, 1996; Miles & Huberman, 1994; Weitzman & Miles, 1995).

The following procedures were followed when analysing interview transcripts using NUD•IST:

• transcripts were formatted according to recommendations presented in software documentation. A line of text was selected as the 'text unit' for indexing purposes.
transcripts were introduced (imported) into NUD•IST for analysis as 'online' documents.

each transcript was analysed in turn. When significant ideas were recognised in a transcript, the relevant lines of text ('text units') were highlighted and indexed at existing or new categories (nodes).

the index categories (nodes) were created to categorise the 'text units' selected from the transcripts. In the initial stages of the analysis, nodes were frequently amended (added and deleted) to obtain a suitable system for data indexing. The index categories (nodes) were organised into 'trees of nodes' (category, sub-category, etc) to obtain an appropriate representation (display) of categories.

in all, 45 nodes were created to index interview data. Data was indexed in terms of participants (trainee teachers, classroom teachers and university staff), then in terms of the factors which members in each group reported had influenced their participation on the network. The data grouped under each node is reported in Chapters 5 and 6 where factors influencing participation on the network are discussed in detail.

Content Analysis

Computer conferencing software stores all messages contributed by participants. These data are particularly valuable for research purposes as they are reliable (recorded accurately), valid (a primary source of data 'original to the problem under study' (Cohen & Manion, 1985:55)) and easily obtained (recorded automatically and available in electronic or printed form).

Many evaluations of computer conferencing include quantitative data collected by direct (eg, software-generated statistics on usage) or indirect (eg, questionnaires) means. Data from conference transcripts have rarely been used. This has been noted by Mason (1992a:113):

The most obvious data available to conferencing evaluators - the transcript of all conference interactions - is paradoxically the least used. There are
astonishing few comments, let alone analyses, in the literature of this central core of the whole enterprise.

The reasons for the limited use of transcripts may include (a) the demanding, time-consuming nature of the task involved in reading the transcripts, and (b) the lack of appropriate methods to investigate and interpret the content of conference messages. However, given the potential value of transcripts in investigating notation and reflection, it was decided to investigate further the ways in which these data could be utilised in this case study.

Investigating and interpreting conference transcripts involves some form of 'content analysis'. Several examples of 'content analysis' have appeared in the literature about computer conferencing and these were reviewed to explicate the methodology involved in each case and the nature of the data which might be collected. These examples of 'content analysis' have been grouped into four categories - (i) quantitative, (ii) descriptive, (iii) structural and (iv) qualitative - for discussion purposes here.

(i) Quantitative

Content analysis has been defined as 'a research technique for the objective, systematic and quantitative description of the manifest content of communication' (Bowers, 1970:291, quoting Berelson, 1952). In psycholinguistic, rhetorical and literary research, the method has a number of clearly defined steps designed to test hypotheses about relevant research problems. The steps involved have been outlined by Bowers (1970:293):

(1) formulating general hypotheses; (2) selecting the sample of messages to be analysed; (3) selecting categories and units; (4) if necessary, formulating judgmental procedures; (5) if necessary, selecting a control or normative sample of messages to be analysed; (6) reformulating general hypotheses in terms of categories and units; (7) selecting the criterion for accepting or rejecting hypotheses; (8) tabulating; (9) applying the criterion.

In relation to computer conferencing messages this procedure could be used in vocabularly and syntactic analysis, and estimations of readability, to quantify (eg,
frequency counts of words and sentences) structures occurring in written text (Moe, 1980).

One example of this type of 'content analysis' was found in the literature. Smeltzer (1992) used quantitative analysis to examine messages selected from bulletin board systems. The questions investigated concerned relationships between (a) structural characteristics of messages such as message length (number of words and sentences, average sentence length), message complexity (number of polysyllable and 'type words' present) and message readability (using an available index), and (b) message intent (information requesting, information giving and information neutral). Messages were assigned to one of three bulletin board categories (technical, educational, general). Smeltzer (1992) found that 'messages orientated to information giving and requesting generally predominated, although information neutral messages were used frequently in the general boards' (p.53) and that 'whenever the purpose of the message was to give information, the message length, the message complexity, and the message readability all increased' (p.54).

Another application of 'content analysis' has been outlined by Henri (1992). She describes her approach as 'qualitative' (p.122) to distinguish it from the usual practice of gathering quantitative data on participation (eg, number of messages, hours online); however, since the analysis of conference messages is based on criteria established a priori (p.123) and involves the counting of 'statements corresponding to units of meaning' (p.126) in messages, the data collected are quantitative in nature. Hence, an outline of her approach has been included in this sub-section.

Henri maintains that 'content analysis' should focus on the 'social and cognitive processes at work in and among the learners' (p.118) so that educators can support individual and group participation in computer conferences:

Content analysis, when conducted with an aim to understanding the learning process, provides information on the participants as learners, and on their ways of dealing with a given topic. Thus informed, the educator is in a position to fulfil his [her] main role, which is to offer immediate support to the individual and the collective learning process. (Henri, 1992:118)
Henri developed an 'analytic framework' of five 'dimensions' - participative, social, interactive, cognitive and metacognitive. The framework, and 'indicators' of each dimension in conference messages, are outlined in Table 4.1.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Definition</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participative</td>
<td>Compilation of the number messages or statements transmitted by one person or group</td>
<td>Number of messages</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Number of statements</td>
</tr>
<tr>
<td>Social</td>
<td>Statement or part of statement not related to formal content of subject matter</td>
<td>Self-introduction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verbal support</td>
</tr>
<tr>
<td>Interactive</td>
<td>Chain of connected messages</td>
<td>'I'm feeling great ...'</td>
</tr>
<tr>
<td></td>
<td></td>
<td>'In response to Celine ...'</td>
</tr>
<tr>
<td></td>
<td></td>
<td>'As we said earlier ...'</td>
</tr>
<tr>
<td>Cognitive</td>
<td>Statement exhibiting knowledge and skills related to the learning process</td>
<td>Asking questions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Making inferences</td>
</tr>
<tr>
<td></td>
<td>Statement related to general knowledge and skills and showing awareness, self-control and self-regulation of learning</td>
<td>Formulating hypotheses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>'I understand ...'</td>
</tr>
<tr>
<td></td>
<td></td>
<td>'I wonder ...'</td>
</tr>
</tbody>
</table>

The first two dimensions are relatively straightforward. In the participative dimension, quantitative data are collected on the number of messages, and the number of statements in messages related to the topic of the conference. The social dimension includes 'any statement not related to the formal content of the subject matter' (p.126).

The other dimensions - interactive, cognitive and metacognitive - are more complex, both in terms of the theoretical assumptions on which they are based and the multiple criteria which are developed to classify statements in conference messages. For illustrative purposes, an outline of the cognitive dimension is presented here.
In the cognitive dimension, Henri attempted to identify 'the elements within messages which would tell us something about the ways people learn' (p.129). She selected 'reasoning skills', from among the many cognitive skills associated with learning processes, for further analysis. The reasoning skills, and examples (indicators) from conference messages, are shown in Table 4.2.

**TABLE 4.2: CRITERIA TO ANALYSE REASONING SKILLS (HENRI, 1992)**

<table>
<thead>
<tr>
<th>Reasoning Skills</th>
<th>Definitions</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary clarification</td>
<td>Observing or studying a problem, identifying its elements, and observing their linkages in order to come to a basic understanding.</td>
<td>Identifying relevant elements. Reformulating the problem. Asking a relevant question. Identifying previously stated hypotheses.</td>
</tr>
<tr>
<td>In-depth clarification</td>
<td>Analysing and understanding a problem to come to an understanding which sheds light on the values, beliefs, and assumptions which underlie the statement of the problem.</td>
<td>Defining the terms. Identifying assumptions. Establishing referential criteria. Seeking out specialised information.</td>
</tr>
<tr>
<td>Inference</td>
<td>Induction and deduction, admitting or proposing an idea on the basis of its link with propositions already admitted as true.</td>
<td>Drawing conclusions. Making generalisations. Formulating a proposition which proceeds from previous statements.</td>
</tr>
<tr>
<td>Strategies</td>
<td>Proposing co-ordinated actions</td>
<td>Deciding on the action</td>
</tr>
</tbody>
</table>
Henri reported that the application of these criteria yielded only 'superficial results' about 'the presence and frequency of use of these skills' (p.130) in message content. Therefore, a second set of criteria (not outlined here) about 'surface' and 'in-depth' processing of information were developed. It was then possible to identify the skills linked to critical reasoning and then to evaluate the level of information processing applied by learners in each of these skills (p.131).

This partial outline of how skills in the 'cognitive dimension' might be evaluated illustrates the complexity which can be introduced into message analysis. The data collected (counts of 'units of meaning' in messages) can then be interpreted to devise generalisations; in this case, about 'critical reasoning' and the learning process.

(ii) Descriptive

In some evaluations, 'content analysis' has been used to provide descriptive information about conference messages. For instance, Haile and Richards (1984) looked at 'teleconferencing' messages in two behavioural science courses at the New York Institute of Technology and established categories ('class management', 'technical assistance', 'motivation' and 'course content') based on types of messages. They then counted the number of messages (units) contributed by instructors and students which contained comments of each type. The percentages of messages in each category were then calculated.

A similar approach was followed by Kaye (1992b:90) to describe the messages from two conferences in the DT200 course at the Open University:

A content analysis of messages in two of the conferences showed that the single largest category of messages (40% of total messages) concerned course content and concepts; messages concerning technical and administrative issues
formed the next largest category; about 15% of all messages were 'chat'
messages, and messages about CMC as a process totalled also around 15%.

According to Kaye (1992b:90), these data showed 'an encouragingly low proportion
of 'chit-chat' messages ... and a relatively high proportion of messages related to
course themes and issues'.

However, reports like these provide limited data about conference messages and
further explanations are usually needed to interpret and qualify the information
provided in specific categories. For instance, Kaye makes the following comments on
the 40% of messages about course themes and issues:

a large proportion of the course-related messages was at the level of
information exchange about, and broadening of, the material covered in the
course units, typified by sequences of two or three messages in response to a
query or problem raised by a student. Occasionally, protracted sequences of
messages building on each other, going deeper into specific concepts, and
developing into true discussion threads, did emerge, but this was not the
typical picture. (p.90)

Unfortunately, the (apparently) precise, initial quantification of messages does not
extent to the comments made, where terms like 'a large proportion' and 'occasionally'
remained undefined. Moreover, more intriguing questions - about 'protracted
sequences of messages building on each other' - cannot be analysed when 'content
analysis' serves purely descriptive purposes.

Another problem with studies like these is the definition of units. In the data presented
by Haile and Richards, each 'message' was presented in tables as the unit counted.
However, since the totals of messages in each category exceeded the totals of
messages in each conference, it is clear that some other unit was counted. In practice,
it appeared that 'statements' in messages, which could be allocated to the categories
selected, were the units tallied. However, 'statements' (words, sentences or
paragraphs?) were not defined.

'Content analysis' of this type presents only superficial information about conference
messages. Difficulties in defining categories and units must be recognised. Moreover,
it does not provide a way to examine more interesting questions - how protracted sequences of messages develop, for instance - which may emerge.

(iii) Structural

'Content analysis' has also been used to investigate electronic discourse structures. Here, 'content' is used to identify relationships between (parts of) messages. The patterns revealed are then examined to explain structural characteristics of electronic communication.

Interesting examples of this approach have been reported by researchers at the University of California at San Diego (Black et al, 1983; Quinn et al, 1983). A quasi-experimental research design was used. Students (number unspecified) in one course were divided (method undefined) into groups. Members of one group participated in face-to-face discussions with an instructor in the classroom. Members of the other group communicated with the same instructor via an electronic network. Data were collected (using audio tapes and printed transcripts) over a three week period. The content of messages was examined to prepare 'discourse maps' representing the structural relationships between interactive sequences of discourse in both groups.

It was found that face-to-face discussions typically followed a sequential organisation. Topics were discussed one at a time, and classroom discussion often followed a sequential pattern (I-R-E) of Initiation (teacher presented a question), Response (by a student) and Evaluation (of the student's response by the teacher).

By contrast, electronic discussions were structured differently. Several topics were discussed simultaneously ('multiple threads of discourse'). Moreover, the linear I-R-E pattern observed in classroom discussions was not replicated in the sequencing of electronic messages. Teacher questions were followed by multiple student responses (I-R-R-) before evaluative comments were made by the teacher. Before the teacher had commented, students had evaluated each others' responses by 'referring to each other's comments', 'accepting each other's answers', 'commenting on the overall discussion' and 'admiring one another's insights' (Quinn et al, 1983:323).
Another example of a 'structural' approach is a procedure developed by Levin et al (1990) called 'intermessage reference analysis'. It involves reading messages to determine whether references are made to other messages. Data are then displayed in a 'message map':

If we lay the messages out in a space with time as the horizontal axis and different senders as the vertical axis, a particular set of messages can be displayed as a message map, with the intermessage references as directed links (arrows) between the messages. (Levin et al, 1990:195)

The examples of 'message maps' provided by Levin et al (1990) are difficult to read. The representation of large conferences in this way results in a complex array of message symbols joined by lines. The nature of the information being conveyed is not clear, although the pictorial representation of data in this way would clearly indicate differences between conferences where messages are referenced frequently and those conferences where messages 'stand alone'. However, a simple reading of messages could accomplish the same objective; the time and effort involved in constructing a 'message map' would not appear to be worthwhile.

Moreover, the purposes of 'message maps' are not clear. Levin et al (1990:200) claim that 'intermessage reference analysis' is 'a way to identify clusters of messages that we can then analyse more deeply with other techniques'. However, no research on 'clusters of messages' was located in the literature (all conference messages are usually selected for analysis) and 'intermessage reference analysis' and 'message maps' would appear to lack practical applications.

The structure of conference messages has also been analysed by Ellis and McCreary (1985) to develop guidelines for 'better' conferences. They used symbols representing speakers, and lines to represent links between messages, to plot clusters of messages on particular themes ('content'). The symbolic displays of the development of these themes were then used to develop guidelines for conference moderators to monitor participant behaviour and topic development; for instance, 'padding-off' messages to a separate conference when 'some critical mass of comments within a theme had accumulated', and as a guide to the 'closure' of topics.
(iv) Qualitative

A different approach to 'content analysis' is revealed in the work of Mason (1990b, 1991b, 1991c, 1992a). Like the work of Henri outlined earlier in this section, Mason focused on learner behaviours and learning processes in electronic discussions, but her methodology is very different from the procedures followed in quantitative approaches to content analysis. She describes her approach in the following way:

in content analysis [I am] attempting to draw up a typology of conference messages related to the educational values they display. This method involves a thorough reading of a set of messages with a view to discovering what, if any, skills and abilities the participants are displaying or developing. (Mason 1992a:114)

Reading messages is guided by questions related to the educational goals of selecting computer conferencing as a learning medium:

Some of the questions the educational analyst would want to bear in mind during such a process are:
- do the participants build on previous messages?
- do they draw on their own experience?
- do they refer to course material?
- do they refer to relevant material outside the course?
- do they initiate new ideas for discussion?
- does the course tutor control, direct or facilitate?

This kind of questioning would lead to a typology of messages which focuses on the independence and initiative of the student, and would provide a means by which evidence of these attributes in students can be sought in the conferencing medium. (Mason 1992a:114)

Mason considers that, by analysing conference messages in this way, it is then possible to move 'beyond description to analysis' (p.115) of the 'educational value' of online activities:
We should not be afraid of making value judgements about what is educational interaction. The educator/evaluator can go beyond description and explanation of conferencing interactions, and actually interpret them according to educational criteria. This stance represents a view of evaluation as 'construction' of knowledge rather than 'discovery' of knowledge. (Mason 1992a:115)

Mason has not explained her methodology in further detail; the best way to do this is to examine an example of her work.

In an account of a conference called 'Management of the Absurd' hosted by the Western Behavioral Sciences Institute, Mason (1991c, 1992b) illustrates how an intriguing conference theme, the experiences and insights of participants (n=30), and exceptional moderating skills, can create a scintillating environment for online discussions. By selecting significant qualities of the conference and revealing these through extracts from messages contributed by participants, Mason succeeds in recreating the conference experience of participants for the reader. Her account is not focused on the classification of messages, or on 'outcomes' based on quantitative data, but with the quality of the educational experience for conference participants.

In this account, description and interpretation are interwoven to generate new insights about the ways in which moderating skills were employed, in this specific conference, to add to the 'educational experience' for participants. Hence, the account is subjective - based on Mason's beliefs about what is important in moderation - and selective in its use of extracts from the conference transcript which illustrate the practical application of these moderating skills.

Criticism about the 'taint of subjectivity' in accounts like these has been recognised by Mason (1991b:161). This does not mean, however, that these accounts have to be dismissed as 'unscientific'. While qualitative forms of inquiry, such as educational criticism, do not make use of the conceptual tools, statistical procedures and research designs of traditional research in the social sciences and education, it can be argued that the 'testability' of 'scientifically' derived beliefs is not the only way in which ideas can be held to be true.
For instance, Eisner (1979) maintains that many fundamental theoretical structures rely as much on the agreements among believers - for example, a cognitivist view by Piagetians or a behaviourist view among Skinnereans - as they do on 'scientific' methods of research. What objectivity means is that 'we believe in what we believe and that others share our beliefs as well', a process called 'consensual validation'. Therefore, if objectivity rests on agreements of this kind, 'what we can productively ask of a set of ideas is not whether it is really true but whether it is useful, whether it allows one to do one's work more effectively, whether it enables one to perceive the phenomenon in more complex and subtle ways, whether it expands one's intelligence in dealing with important problems' (Eisner 1979:214).

According to Eisner, consensual validation is achieved through 'structural corroboration' and 'referential adequacy'.

Eisner (1979:215) defines structural corroboration as:

> a process of gathering data or information and using it to establish links that eventually create a whole that is supported by the bits of evidence that constitute it. Evidence is structurally corroborative when pieces of evidence validate each other, the story holds up, the pieces fit, it makes sense, the facts are consistent.

Structurally corroborated cases, however, may be false. As Eisner notes, 'nothing is so persuasive as the swindler's story' (Eisner, 1979:216). Therefore, referential adequacy must be determined 'by checking the relationship between what the critic has to say and the subject matter of his or her criticism' (Eisner, 1979:216). In this way, educational criticism is an empirical undertaking: we can check the referential adequacy of educational criticism against the object or event which it seeks to describe, interpret and evaluate.

In 'Management of the Absurd', Mason has satisfied both these tests of 'consensual validation'. The account she provides 'holds up' and the 'pieces fit'; her description of the conference, and the interpretations she places on what happened, corroborate (support) each other. The referential adequacy of her account can be checked against the extensive extracts she quotes to illustrate her interpretation. In these ways, the
'educational quality' of the conference, and the specific moderating skills employed, can be evaluated.

(v) Comments on methods of content analysis

The purpose of reviewing different approaches to 'content analysis' was to select, modify or design a method by which data about messages on the network could be collected. In particular, an appropriate method was sought to investigate research questions relating to 'reflection' on the network. The work of Henri (1992) and Mason (1992a) appeared to be appropriate for this purpose - criteria which identified 'reflection' could have been developed, such as those outlined by Harrington and Quinn-Leering (1995b), and used as a guide when reading conference messages. However, an analysis of this type would have been pretentious in this case - given the quantity of messages contributed to 'The Conclave' (see Chapter 5), this type of analysis could not have been sustained. Too few messages displaying any evidence of 'reflection' were contributed during the year to enable any meaningful analysis to be completed.

Given the quantity of messages on 'The Conclave' it was decided that a 'content analysis' of the type proposed by Smeltzer (1992), focusing on 'message intent', would be a more appropriate way to report data on conference messages. Hence, (a) messages were read and the purpose of the message identified, (b) categories were established (such as 'requesting information', 'presenting information', 'welcome' or 'introduction') which represented the different purposes of messages, and (c) messages in each conference were re-read, grouped in one of the established categories, and counted. This classification and quantification of data was then used as the basis for descriptive reports about conference messages (Chapter 5).

ETHICAL ISSUES

In Chapter 2, and an earlier section of this chapter, the ways in which the author was involved in the events investigated were outlined. This involvement enabled valuable data to be collected about the development and implementation of the 'school based' program and the use made of the electronic network.
This involvement raises ethical issues which are clarified in this section. Since research proposals require approval from the appropriate ethics committee, the other purpose of this section is to discuss the documentation prepared. Important issues, and the ways these were resolved, are outlined.

Despite the involvement of the author in the events investigated, no special relationship existed between the researcher and other participants. The researcher was *not* responsible in any way for student progress or assessment in the subject of which the 'school based' program was part. Any assistance to students - for instance, about assessed student projects - was only provided when specifically requested by individual students.

However, a teacher/student relationship had existed between the researcher and trainee teachers in the previous three years. Since trainee teachers may have perceived that this relationship still existed they were informed - in writing on the 'Consent Form' and verbally before interviews - that they had a right to decline to participate, or to withdraw from participation once the research had commenced.

Other participants were also informed that they could decline to participate, or could withdraw from participation at any time.

A written explanatory statement about the purposes of the research was issued to all participants to ensure that their informed consent about involvement in the research was obtained.

Since the Privacy Act 1988 was perceived to apply to the transcripts of individual academic records held by the university, trainee teachers were specifically asked for permission to obtain copies from the registrar.

Ethical practice requires investigators to avoid causing subjects distress or harm from breaches of confidentiality. A breach of confidentiality may occur when (a) data are reported which might lead to the identification of individuals who provided the information, and (b) interpretations of the data by the researcher may lead to participants experiencing harm.
The case study completed included only a small number of liaison lecturers and
university staff. Hence, special attention was given to reporting data contributed by
members of these groups, since the nature of the data contributed by participants, or
reported by the author, could lead to the identification of the individuals involved.

In these circumstances it was decided that the only way to deal with this was to report
data, or interpretations of it, in such a way that the identity of the person who
contributed the data would remain private. This has necessitated ambiguity in
classifying individual liaison lecturers as classroom teachers or university tutors, and
the omission of descriptors¹ about individuals when interview data has been reported.

Protection against breaches of confidentiality is also required for the five year period
during which data are stored. Since printed copies of all computer conference
messages, and transcripts of audiotaped interviews, were made as part of the research
process (and to ensure a permanent record for the five year period), consideration was
also given to the ways in which confidentiality of these data could be maintained.

In the case of printed records of messages previously available electronically on 'The
Conclave', no special requirements were considered necessary. These data had been
prepared and made publicly available by the individuals concerned; the printed
versions simply duplicated, in another form, what participants had been willing to
share initially in the electronic network.

With audiotapes, the index of recordings maintained during the research was filed
separately after the tapes were stored.

Ethics committee applications also require the researcher(s) to review proposed
research with a view to identifying possible areas where the research may raise ethical
issues which have not been covered on the application form.

¹ For instance, a descriptor like 'mature age' could lead to the
identification of a trainee teacher. The positions of university staff (eg,
'Head of School' and 'Subject Examiner') and school personnel (Principal
and classroom teacher) have not been used when sections from
transcripts from interviews have been quoted. The locations and sex of
participants have been omitted in all cases.
In preparing the ethics committee application forms for the research proposed in this thesis attention was directed to the proposed use of conference messages. At issue was the 'privacy' of the comments made by contributors. While comments were made in what is, in all respects, a public electronic forum, some participants may still regard their comments as private in nature, restricted in circulation to only the actual participants on the network.¹ Different views about this issue have emerged on some networks (Phillips & Pease 1987:50-51; Wilkins 1991:58). Given the ambiguity which apparently exists about the status of conference messages it was decided that informed consent to quote extracts from messages would be obtained. At the time this permission was requested individuals were also asked if they wanted their comments to remain anonymous or have authorship attributed.

When these issues were resolved, ethics committee application forms were completed and submitted for approval to the Deakin University Ethics Committee (DUEC). The proposed research was approved by DUEC on 11 September 1995 (Application Number EC106/95).

CONCLUDING COMMENTS

In this chapter, the research questions have been introduced and relevant issues about research design, data collection, data analysis and ethical practice have been outlined and clarified. In the next two chapters, data collected about trainee teachers (Chapter 5), and classroom teachers and University staff (Chapter 6) are reported and discussed.

¹ Evans & Jakupec (1996:91) have also noted that 'matters of access to [electronic] data and the confidentiality of its storage need to be addressed and dealt with appropriately' when considering ethical practice.
CHAPTER 5 NETWORK PARTICIPATION BY TRAINEE TEACHERS

INTRODUCTION

In this chapter, the use which trainee teachers made of the network is discussed using data collected in questionnaires and interviews, software-generated statistics, and a 'content analysis' of messages in conferences. Since relatively few messages were contributed to conferences, particular attention is given to the reasons which trainee teachers reported had influenced their participation on the network. The data reported also show that when trainee teachers were given the opportunity to use an anonymous account messages (to one conference) increased greatly. The reasons advanced for this increase in messages are also discussed.

The comments by trainee teachers reveal how factors related to a specific context (the 'school-based' program), the medium (electronic communication), and personal skills and inhibitions, can influence individual participation. These comments also reveal the richness of data which can be gathered in a case study of a particular application, which can then lead to new insights about how participants 'negotiate' personal relationships with communications technology.

NETWORK USE BY TRAINEE TEACHERS

Chart 5.1 shows the extent and nature of usage by trainee teachers between April and October. Trainee teachers account for 85% (n=1256) of logins to the network, 82% (n=721) of private messages created, and 68% (n=130) of messages placed in conferences. This chart reveals that trainee teachers used the network extensively for private messages but to only a limited extent for public conferencing. No special reasons can be advanced to account for increases in participation (logins to the network, and private messages) in August and September.

To investigate the factors which influenced the use made of the network, trainee teachers (who agreed to be interviewed) were asked to complete a questionnaire before the interview with the researcher. All trainee teachers (n=21) interviewed completed a questionnaire.

These data (Appendix C) revealed that the 'school-based' program was viewed positively. Trainee teachers reported (Strongly Agree/Agree) that they enjoyed planning and teaching
their individual project (81%) and that the 'school-based' program helped them to develop teaching skills (90%). They rejected (Strongly Disagree/Disagree) statements (items) that they were not really interested in the 'school-based' program (81%), unhappy with their choice of school (81%) and didn't like the 'school-based' program (72%). However, the 'school-based' program was considered to be demanding (90%) and less than half (47%) thought they had received enough help with their individual project.

Trainee teachers were also positive about using computers although 24% thought they were still 'not very confident about using computers' at the end of the year.

Few difficulties were experienced using the FirstClass communications software which was considered to be 'easy' (90%) and 'fun' (77%) to use. Only 14% thought they were at a 'basic level' using features of the software, the remaining 86% indicating that they were at 'higher' or 'advanced' levels.

These data reveal positive attitudes towards (a) the 'school-based' program, (b) using computers, and (c) the communications software. Strongly positive responses were also received on items about the perceived value of the network. Trainee teachers considered electronic communication was very useful for 'receiving information' (91%), 'social
contacts' (95%), 'teaching projects' (86%), 'discussing educational issues' (81%), 'dealing with personal and professional problems' (71%) and 'developing a 'sense of community' amongst participants (81%). These are interesting and useful findings; they indicate that there is scope to incorporate electronic networking in initial teacher education courses and that participants perceive that benefits may accrue from doing so. However, some of these responses, particularly those concerning the value of the network in discussing 'teaching projects' and 'educational issues', need further consideration in light of other data collected on conference messages and in interviews. In these data - presented and discussed in the remainder of this chapter - other ideas about electronic networking emerge, and these influence conclusions which might be drawn about the potential of the medium.

CONFERENCE MESSAGES

Table 5.1 presents data on participation by trainee teachers (n=26) in conferences during the year.

<table>
<thead>
<tr>
<th>CONFERENCE NAME</th>
<th>TOTAL MESSAGES</th>
<th>N AND % OF MESSAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staffroom</td>
<td>67</td>
<td>52</td>
</tr>
<tr>
<td>Course Comments 2</td>
<td>57</td>
<td>81</td>
</tr>
<tr>
<td>Projects</td>
<td>36</td>
<td>75</td>
</tr>
<tr>
<td>Computers</td>
<td>15</td>
<td>47</td>
</tr>
<tr>
<td>Maths</td>
<td>13</td>
<td>85</td>
</tr>
<tr>
<td>Assessment [in schools]</td>
<td>12</td>
<td>33</td>
</tr>
<tr>
<td>Health &amp; PE</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>LOTE</td>
<td>4</td>
<td>75</td>
</tr>
<tr>
<td>Technology</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>English</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Art/Craft</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>Music</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>SOSE</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Science</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>

1 Apart from 'Staffroom' and 'Computers', the conferences created were determined by trainee teachers at on-campus meetings.

2 It has been assumed that all contributions to this conference using the anonymous account ('Mary Smith') were made by trainee teachers.
Data in Table 5.1 reveal that only 'Staffroom', 'Course Comments' and 'Projects' had relatively high message counts. Conferences set up to discuss curriculum issues were poorly supported. The conferences 'Computers' and 'Maths', for discussion of issues in subjects in which some trainee teachers were concurrently enrolled, also received relatively few contributions. Twenty five trainee teachers contributed messages but participation varied greatly (range = 1-17 messages).

'Staffroom' was the first conference created (by the Administrator) on 'The Conclave'. In the User Guide it was suggested that 'Staffroom' could be used for 'notices, introductions and trial messages'. Similar suggestions were made in the inservice programs which introduced participants to the network (see Chapter 2).

A review of the messages in the 'Staffroom' conference revealed that trainee teachers contributed 100% (n=9) of messages requesting information, 67% (n=6) of messages which offered information, 86% (n=6) of welcomes/introductions, 33% (n=9) of notices about events (meetings, inservice programs) and 66% (n=4) of chit/chat. These data reveal that trainee teachers used 'Staffroom' to notate factual information, as a 'noticeboard' on which to distribute notices and publicise events.

The conference 'Projects', created at the request of the Subject Examiner, consisted almost entirely of project outlines (n=22) submitted by trainee teachers. Messages (n=5) containing general advice about preparing projects were submitted by some (n=3) university staff. Only two messages offered comments on specific projects proposed by trainee teachers. Hence, 'Projects' was also used as a noticeboard, rather than a forum in which ideas were discussed and procedures about completing projects were clarified.

The 'Assessment' conference was initiated by the Computer Co-ordinator (see Chapter 2). It initially attracted relevant and thoughtful messages (n=7) about standardised testing in schools from five participants (two trainee teachers, one classroom teacher and two university staff). However, participation in this conference lapsed when copyright approval to use newspaper articles, introduced by the Computer Co-ordinator to stimulate responses, was refused. Difficulties were also experienced by trainee teachers (discussed later in this chapter) and classroom teachers (see Chapter 6) in dealing with this controversial topic.

'Computers' was introduced by the Computer Co-ordinator, who also had responsibility for teaching a curriculum studies subject, titled 'Computers in Education', in which five trainee teachers were enrolled (distance education mode) in second semester. Various questions
about using computers in schools were posed by the Computer Co-ordinator. These attracted detailed and thoughtful responses (n=8) from two trainee teachers.

The 'Maths' conference was also introduced as a forum for discussion for trainee teachers, and the lecturer (also a liaison lecturer in the 'school-based' program) responsible for the (distance education) subject. Questions for discussion were posed by the lecturer, but only two responses contained comments about issues in mathematics education, the remainder dealing with procedural matters (subject requirements), and notices about inservice programs which trainee teachers could attend.

'Course Comments', in which trainee teachers were able to use a special account called 'Mary Smith' to contribute messages anonymously, attracted numerous messages (n=57) which dealt, in the main, with immediate concerns related to the 'school-based' program (n=38). The content of messages in this conference, and the use of the special account, is discussed in more detail later in this chapter.

Apart from 'Course Comments', participation by trainee teachers in conferences was limited. When they did contribute messages, these usually took the form of notices about forthcoming events. Conferences were not used for discussion purposes; comments were only made on other messages, in conferences like 'Computers' and 'Maths', when questions had been posed by subject lecturers. However, increased participation in the 'Course Comments' conference revealed that trainee teachers were, in certain circumstances, willing to use the network for discussion purposes. This raised the intriguing question of why they had not contributed to other conferences. Questionnaire and interview data on factors which influenced participation in conferences are presented in the following sections of this chapter.

FACTORS INFLUENCING PARTICIPATION ON THE NETWORK

Responses to items on the questionnaire related specifically to computer conferencing are displayed in Table 5.2.

These data reveal that computer conferencing was considered to be 'useful' (Item 22) and 'interesting' (#17). However, a broader range of responses is evident on other items with concerns about lack of time (#15), lack of ideas (#20) and possibility of ideas being criticised (#18) influencing personal participation in network conferences. The impact of these, and other, factors are revealed further in data collected in interviews. They can be
conveniently grouped for discussion purposes here into factors associated with (a) the 'school-based' program, and (b) electronic communication.

### TABLE 5.2: VALUE OF COMPUTER CONFERENCING

<table>
<thead>
<tr>
<th>Item</th>
<th>SA/A%</th>
<th>N%</th>
<th>D/SD%</th>
</tr>
</thead>
<tbody>
<tr>
<td>17. Reading messages in conferences is interesting</td>
<td>86</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>22. Computer conferencing is a useful way of presenting a diverse range of views.</td>
<td>86</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>15. There wasn't enough time for computer conferencing.</td>
<td>64</td>
<td>5</td>
<td>29</td>
</tr>
<tr>
<td>16. I didn't contribute because I didn't think I could express my ideas clearly enough in written messages.</td>
<td>10</td>
<td>33</td>
<td>58</td>
</tr>
<tr>
<td>20. I didn't think I had many ideas to contribute to conferences.</td>
<td>33</td>
<td>10</td>
<td>57</td>
</tr>
<tr>
<td>18. I was reluctant to contribute my ideas because they might be criticised.</td>
<td>29</td>
<td>19</td>
<td>52</td>
</tr>
<tr>
<td>21. The conference topics were of little interest to me.</td>
<td>19</td>
<td>24</td>
<td>57</td>
</tr>
</tbody>
</table>

### THE IMPACT OF FACTORS ASSOCIATED WITH THE 'SCHOOL-BASED' PROGRAM

When trainee teachers arrived in schools in February, they were faced with the tasks of working out their role in the school and the ways in which they could deal with the requirements of the 'school-based' program. While the 'school-based' program had been 'planned' by a representative Planning Committee comprising trainee teachers, classroom teachers and university staff, the 'planning' had been limited to setting the broad parameters of the program (school sites, number of days in schools) and specific requirements of the subject of which the 'school-based' program formed a part. It was considered that the actual program pursued by each trainee teacher would be 'negotiated' with classroom teachers and liaison lecturers once all participants had arrived in schools. While trainee teachers had visited their school sites and 'discussed' their placements with 'school co-ordinators', there was no orientation program at which the roles of participants, and the tasks to be completed,
were discussed. So, at the start of the year, armed only with a folder containing subject
requirements, resumes of trainee teachers and useful readings, trainee teachers (and other
participants) set about trying to decide what they would do, and how, to satisfy subject
requirements. For many participants this was a difficult and demanding time. Using the
computer network was another challenge.

Role in the school

One of the first issues which trainee teachers had to tackle involved resolving differences
between classroom teachers' perceptions of what they were in the school to do and other
subject requirements. One trainee teacher was particularly pleased that she was making good
use of the computer early in the year:

I felt proud sitting there thinking, 'I can use this. This looks important. I've got
computer skills'. I think it looked good for us to sit behind them in schools. It made
us look computer literate. [TT3]

However, she was particularly conscious that she needed to act, and be seen, as a 'real
teacher':

We were there to be seen as energetic teachers who wanted to get into real teaching
and that's what the staff expected us to do, not sit behind a desk. I felt wrong to do
that, that I was using the school as a place to sit down behind a computer. [TT3]

Faced with this problem, she decided that using the computer could wait until later in the
year and she threw herself into a demanding schedule of classroom teaching.

Major project

The major project also received a great deal of attention by trainee teachers early in the year.
According to one trainee teacher, it was:

The only reason we were there. [TT2]

Similar thoughts were expressed by many other trainee teachers.

Getting started on the major project (6,000 words) also involved a great deal of negotiation.
Decisions about a topic and the complexities of implementing the project in unfamiliar
surroundings occupied much of the time trainee teachers were in schools. The size of the written report, much longer than assignments completed in previous years, was also of concern. Delays in commencing the project resulted in additional anxieties:

I had a lot of difficulties planning which meant I wasn't in school because my major project, that all the pressure was on, wasn't succeeding how I wanted it too. That has a great impact on your whole attitude to everything - the FirstClass system, the teachers in the school, the whole school-based program. The success of your project influenced all the other aspects. [TT5]

Assessment

There were other reasons for concentrating on the major project. Not surprisingly, fourth year trainee teachers were particularly 'cue-conscious' about what 'counted' in terms of assessment.

In the program there were a few things that it seemed you did for no purpose, that weren't contributing to the major assignment. The major assignment is 6000 words and that's what you had to concentrate on. People didn't write the journal because it didn't contribute [to assessment]. It was time, because to write a journal takes time and contributing in the system [network] takes time and that's not going to benefit you either. [TT7]

THE IMPACT OF FACTORS ASSOCIATED WITH ELECTRONIC COMMUNICATION

In addition to 'negotiating' their role in the school and the requirements of the 'school-based' program, trainee teachers were also faced with the task of 'negotiating' their own relationship with the electronic network. While most trainee teachers had acquired computer skills (wordprocessing, database and presentation software) in the first three years of the course, none had previously used communications software; hence, the inservice program in February (see Chapter 2) was the first time trainee teachers had been introduced to the procedures (to send and receive messages) involved in electronic messaging, and the purposes (individual messages and conferencing) which an electronic network could be used for. Perceived difficulties associated with audience, notation and/or reflection were evident in all the interviews completed with trainee teachers.
Previous experience with public presentations

'Negotiating' a relationship with the electronic network and, in particular, the conferencing facility proved to be a particularly difficult task for many trainee teachers. They found that nothing in their teacher education course had prepared them to put forward ideas in the 'public' way required in conferencing. In previous years, they had been passive listeners rather than active contributors in university classes. One trainee teacher commented:

First and second year we weren't asked our point of view on anything. We were really lectured to and you write that down and do an assignment and that's it. [TT9]

Another trainee teacher stated:

Looking back over the three years you could count on your fingers the number of times you actually had to get up in front of everybody and do something. And then you're stuck on this thing where everything you do is in front of everyone else. So it's a big change. [TT12]

In some subjects 'presentations' (tutorials) had been required but these provided few opportunities to develop confidence about presenting and defending ideas:

TT12 I can't ever remember having to write something which was going to be read by my peers.

JP When you do your general studies subjects, do you present tutorial papers in front of other students?

TT12 There were times when you had to. Some I just didn't do, others I did. It wasn't a problem. You just have to get up and say your piece. There is usually only ten people there anyway, if that.

JP Were they lively discussions where you argued about points that you'd raised?

TT12 No. Those who were awake just took in what you said. They wanted to go.

JP So you looked after one another by not being too controversial?

TT12 Pretty much. Everyone knows that.
It might also be anticipated that teaching practice in previous years developed confidence about public presentations. However, trainee teachers were unable to transfer the skills and confidence gained during face-to-face interaction (with children, as well as adults) to the electronic medium.

Teaching children isn't as intimidating as presenting your own ideas to people your own age or older. Even though you might be quite confident in front of 30 or so kids, when it comes to actually participating in conversations relating to class work or whatever it's just dramatically different. [TT13]

Envisaging the audience

One of the problems for trainee teachers thinking about contributions to conferences was the difficulty they had in envisaging the audience. In assignments in other subjects, trainee teachers had written what they perceived the lecturer wanted:

In most of our Uni life we've gotten to know the lecturers in the classes we've been in and you'll tend to write what you think the lecturer wants from you. You know what particular lecturers look for. I don't think you necessarily write the same way for all lecturers. [TT13]

However, on the network they were uncertain about how to compose messages which would be read by an audience (rather than one person) which comprised other trainee teachers, classroom teachers and university staff. As one trainee teacher commented:

You're thinking: 'Who am I actually writing to? How do I write this?' You've got a whole range of people reading what I'm writing [on the network]. You've got lecturers, other teachers. You've got fellow students. What sort of stuff do I put in it? [TT13]

Writing skills

The content of messages was not the only problem. Without previous experience of 'network genre', trainee teachers were uncertain about how to write.

I've got to write in a non-relaxed form for me when I'm on the network. I feel like I've got to write in a formal way and that puts me off. [TT3]
The difficulty of making decisions about writing 'style' is also reflected in the following passage from another trainee teacher.

You have to adjust to it. You can't just write exactly what you mean when you're typing it. You have to really explain yourself a lot. When you're having a chat with someone they can fill in the gaps really easily. [TT5]

'Time' was another problem. In some cases, this referred to the competing demands of other components of the 'school-based' program, but in other cases the concern with 'time' related to 'reflective writing'. One trainee teacher expressed this in the following way:

It takes me a long time to think about what I'm going to write and edit it. I edit and edit all the time to try and make the point that I want to make so that it's not ambiguous. So, I'm constantly editing and that's time consuming. And sometimes I've felt under pressure with time on the network and I've sent something and thought afterwards that I could have done better. [TT20]

Cues

For trainee teachers, the experience gained from writing assignments for particular lecturers provided little guidance about how to write conference messages for an audience. For other trainee teachers, the difficulty was the loss of visual and verbal cues associated with face-to-face conversations when communication was mediated via an electronic network.

It's hard typing something on the computer because, when you are talking to someone, you know with the tone what they're meaning. If they're being sarcastic you know, but on the computer you don't. [TT1]

Another trainee teacher made the following comments:

If you're there you can read what a person's body language says and you can see if they're understanding what you mean and you can communicate more effectively face-to-face or over the telephone because you can listen to what they're saying in response to what you're saying and you can modify your message so that they understand what you mean. [TT16]

In the 'school-based' program, the electronic network was introduced to facilitate 

communication between course participants. But for trainee teachers, computer-mediated
communication was about *writing*, since active participation in computer conferencing involved composing written messages. Their fundamental concern was the written nature of communication, evident in the language they used when talking about the network. Instead of sending messages they spoke about 'writing on the computer'; messages were referred to as 'letters'; and replies involved 'writing back' rather than sharing ideas. They did not talk about contributing ideas, hearing other points of view or justifying their own project proposals.

**Criticism**

Since computer conferencing was about writing, rather than communication, it is not surprising that the major concern of trainee teachers - mentioned in almost every interview - was fear of criticism from others about what they had written. An incident early in the year reinforced their worst fears.

At the start of the year there was widespread uncertainty about the nature of the 'teaching project' (6 000 words) which trainee teachers were required to complete to satisfy subject requirements. At different schools groups of trainee teachers, each working with a different 'liaison lecturer', attempted to interpret requirements and 'negotiate' outcomes which were appropriate at each school site. However, by the time an on-campus seminar was scheduled to discuss this requirement, the 'teaching project' had become a 'research project', and concerns were centered on how to plan and manage 'classroom-based research'. Nothing in the first three years of the course had prepared trainee teachers for this task.

At one on-campus seminar (and in a conference message), trainee teachers were presented with an outline of how to complete 'small scale research'. This involved forming 'a hypothesis', 'constructing or obtaining research instruments', 'data-gathering' and, ultimately, 'testing' hypotheses. Trainee teachers, already well into planning their teaching project - such as a physical education program, a student newspaper and working with 'atypical children according to their needs' - were then uncertain about how to proceed. This was reflected in the outlines placed in the 'Projects' conference (a requirement by the Subject Examiner), with many trainee teachers attempting to adapt what they had already planned, and started, to conform with the recently stated requirements.

It was a response to one brief project outline - 'about atypical children and self esteem' - which heightened anxiety about the vulnerability of written outlines. This response, by a university staff member, sought further clarification of 'atypical' (Would talented and gifted children, who may also suffer from low self-esteem, be included in the study?) and
suggested an alternative to 'remedial' approaches based on 'behaviourist theories of
development'. The message was genuine, designed to foster discussion and provide helpful
information, but this was not the way it was perceived by the trainee teacher who had
proposed the project. According to another university staff member:

[She came] tearing into my office after school one day saying, 'Who is this?', and
she used a very short word for him. And then she gave me a half hour diatribe on
why she thought he had no right to have any opinion on what she did. And she was
deeply offended. There was no idea of the contribution of a colleague or why he
wrote it. It just offended her utterly. [US2]

The university staff member who inquired about the project on 'atypical children' made
another contribution a few days later clarifying the meaning of 'hypothesis' and the way a
hypothesis was framed. This message was designed to assist trainee teachers who were
obviously struggling to fit their projects into the model of 'classroom-based research' which
they had been recently given. While the message did not relate to a specific project proposal,
the expression used could be construed as intimidating:

[A hypothesis] may be tested by research and in the process the hypothesis may be
confirmed or refuted. (Using the terms 'proved' and 'disproved' in this context is
philosophically naïve and ugly to justify.)

For trainee teachers poorly prepared to deal with the recently outlined requirements about
'research', and struggling to negotiate a relationship with a new communication medium,
comments like these heightened anxiety about public comments in electronic conferences.
Not surprisingly, their response was to avoid written contributions which could expose, as
in this case, their own inadequacies. As one trainee teacher commented:

Better to remain silent and be thought a fool than to open your mouth and remove all
doubt. [TT10]

Another incident later in the year reinforced trainee teachers' concerns about the vulnerability
of written communication. It was described in the following terms by one trainee teacher
who was directly involved.

We were discussing whether computers stay in schools [in Term 4]. It wasn't even a
touchy subject as far as I was concerned. I wrote on the computer. I used her name
and that was why I was criticised. I probably shouldn't have done but her name was
on her comment so I didn't think she would worry. I said: 'After the last meeting you weren't at the situation has been resolved'. I thought it was quite an innocent comment and I got heaps and heaps of mail really, really bitchy, rude to me, saying how I was terrible and how [student representatives on] the fourth year committee should work together rather than bitch to one another. So I was very hurt by it all. Very hurt. [TT4]

This trainee teacher felt obliged to offer a public apology to the trainee teacher she had named. Previously amongst the more frequent contributors to conferences, this incident curbed her enthusiasm for electronic communication.

I thought: I'm going to write as much if not more just to really annoy them, those people who wrote back to me. But, I don't know, the will power went and I couldn't be bothered writing. I've just used it for your subject and personal mail and I haven't contributed to any other conferences. [TT4]

The potential 'danger' in incidents like these were all too evident to any trainee teachers who might have contemplated a contribution to a conference as the following comments from two trainee teachers indicate:

I was probably a bit scared about what to put down or what the criticism was going to be. Other people got criticism for things they wrote and it got 'bitchy' and it put me off using it. [TT2]

There's a couple of cases where a little bit of bitchiness went on and I just don't want to be part of it. If I was to put my opinion on it might backfire in my face. [TT8]

The trainee teachers in this 'school-based' program seemed particularly vulnerable to criticism from peers. Surprisingly, knowing each other in previous years of the course appeared to heighten, rather than reduce, these concerns.

I would be wary about putting stuff down because I care about what the group are going to think about what I write. So, I might be thinking: 'Are they going to be thinking that I'm a complete idiot if I write this down?', because they know who I am. Whereas, when I'm on the Internet, nobody knows who I am. I can say what I like and not worry about being ridiculed for it. [TT13]
But trainee teachers were also conscious of their emerging reputations as beginning teachers. Those who had successfully completed the first three years of the course were already working as casual relief teachers in local schools. In some instances, these were the same schools in which they were placed for the 'school-based' program. After completing the fourth year, many would be seeking a full time position locally. Hence, trainee teachers were also keen not to expose their present views, which they believed were not fully informed, in case they later felt they needed to change these views when working in a particular school. The following statements from two trainee teachers illustrate this timidity.

It is good for those with experience but we're 'fresh out'. I know I make mistakes and I don't want my mistakes recorded. [TT3]

I suppose now we are becoming teachers, or we are teachers, we have to put things out for other colleagues to read, but we are not used to that - publications of our own work and other colleagues reading them and giving us feedback which might be a criticism. I guess most of us are scared about that at the moment. [TT6]

Given these views, it is not surprising that the 'Assessment' conference failed to attract many messages. The LAP testing program was controversial, with many teachers holding strong views about the value of standardised testing in primary schools. Trainee teachers were aware of the controversy and, knowing little about the issues involved, were reluctant to take positions. For trainee teachers, this conference presented similar problems to 'Projects' and 'discussions' about how to complete classroom research. However, comments on controversial issues like testing might also jeopardise future relationships when in casual or full time employment. One trainee teacher commented:

They'd say: 'In 95 she said this', or 'this was her view and now she's gone back on her philosophy'. Because I'm only straight out of college I'm new to it all. I know I need a lot of developing of my thoughts and I'm very reluctant to say too much. So I keep quiet. I do a lot of thinking. [TT3]

These comments by trainee teachers reveal some of the problems they experienced negotiating the conferencing facility on the network. The fear of criticism about what they wrote was a particular problem which most failed to resolve. Hence, when their own name was attached to messages, they sent private mail to friends rather than public mail to conferences. Public mail addressed to conferences usually took the form of notices about inservice or social activities, 'safe' because these messages simply conveyed information and nothing about their own views which might be open to 'criticism'.

PARTICIPATING ANONYMOUSLY - THE 'MARY SMITH' ACCOUNT

The circumstances surrounding the creation of the anonymous account (with the user name of 'Mary Smith'), and the conference called 'Course Comments', were outlined in Chapter 2.

'Course Comments' (often called the 'Mary Smith conference') was the most successful of the conferences on the electronic network - it created a great deal of interest among trainee teachers, attracting the second highest number of messages (n=57) of all conferences. The 'Mary Smith' account is also perceived to have encouraged a high level of interaction (comments on issues raised in other messages) amongst participants which was not evident in other conferences but, since this account was anonymous, the number of participants cannot be quantified.

Most (n=45) messages in the 'Course Comments' conference introduced, or commented on, issues of direct concern to trainee teachers about the 'school-based' program. These included trainee teachers' responsibilities while in schools, the maintenance of personal journals, the location of computers in term 4, and the evaluation criteria for major projects. Several messages, representing different points of view, were posted on each of these issues.

However, a great deal of interest in 'Course Comments' resulted from one message (titled 'stuff'), posted soon after the conference was started, which contained disparaging comments about the 'school-based' program. It is reproduced here in full.

I HAVE TWO SIMPLE WORDS TO SUM UP THE WAY I FEEL AND THE WAY I KNOW A LOT OF OTHER PEOPLE FEEL ABOUT THIS COURSE.

STUFFED AROUND.
IT SUX
PISSED OFF
LIKE SHIT
CONFUSED IMMENSELY
VERY SLEEPY
OVER SEXED
NO SEX
DON'T WORRY
BE HAPPY
FED UP

GOING CRAZY
REALLY BORED
BACK SOON!!!
DON'T LEAVE!!!
CONTINUE ON
HEAVY GOING
HEAVY SHIT
HEAVY STUFF
FEELING STUFFED
WASTING TIME
EVIL NECESSITY
BLACK, BLACK
VERY BLACK
LATE NIGHT
COCK UP
COCK DOWN
BYE NOW ...........

Some contributors found the language in this message offensive. Other contributors considered messages like this were inappropriate on the network. Firm opinions about 'stuff' were expressed in several messages.

For instance, one 'Mary Smith' response to 'stuff' considered that:

The name Mary Smith was put there to allow us to give CONSTRUCTIVE feedback to each other. Good or bad, but not in bad taste. This line is important to have and allows us to voice our opinions. Please think of others before you go and ruin this line of communication.

Another 'Mary Smith' response was also critical of this message:

Don't completely stuff it up for everyone. Just because you are not satisfied with the course, and I agree we have been stuffed around, it doesn't mean to say that everyone is dis-satisfied. So keep your comments to yourself and butt out.

Other messages, critical of the 'school-based' program, were also posted:

Chin up folks. I am going through this with you all. We are half way through this year and we only have 1/8 of the course to go! I hope that it will get better.

The 'Course Comments' conference, and the 'Mary Smith' account, provided a unique opportunity for trainee teachers to discuss issues and candidly express their opinions about aspects of the course. One university staff member commented that the anonymous account enabled trainee teachers to 'blow off steam'; another thought it 'released a bit of tension for those who needed it'. 
Sometimes these discussions also occurred off-line, as one trainee teacher reported:

Once there was a thing in 'Mary Smith' asking about the computers in fourth term. And all the people who were in the room at the time had a big discussion about it, and so we wrote something together in 'Mary Smith' and put our opinion in because we wanted the computers to stay in fourth term. [TT1]

Clearly, the capability of sending anonymous messages to the 'Course Comments' conference enabled many trainee teachers to resolve problems associated with using their own accounts. As anonymous participants, they were free from criticism and it didn't matter what, and how, they wrote. One trainee teacher, who had made no comments to conferences except 'Course Comments' using the anonymous account, considered that:

It wasn't personalised. No-one knew who it was so they couldn't attach a name to it. So the criticism wasn't taken to heart. [TT12]

Another trainee teacher thought the anonymous account was a good idea because:

You don't feel so bad about coming back as Mary Smith and giving feedback. It's not friends or people you know. You don't want to step on peoples' toes. You can actually give feedback whether its critical or whether its positive. [TT18]

For another trainee teacher, using 'Mary Smith' was a way to contribute ideas with 'no strings attached':

I wrote it under Mary Smith because I couldn't be bothered getting back all the garbage that would come if I wrote it under my own name. I'd be getting personal comments back to my [mail]box and on to me personally and I didn't want that. [TT14]

However, not all trainee teachers were totally supportive of what happened in the 'Course Comments' conference. One trainee teacher acknowledged that she enjoyed reading comments but did not want to get involved:

I thought it was good but I thought a lot of the comments reduced the trainees' professionalism. It sounded like a Year 10 game. It was below me. I didn't want to get involved. [TT3]
Another trainee teacher who read messages also had little interest in contributing:

I know a lot of people were getting really upset about things, like the things in Mary Smith. I just thought that if they've got the time to worry about, talk about, whinge about things like that, then they're not going to get anywhere. [TT19]

This trainee teacher, like several (n=6) others, used her own account when contributing to 'Course Comments' because she considered that an anonymous account was unnecessary:

I feel if you have something to say you say it. If you feel strongly about something you should be able to say it and identify yourself. [TT19]

The use of an anonymous account was an interesting innovation which has been perceived to have increased participation in one conference. But it might also be argued that the capability to make anonymous contributions enabled trainee teachers to avoid, rather than address, the problems they had with the network and probably did little to help them resolve the concerns they had about public comments and the 'fear of criticism' about what they wrote on the network. This is an issue which is discussed further in the final chapter when the overall findings of this study, and the potential application of electronic networking in initial teacher education, are reviewed.

ACADEMIC PERFORMANCE OF TRAINEE TEACHERS

In Chapter 3, research about the use of electronic networking in place-based undergraduate courses was reported. This research (Hiltz, 1986; 1990) indicated that students who were 'deficient in basic skills' performed poorly in online activities in which reading and writing skills were involved. Initial observations of ranked lists of trainee teachers' academic performance and conference participation also indicated that a relationship may exist between these variables.

Hence, it was decided to investigate further whether any relationship existed between academic results (the only available measure of 'written skills') in the Bachelor of Teaching, and participation (number of public messages contributed to conferences) on the network. The use of academic results as a measure of 'written skills' appeared justified because academic results were almost exclusively based on written assignments submitted for assessment. The use of public messages as a measure of 'participation' appeared justified
because these data were reliable (public messages could be counted) and valid (only those trainee teachers who were confident about their written skills would contribute).

It was found that the relationship (at the .05 level, one-tailed test) between academic performance and conference participation was significant (Spearman's rho = .44). This result supports observations made during the year about students in the 'school-based' program (and conclusions reached about undergraduate students in other research reported in Chapter 3), that deficiencies in 'basic skills' (measured by academic performance in all subjects) may have been a factor affecting network participation.

Academic performance may also have impacted on participation in another way. Some (n=8) trainee teachers enrolled in the Bachelor of Education (fourth year) had not successfully completed the Bachelor of Teaching (first three years of the course). Hence, as well as a full study load for the Bachelor of Education they were also attempting to complete subjects in the Bachelor of Teaching. As a result, 'overload' may also have been a factor when trainee teachers reported that 'lack of time' was a reason for their limited participation on the network.1

CONCLUDING COMMENTS

Data presented and discussed in this chapter revealed that most trainee teachers logged on the network periodically (8.5 times per month), and used private mail extensively. However, only limited use was made of conferencing, typically to record factual information (notices of meetings and publicity about forthcoming events) rather than ideas about educational issues and curriculum, and the teaching/learning activities in which they were involved in schools.

The comments made by trainee teachers to account for limited participation in conferences related to the 'school-based' program, the medium of electronic communication, and personal skills and inhibitions. Trainee teachers' concerns about the 'school-based' program included their role in the school, the perceived demands of the major project, and assessment requirements. In relation to the medium, trainee teachers were concerned about presenting ideas publicly, conceptualising the audience they were writing for, the adequacy of their own writing skills, and the absence of familiar cues which form part of face-to-face

1 These trainee teachers failed to handle their fourth year study programs - 33% (n=8) had not completed the Bachelor of Education by the end of fourth year. Two trainee teachers had not completed either degree by the end of fourth year!
communication. The 'fear of criticism' from others about ideas presented was also a major deterrent to network participation.

Data presented and discussed in this chapter also revealed that an opportunity to use an anonymous account masked concerns about personal writing skills and fear of criticism from others. Trainee teachers were more willing to contribute public messages when they were not identified on the network. However, the anonymous account ('Mary Smith') was only used to send messages to one conference ('Course Comments'); this opportunity to investigate the effects of anonymity on network participation and message contributions in more detail was not realised (by the author) while the research was in progress.\(^1\)

Comments by trainee teachers revealed their uncertainties and frustrations with tertiary teaching and learning, and the particular 'school-based' program which they completed. Other comments revealed that trainee teachers lacked skills and confidence to participate fully in network conferences. Comments of this nature indicate that contextual factors such as the objectives of the program, and the skills and attitudes of participants, can have a significant impact on network participation. Hence, the final chapter contains a more detailed discussion about the nature of collaborative arrangements which might be sought with schools, and the purposes to which these might be directed, if a 'virtual community' of participants involved in teacher education is to be developed.

Data presented and discussed in this chapter has also provided insights into two factors associated specifically with electronic communication which have not received attention in the research literature - the well-known phenomenon of 'lurking' (accessing the network to read, but not to contribute messages), and the effects of anonymity on participation. These aspects are also examined more fully in the final chapter (Chapter 7) which incorporates data on, and comments about, network participation by classroom teachers and university staff presented and discussed in the next chapter (Chapter 6).

\(^1\) Unfortunately, the opportunity to investigate the effects of anonymity on network participation and message contributions was not realised by the author while the research was in progress. The 'Mary Smith' account had been created to enable participants to contribute anonymously to the 'Course Comments' conference; the author, and other participants failed to realise that this account might also be useful for contributions to other conferences.
CHAPTER 6 NETWORK PARTICIPATION BY CLASSROOM TEACHERS AND UNIVERSITY STAFF

INTRODUCTION

In the previous chapter the use of 'The Conclave' by trainee teachers, and the factors which influenced their participation on this electronic network, were outlined and discussed. This chapter focuses on similar concerns for two other major groups of participants - classroom teachers and university staff - in the 'school-based' program. Here, the extent to which teachers and university staff used the network, and the factors which influenced their participation, are presented and examined. While some of the teachers' concerns about electronic communication were similar to those expressed by trainee teachers, other concerns - such as regulations governing employment in schools - were only applicable to members of this group. Hence, the views expressed by teachers present unique insights about factors which can influence participation on an electronic network. The comments by university staff provide other ideas about participation by trainee teachers and classroom teachers, as well as their own use of the network.

NETWORK USE BY CLASSROOM TEACHERS

![Chart 6.1 Use by Classroom Teachers](image)

Chart 6.1 shows the extent and nature of usage by classroom teachers (n=8) between April and October. Classroom teachers account for only 4% (n=59) of logins to the network, 2%
of messages created, and 1% (n=2) of messages placed in conferences. This chart reveals that classroom teachers made minimal use of the network for private and public (conference) messages.

To investigate the factors which influenced classroom teachers' use of the network, questionnaires (Appendix B) were distributed to these participants at the end of the 'school-based' program. These were returned by 100% (n=8) of classroom teachers to whom questionnaires were distributed.

These data (Appendix C) revealed generally positive attitudes towards microcomputers (Items 1-4). Classroom teachers were also positive about the FirstClass communications software, considering that it was non-threatening (Item 13) and easy to use (Item 11). However, 50% (n=4) of respondents disagreed that initial training was sufficient (Item 5) and most indicated that extra training would have been helpful (Items 6 and 9), the responses to these items reflecting classroom teachers lack of familiarity with communications software. Most (n=7) classroom teachers (unlike trainee teachers and university staff), considered they were still at the 'basic level' of using the software at the end of the year.

Despite limited experience with communications software, and 'The Conclave' specifically, classroom teachers were generally positive about the medium and the ways in which it could be used. Most agreed that electronic networking was a useful way to present diverse views (Item 23) and that reading messages in conferences was interesting (Item 17). However, a wider spread of responses was evident about the value of the medium for social contacts (Item 24), discussing teaching projects (Item 25) and dealing with personal and professional problems (Item 27).

The questionnaire responses revealed that limited network participation by classroom teachers was due to lack of time (Item 15), rather than concerns about personal skills such as expressing ideas clearly (Item 16), potential criticism (Item 18) or lack of ideas (Item 20). However, interview data revealed that other factors also influenced network participation; these are discussed more fully in later sections of this chapter.

CONFERENCE MESSAGES

Data presented in Table 6.1 reveals the limited extent to which classroom teachers participated in conferences on the network.
<table>
<thead>
<tr>
<th>CONFERENCE NAME</th>
<th>TOTAL MESSAGES</th>
<th>N AND % OF MESSAGES BY CLASSROOM TEACHERS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>%</td>
</tr>
<tr>
<td>Staffroom</td>
<td>67</td>
<td>1.5</td>
</tr>
<tr>
<td>Course Comments¹</td>
<td>57</td>
<td>-</td>
</tr>
<tr>
<td>Projects</td>
<td>36</td>
<td>-</td>
</tr>
<tr>
<td>Computers</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>Maths</td>
<td>13</td>
<td>-</td>
</tr>
<tr>
<td>Assessment [in schools]</td>
<td>12</td>
<td>8²</td>
</tr>
<tr>
<td>Health &amp; PE</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>LOTE</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Technology</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>English</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Art/Craft</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Music</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>SOSE</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Science</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>

Although the questionnaire data revealed that classroom teachers considered conference topics 'interesting' and a useful way to present 'a diverse range of views', Table 6.1 indicates that this interest in electronic networking was not reflected in personal participation in conferences. The reasons for this are further examined in the following sections where interview data are presented and discussed.

**FACTORS INFLUENCING TEACHERS' PARTICIPATION ON THE NETWORK**

Interviews were completed with eight teachers (two from each school) at the conclusion of the 'school-based' program. Teachers interviewed were positive about the medium and understood the ways in which it might be used. For instance, one classroom teacher commented:

---

¹ As previously noted (Chapter 5, footnote #2) it has been assumed that all messages in this conference using the anonymous account ('Mary Smith') were contributed by trainee teachers.

² Three messages were removed by one teacher who contributed them for reasons discussed further in the following section of this chapter titled 'Teaching Service Orders 1993'.
It provides a communication link which is very difficult to achieve in any other form in that multiple users can be linked and there can be cross-seeding of information from one place to the other. You can share your highs and lows, I suppose, particularly in this case with the trainee teacher program. You can get instant communication provided the people you send it to access it as soon as they have the opportunity, so its as instant as that might be. If you get into any particular difficulty you can ask questions, so you can hopefully solve problems in that sort of way.

[CT6]

Despite these understandings of the ways in which an electronic network could be used, several factors mitigated against participation. Foremost amongst these was 'lack of time'.

Lack of Time

Most classroom teachers interviewed stated that the most important limitation on their use of the network was 'lack of time'. There were several reasons why time was considered to be limited.

One was teaching commitments. Recently introduced changes in school staffing, which placed restrictions on the employment of 'casual relief teachers' (CRTs) to cover teacher absences, meant the classroom teachers were forced to take other classes as well as their own. This left little 'free' time in the school day to participate on the network. One teacher commented:

I found it was a time commitment. I had class commitments. It was interesting to read through some of the messages but if I missed a week or so of access to the computer I'd have a huge file and it would take me fifteen or twenty minutes and I could be doing preparation. [CT1]

Curriculum changes also contributed to the lack of available time. In the first six months in which the network operated, teachers were heavily involved in two Ministry of Education 'innovations' - the introduction of new curriculum guidelines (CSF) and the writing of School Charters - which demanded a higher priority than participation on the network. Other changes also had to be dealt with, as another teacher explained:

This year we've had CSF. We've introduced First Steps. We've had LOTE days. We've had Health days. Health has been a priority in the school. We've had
swimming and camps coming in on our time. A musical that takes kids in and out of
the classroom. KIDMAP has been a huge one. That's the reality of what's being
pushed on us at the moment. [CT1]

Another classroom teacher (also the Principal at the school), explained the problem of 'lack
of time' in the following way:

The classroom teacher's first priority, without a doubt, is going to be the kids in the
grade and the delivery of curriculum to those kids. And, to be quite honest, in
today's climate to find time to do other things is very, very difficult. [CT1]

The 'lack of time' available for teachers to engage with the electronic network was
confirmed when the researcher attempted to implement initial inservice activities. While
inservice activities were organised in advance, changes were frequently necessary to
accommodate unexpected interruptions during the school day (dealing with playground
misbehaviour, parent visits) and after school hours (meetings scheduled at short notice).

The number and extent of demands, other than classroom teaching, on teachers' time were
extensive. In these circumstances, it was not surprising that participation on the electronic
network, a new medium with which teachers were not familiar, received a low priority.

Difficulties with Access

The computers used on the network were located in the trainee teachers' 'home room'.
Hence, to use the network classroom teachers were required to visit this room (an
inconvenient shift of physical location) to determine if the microcomputers were available to
use. Often, as one classroom teacher commented, it was necessary 'to wait in line to get
online' and this was a further disincentive to participation. Another teacher commented:

I think that the situation is particularly limiting if you have to go out of the
classroom, to a different part of the school, to access the modem. [CT6]

Yet another teacher made similar comments:

My biggest problem has been lack of time to physically get in there. Trainee teachers
were always using it which was great, but for teachers there was a problem if you
wanted to get in there at a particular time. [CT8]
The difficulties of accessing computers, however, related not only to participation but also to gaining the skills needed to use microcomputers and communications software confidently. In interviews, teachers readily acknowledged their lack of computer skills:

It's a relatively new concept. Like anything else, and particularly new technology, it might take time. There are still teachers who are not confident with computers, even the basic use of computers. They're still not confident because computers weren't in use 10 or 15 years ago when a lot of teachers did their training. They haven't grown up with computers. [CT8]

Given the lack of computer skills, access to computers was needed not only to use the network but also to practise necessary skills. Limited access greatly reduced the opportunities to develop these skills. One classroom teacher explained this difficulty in the following way:

If you feel insecure about using the new program, there is an insecurity there to start with. Access was a problem. Unless you can practise something that you feel insecure with, and develop confidence, you don't master it. Then you have to rely on others if you need to use it. What I found was (a) I didn't have time, (b) I had to wait in line to get online, and therefore my practice was down, so I relied on others to access the information I needed. [CT5]

The related difficulties associated with 'lack of time' due to other commitments, basic computer skills, and limited opportunities to practise using the software acted as major obstacles to teacher participation on the network.¹

Curriculum Prescriptions

As previously noted (Chapter 1), one of the perceived advantages of 'The Conclave' was the opportunities which this network might provide for discussions about curriculum programs and issues. However, in interviews it became evident that many teachers considered that curriculum was no longer problematic, that few incentives existed for teachers to discuss curriculum, and that the use of an electronic network for these purposes was unlikely to develop.

¹ The potential of increasing participation by accessing the network from home was also discussed in interviews. However, this idea received few positive responses from teachers due to the costs (equipment, call charges) involved, and a preference 'to keep home and school separated where possible'.
Teachers who commented on this aspect considered that the recently (late 1994) introduced *Curriculum and Standards Framework* (CSF), a series of curriculum documents outlining the 'outcomes' students should reach at particular levels of schooling, had stifled debate about curriculum programs and issues. As one teacher noted, the introduction of the CSF had lead to a 'climate' in which ideas were not subject to discussion. She commented:

There's not the enthusiasm now like there was. Once it [an in-service activity] was a chance for you to meet and discuss what you were doing. What you were doing you had worked out for yourself and you wanted to bounce that off someone. Whereas, when teachers meet now, we don't start talking about what we're doing because we're all supposed to be doing the same thing because the tomes say what we are supposed to be doing. [CT2]

The same teacher also added:

A part of it is the barrage of materials. We've been told not to rely on our own resources about the curriculum as the latest glossy has not only the framework but also the ideas. The glossy following in three weeks time will give you the method for interpreting that. We're getting into a habit, I think, of waiting for the next tablet from above that will show us how to do it. [CT2]

Another teacher expressed a similar view in the following way:

I think that one of the best ways to get teachers into 'The Conclave' is to try and avoid repetition of the sorts of stuff that happens in inservices and avoid the official documentation coming in. It's all there, it's thorough and support materials are starting to dribble in now. How you can still maintain your enthusiasm and uniqueness as a teacher. I think that's what probably really worries me. [CT3]

If these teachers were correct in reporting that the prescriptions in the CSF had restricted debate about curriculum at traditional (in-service) gatherings of teachers, the likelihood of discussions about curriculum developing on an electronic network would appear to be slim. If teaching involved reaching the specified outcomes in the CSF, and following the methods in the support documents, there would appear to be no need for collaborative interaction - electronic or face-to-face - about curriculum programs or issues. However, additional sanctions - regulations in the Teaching Service Act - also existed to discourage discussion about curriculum initiatives. These are discussed in the following section.
Teaching Service Orders (1993)

Concerns about discussing Ministry of Education initiatives on 'The Conclave' were raised by three teachers interviewed, and raised by the researcher in another interview to 'test' the veracity of these concerns amongst teachers in schools. To understand the nature of these concerns, the context needs to be briefly outlined.

In March/April 1995, the first standardised tests in the Learning Assistance Program (LAP) were administered in schools. For a variety of reasons, these tests were controversial, with many teachers opposed to this form of testing. In one of the schools involved in the 'school-based' program, teachers refused to administer the tests, and distributed (using children at the school) leaflets to parents outlining their reasons for opposing these tests. As a result of these actions, the Directorate of School Education (DSE) conscripted principals in other local schools to administer the tests. The DSE also took disciplinary action\(^1\) against the teachers concerned, but this was thwarted by an injunction in the Industrial Relations Court of Australia preventing the DSE Regional Manager 'interrogating the teachers' involved.\(^2\)

These actions by the DSE were based on the Teaching Service Orders (1993) which placed restrictions on teachers making 'public comment'\(^3\) about DSE initiatives in curriculum and testing. Section 3.12\(^4\) prevented teachers making 'public comment' on the Government or

\(^1\) The DSE disciplinary case was based on a section of Teaching Service Order 140 (1993) which stated:
3.13 (1) A member shall not use, directly or indirectly, the resources of the Directorate, school or students of the school for any activity other than official school purposes or other activities as authorised by the Director; (2) A member shall not use his/her official position, the resources of the Directorate, school or students at the school to produce and/or distribute material that is not in connection with his/her official duties as a member of the Teaching Service. (Supplement to Education News, 22 July 1993, p. 4. Teachers had also been notified of this section of the Teaching Service Orders (1993) in Executive Memorandum #748 faxed to schools on 1 September 1993 and reprinted in Education News, #16, 16 September 1993, p.22.)

\(^2\) WIN News (Channel 8), 25 October 1995; Latrobe Valley Express, 27 February 1996.

\(^3\) In the Teaching Service Orders (1993), 'public comment' was defined as 'any comment, oral or written, which is made to any person not employed by the Directorate and includes comments made in public speaking engagements, radio, television or the press, expressing views in letters to the press and/or in books or notices'. (Supplement to Education News, 22 July 1993, p.2.) It might be assumed that 'public comment' in messages on electronic networks would also have been excluded if those who had framed the Orders had been aware of new technology.

\(^4\) Section 3.12 of the Teaching Service Orders (1993) stated:
the Directorate, except where authorised by the Minister or Director. In these approved cases, comments had to be 'consistent with and reflect the policies, practices and directions of the Government and/or the Directorate'. A teacher making 'public comment' (in a 'private capacity', unauthorised by the Government or the Directorate) needed to ensure that 'the public comment will not adversely affect the member's ability to implement or administer Government policy'.

While teachers in the 'school-based' program were not necessarily familiar with the wording of the Teaching Service Orders (1993), they were aware of the industrial action by teachers at one school, the DSE's attempts to discipline these teachers, and the decisions in the Industrial Relations Court. These attempts to intimidate teachers who had made 'public comment' also influenced the willingness of other teachers to participate in network conferences on 'The Conclave'.

One teacher expressed her concerns about the dangers of criticising DSE initiatives in the following way:

Basically, it [DSE policy] states that we are not to criticise our employer being the State and therefore the DSE. The interpretation of 'criticise' is hard to work out. If you criticise something substantial, like an initiative such as the LAPS, you really are sticking your neck out fairly seriously if you do it as an individual. If you do it with a recognised group it's slightly different. With more minor things it doesn't seem to be a problem, but it's the major initiatives that you like to criticise, that you feel like you need to have input into. We have had some absurd initiatives here. For example, I think the money spent on putting ITV satellites into every school is ridiculous. We've got much stronger needs than that. That's just crazy stuff. It really is all just stop-gap stuff, vote-winning, but you can't afford to criticise it. And I can't afford to write to the paper and say its a complete and utter waste of money and sign my name under it because I believe that wouldn't go unnoticed. [CT3]

3.12 (1) Except where authorised by the Minister or Director, a member shall not make public comment on the Government or the Directorate; (2) Where public comment is authorised by the Minister or Director, a member should ensure that comments are consistent with and reflect the policies, practices and directions of the Government and/or the Directorate; (3) Notwithstanding sub-clause 3.12 (1) members may make public comment and enter into public debate on issues in his/her private capacity provided that: (a) the public comment is clearly made in the member's private capacity, and cannot be construed as an official comment of the Government and/or the Directorate, and (b) the public comment will not adversely affect the member's ability to implement or administer Government policy. (Supplement to Education News, 22 July 1993, p.4.)
The same teacher had expressed her concerns in the local press, but did not use her own name:

I've had friends put letters into the local paper expressing my thoughts but I'm not prepared to put my name to it. [CT3]

Another teacher expressed similar concerns about putting a name to critical comments to DSE initiatives:

It really is a result of experiences this year. You don't know whether there is someone documenting. If you've got a name for anything at all you could well have a file saying: 'You stopped work on this day', 'You went on strike this day', you sent this letter to *The Age*, and you put this on 'The Conclave', and all these things are documented against you. [CT2]

A teacher at another school stated that it was not possible to discuss the 'pros' and 'cons' of the LAP on an electronic network like 'The Conclave':

It's too controversial. I have to, as a member of the DSE, implement that policy. So to put any doubts I had about that program down in writing is going to be a little bit dangerous. I'm going to put a lot of thinking into it before I enter any of that sort of information. [CT7]

Questioned further about these 'doubts', she stated:

The doubt comes from yourself and where the information is going to go and who's going to use it and who's going to read it and who, perhaps, is going to come back at you with some of the comments you've made. [CT7]

These comments by classroom teachers (n=4) indicate that fear of retribution for critical comments about DSE policy and curriculum initiatives may have acted as a powerful disincentive to participation in network conferences. Fearing that critical public comments may result in some form of discipline by their employer (DSE), many teachers considered it 'safer' to say (write) nothing. There was no requirement in the 'school-based' program to participate on the network and, in these circumstances, reservations about Government initiatives were considered to be best expressed verbally so that no written record would exist which could be scrutinised at a later date. Hence, like trainee teachers (see Chapter 5),
classroom teachers considered that public communication on the network exposed the vulnerability of communication where a record of what was written was archived. Classroom teachers, like trainee teachers also, saw no particular advantages, and some real dangers, in notating ideas about teaching, curriculum, testing and other aspects of teaching and learning on an electronic network. Given doubts about 'public comment', and in the absence of any obligation to participate, the 'best' response was not to contribute.\footnote{As noted earlier (Chapter 5), the opportunity to investigate the effects of anonymity on network participation was not realised by the author while the research was in progress. If teachers had become aware, or been told by the author, that the Mary Smith account could have been used to contribute anonymously to all conferences (and not just the 'Course Comments' conference), this may (?) have allayed teachers' fears about participating.}

Criticism

The possibility of disciplinary action by their employer was not the only factor which raised teachers' concerns about the vulnerability of written communication on an electronic network. Like many trainee teachers, some classroom teachers also expressed reservations about the scrutiny their contributions might receive from other users. One classroom teacher expressed these concerns in the following way:

I see it as being very threatening. There would be some people here who would never touch a computer because having to write something down makes what they have said set in concrete in some ways. Putting something in writing, you get a hard copy of it. For some of our teachers here, for them to get their ideas down, would be a major step. To then put it in a public place would be a huge step and they wouldn't touch a machine again if somebody said anything critical. [CT1]

Other teachers acknowledged their lack of experience with written presentations. The main medium of communication with children and parents had been face-to-face interaction, and few opportunities had existed to develop written communication skills. However, the need to develop these skills was acknowledged, as one teacher noted:

I feel that with charter implementation, curriculum meetings and sharing of professional development, teachers are becoming more aware of the need to communicate with adults rather than just children. Therefore, they'll get used to the idea of having to do it. They may not feel comfortable with it but they'll need to do it. [CT5]
Hence, lack of experience with written communication, and concerns about possible criticism about views expressed, may also have been deterrents to network participation for some teachers involved in the 'school-based' program.

Cues

Like many trainee teachers (see Chapter 5), some classroom teachers found the lack of cues normally associated with face-to-face communication disconcerting. One classroom teacher, who emphasised the importance of 'social skills' several times in the interview, commented:

I prefer face-to-face interaction rather than sitting down at a computer and typing it. I prefer to discuss it over the phone and get the inferences about what people are saying and clarify the points straight off as the discussion goes. I'm more into the social skills you develop through the interaction. I don't feel you interact through computers. In the way it was structured here it was to allow people to communicate without travelling the distances but, from my point of view, I'd still rather pick up the phone or arrange a meeting and do it in person rather than do it with a computer. [CT1]

The problem for several teachers was that the skills involved in electronic communication were very different from those used in face-to-face communication which they had developed, through specific training and extensive experience, as teachers. One teacher noted:

I think it's definitely foreign. We prefer to communicate face-to-face the whole time, even with parents. We prefer to talk to them face-to-face and if that's impossible we phone them up. We just feel you get better communication because you've got the two-way communication instantly. You get their reactions, their feedback, straight away and we find it's far more successful in our job. [CT8]

These comments illustrate that the loss of cues normally associated with face-to-face discussions can be perceived as inhibiting (compare with Chapter 1), and a significant barrier for some participants to overcome, particularly in the early stages of using the medium.
COMMENTS ABOUT TEACHERS' PARTICIPATION

In the above sections, statistics on the use of the network by classroom teachers, and questionnaire and interview data on the factors which influenced their participation on 'The Conclave' have been reported. These data revealed that classroom teachers involved in the 'school-based' program made only a few contributions to network conferences. However, the transcripts of interviews revealed that teachers were familiar with the concept of electronic communication (although their skills in doing so were only at a 'basic' level), and made thoughtful comments to explain their lack of participation.

Some of the reasons for lack of participation - lack of time, limited access, elementary computer skills - related to becoming part of the community of network users (audience). In most cases, teachers simply lacked the necessary time in their busy teaching schedules and other commitments to access equipment, practice the procedures needed to use the communications software, and to write messages. In the absence of any requirements to participate in network conferences, learning to use the software and contributing messages remained a low priority.

Other reasons for lack of participation related to concerns about notation - the dangers of 'public comment' on DSE policy and curriculum initiatives, possible criticism from colleagues and the loss of cues associated with face-to-face communication. The justifications provided in interviews indicated that fundamental concerns about electronic networking - in particular, with the archiving of messages - existed amongst teachers, and that lack of participation was not simply due to practical considerations like available time and access to equipment. These concerns indicate that reported advantages of electronic communication (see Chapter 1) are not necessarily applicable in all communities of users, and that generalisations about electronic communication need to be 'tested' in specific cases. Similarly, the perceived advantages of written communication (in an electronic form) are not necessarily shared by potential users; specific training and extensive experience with face-to-face communication may present considerable resistance to new ways of encouraging interaction and collaboration.

In the remainder of this chapter, the use which university staff made of the network is outlined, and their perceptions about the network are reported and discussed.
Chart 6.2 shows the extent and nature of usage by university staff \((n=8)\) between April and October. University staff account for 12\% \((n=171)\) of logins to the network, 16\% \((n=140)\) of private messages, and 31\% \((n=42)\) of messages placed in conferences. These data reveal limited use of the network by the eight university staff who were given accounts on the network. Most public messages were contributed by the Subject Examiner.

To further investigate the factors which influenced university lecturers' use of the network, questionnaires (Appendix B) were distributed (at the end of the 'school-based' program) to four available staff (two academic staff and two liaison lecturers) who had major responsibilities for the development and implementation of the 'school-based' program.

These data (Appendix C) reveal positive attitudes from respondents towards computers (Items 1-4). University staff did not find the software threatening (Item 13), and agreed that it was 'easy' (Item 11) and 'fun' (Item 12) to use. Members of this group reported (Item 14) that they had 'higher' \((n=3)\) or 'advanced' \((n=1)\) mastery of features of the software. However, despite this level of confidence about using the communications software, extra training was also considered to be desirable (Items 6 and 9).

Respondents in this group strongly supported the notion of computer conferencing (Items 17, 19, 21 and 22), and were confident they had the necessary skills to do so (Items 16, 18
and 20). However, a wider range of responses is evident about the time available to participate in conferences (Item 15).

University staff also reported that the network was suitable for receiving information (Item 23), social contacts (Item 24), discussing projects (Item 25) and for developing 'a sense of community' amongst participants (Item 28). However, uncertainty is evident about the value of the network for discussion of educational issues (Item 26), and for dealing with personal or professional problems (Item 27). These data can be considered to be indicative of the views of university staff; data were available for only four staff (those who were also interviewed) and generalisations about this group must be regarded as tentative.

CONFERENCE MESSAGES

<table>
<thead>
<tr>
<th>CONFERENCE NAME</th>
<th>TOTAL MESSAGES</th>
<th>N AND % OF MESSAGES BY UNIVERSITY STAFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staffroom</td>
<td>67</td>
<td>46%</td>
</tr>
<tr>
<td>Course Comments¹</td>
<td>57</td>
<td>19%</td>
</tr>
<tr>
<td>Projects</td>
<td>36</td>
<td>25%</td>
</tr>
<tr>
<td>Computers</td>
<td>15</td>
<td>53%</td>
</tr>
<tr>
<td>Maths</td>
<td>13</td>
<td>15%</td>
</tr>
<tr>
<td>Assessment [in schools]</td>
<td>12</td>
<td>58%</td>
</tr>
<tr>
<td>Health &amp; PE</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>LOTE</td>
<td>4</td>
<td>25%</td>
</tr>
<tr>
<td>Technology</td>
<td>3</td>
<td>100%</td>
</tr>
<tr>
<td>English</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Art/Craft</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Music</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>SOSE</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Science</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>

¹ See footnote 1 (p.146).
Data presented in Table 6.2 reveals limited participation by university staff (n=8)\(^1\) in conferences on the network. All staff contributed messages (n=34). Several staff attempted (unsuccessfully) to initiate conferences.

The factors which influenced university lecturers' participation on the network, and their insights about the involvement of trainee teachers and classroom teachers, were further investigated in interviews. The data collected in these interviews (n=4) are discussed in the following section.

**FACTORS INFLUENCING STAFF PARTICIPATION ON THE NETWORK**

Interviews were completed with four university staff - the Head of School, Subject Examiner and two liaison lecturers. These staff were known to have completed questionnaires at the conclusion of the 'school-based' program.

In general terms, the university staff interviewed were enthusiastic about the potential value of electronic networking, and confident about their abilities to use it. One of the reported advantages was evaluative comments (contributed anonymously) in the 'Course Comments' conference. Here, staff considered the ideas raised by trainee teachers and, where it was thought appropriate, noted changes to the program. For instance, one university lecturer commented:

> I thought a lot of the criticism was quite justified. There were a few messages which were obviously very silly like the one which had lots of expletives in it. But a lot of the other stuff I agreed with. For example, we're changing how we're writing things for the coming year on the basis of what's occurred this year. Things like, why we have journals. These journals are a waste of time; that's their perception. What we're doing is writing up the introduction to keeping a reflective journal. We are stating very clearly what the reasons are for keeping the journal. [US2]

Some of the messages in 'Course Comments' also provided useful formative evaluation, which resulted in changes to the program:

---

\(^{1}\) Messages by the Administrator (the author in this case study) are included in Table 6.2. The Administrator contributed 52\% (n=16) of messages by staff in 'Staffroom', 36\% (n=4) of messages in 'Course Comments', 33\% (n=3) in 'Projects', 100\% (n=8) in 'Computers', and 71\% (n=5) in 'Assessment'. Apart from the conference 'Computers', messages in other conferences were of a technical or administrative nature.
They said: 'When are we going to get some evaluative criteria for the assignment? That was fair enough. We hadn't done that. As you know, we've made up most of this subject as we went along. That's where the network has been very useful because I've kept copies of a great many of the messages that have significant statements about how to spend your time in schools, what the purpose of the journal is, how the assignments should be organised, and other things which go into the subject book. [US2]

Hence, the network was a useful way to notate ideas about the program, with changes made during the year and when planning the following year.

One liaison lecturer also used the 'Course Comments' conference to handle trainee teachers' concerns about the program in the school to which she was appointed. She found this conference useful, as she put it, to find out 'what was happening behind the shelter-shed':

I was reading Mary Smith just to find out how the program was going along when students weren't prepared to tell you face-to-face. [US3]

However, she was reluctant to respond to messages in 'Course Comments' because she wasn't prepared 'to stoop down to their level' and because she felt the medium was not very useful for resolving issues. Instead, she preferred to discuss issues raised in 'Course Comments' in face-to-face meetings with trainee teachers:

I didn't feel responding to Mary Smith would do anything. It was just mud-flinging. But those issues were to trainee teachers' hearts so that's why I decided I would discuss them. I had meetings every Wednesday morning and the Mary Smith comments would always come up. [US3]

Another advantage of the network was the ease with which information could be distributed to participants. For staff with specific responsibilities (Subject Examiner, Liaison Lecturers) for aspects of the program across several sites, the network was a convenient way to contact participants:

I've really appreciated having that system there. It made it a lot easier for me. The notion of having to contact students by 'phone is appalling in terms of ringing the school. The teacher trainees' room is miles away. How do you get messages to them? I just punched in their names and sent the message and assumed they got it. [US2]
Here, the advantages of electronic communication were fully utilised - information was distributed easily, and receiving (and acting on) it became the responsibility (accessing the network frequently) of those to whom messages were addressed.

However, despite the value of formative and summative evaluative comments, and the ease with which information could be distributed, university staff were disappointed with the limited participation by trainee teachers and classroom teachers. For instance, one staff member commented:

I found it extremely useful in terms of sharing information between the trainee teachers, talking to them, and being able to contact them because they're not always easy to find. I have not found it useful for discussion as the trainee teachers didn't enter into the spirit of the thing in my opinion. At times, like several other people, I put on what I thought might be an opening for on-going discussion but nothing ever happened. [US2]

University staff advanced several reasons for limited participation by trainee teachers and classroom teachers. Two members of staff considered that changes in the first three years of the course (see Chapter 2) had affected student motivation. One member of staff commented:

This group's got a history. They are fully aware of their own history in that they have always felt 'hard done by' this University for reasons that are beyond our control. For example, they started out in DipT and then they were transferred. And in the process of being transferred there was an attempt to not give them full credit for what they'd done. . . They'd always had the mindset of being three year people. They never accepted the notion that the game rules had changed, or some of them didn't. [US2]

Another staff member made similar comments:

I think we had another factor this year that this group, in the fourth year this year for the first time, actually started out in the DipT and we transferred it in second year into the new course so they wouldn't be disadvantaged. They had different expectations when they started. They felt they were guinea-pigs with the extra year added on. We were actually doing them a favour but a lot of them didn't want to believe that. [US1]
If these assessments are correct, course changes may also have influenced trainee teachers' participation on the network. However, this is difficult to gauge - the potential impact of these changes had not been anticipated by the author and were not raised in interviews with trainee teachers which were completed before University staff were interviewed.

Staff considered that passive learning activities early in the course may also have contributed to limited participation. According to one staff member, trainee teachers lacked confidence in their own writing skills, and feared criticism of public comments, indications of shortcomings in earlier years of the course where public presentations (eg, tutorials) had not been part of subject requirements. The lack of specific training and experience in reflection about teaching was also considered to be a contributing factor:

It may be that our course structure for the first three years and the attitudes about the way we work with our students aren't conducive to that. It makes them too dependent. If we want, at the end, to say to them in the fourth year of the school-based program now 'reflect', we've made them very dependent learners and, as someone has said, we've cast our pearls before them. If that's the attitude that's driving the first three years they're not going to make that shift. In the first three years we've got to develop them to be very independent learners, able to put their stuff on the table, and to feel confident about reflecting in public without the lecturers being the experts who know more than them. [US1]

The impact of the dominant pedagogy of university teaching - face-to-face lectures and 'tutorials' - was also considered to be important by another staff member:

I don't think the network encouraged discussion to the degree that we hoped. There's a great resistance to the notion of having discussions on it - you have to be in the same room together to have real interaction. [US2]

Liaison lecturers who had spent a great deal of time in schools during the year were also concerned about the extent to which classroom teachers could be encouraged to participate. One liaison lecturer thought that many teachers lacked confidence to contribute ideas:

They have to feel really confident. Primary teachers don't 'sell' themselves very well. They are constantly going to in-services on leadership, how to prepare a CV, and things like that. They say: 'I can't do that. We'll get somebody else to do that'. [US3]
Another member of staff thought that many teachers were only concerned about 'doing their job' and that they were not interested in discussing educational issues:

I think you have a small group that it would be highly successful with. They're people who are thinking about educational issues anyway. They would be people who are doing extra study - their Masters. But 80% of the teaching population are just busy. They get in and teach their class. They've got a meeting every night, those sorts of commitments. It's a job, so you're not going to get those people using it unless it's to have a chat. That's valuable in itself, to be able to get on and say, 'Have you got anything on the circus?' [Laughs] That would be a start, but in terms of discussing broader educational issues I just think the problem is that teachers aren't interested. Unless you're studying, it's just another thing that you've got to contend with. If you've got your degree, if your class is operating OK, if you're getting along with the staff, and the parents are fine, then you're doing OK. [US4]

The remarks by university staff contain several plausible explanations for limited network participation. Two comments about these explanations appear relevant. First, conclusions reached on the basis of these explanations must remain tentative given the paucity of interview data from a small (n=4) number of respondents. Second, there was no commentary on the extent to which educational practices (in a supposedly innovative 'school-based' program) enabled the opportunities presented by new technology (electronic networking) to be exploited. The extent to which educational practices could have been changed to take advantage of key attributes of electronic communication (see Chapter 1) was not raised in interviews (or at other times during the year). While some staff valued evaluative comments from trainee teachers, these only concerned minor adjustments to the 'school-based' program as it was currently implemented (and how, it was assumed, it would be implemented the following year). Broader questions surrounding the objectives and practices of 'school-based' teacher education, and the use of new technology, were not examined. These questions, about objectives and practices in teacher education to exploit new technology, warrant detailed discussion; hence, this is deferred until the next chapter where major conclusions of this case study are presented and discussed.
CHAPTER 7  CONCLUSIONS

INTRODUCTION

Data on the use of the electronic network by trainee teachers, classroom teachers and university staff have been reported and discussed (Chapters 5 and 6). Since all data have been presented, it is now appropriate to consider these data in relation to the theoretical perspectives which framed the case study, and the specific research questions which were investigated. This chapter is also an appropriate place to evaluate the contribution of this case study to knowledge in the field, and to identify aspects arising from the research completed which appear to justify further study.

SCHOOL-BASED TEACHER EDUCATION AND ELECTRONIC NETWORKING

In Chapter 1, features of school-based models of initial teacher education, and the justifications provided for alterations to traditional teacher education courses, were outlined and discussed. These models of school-based initial teacher education rejected the notion that teaching was a technical procedure which involved the application of specialised knowledge in a rule-governed way. Instead, teaching was viewed as a professional activity - a 'constant process of interpretation, action, reflection and adjustment' - in which assessments of situations, and actions taken, were monitored and adjusted as intended outcomes were perused.

The view that teaching was an interactive process in which past experiences and understandings were used to impose meaning on classroom situations involved a different perspective from traditional courses about the knowledge base of teaching. Research findings could inform teaching, but could not be used to derive 'prescriptive principles'; these findings needed to be mediated to suit particular contexts. 'Craft knowledge', the 'very sophisticated thinking involved in everyday teaching', and 'practical wisdom' (resources, examination requirements), also impacted on decisions taken. Hence, knowledge about teaching originated from different sources, with teachers selecting what was appropriate in decisions about achieving specific outcomes.

If the primary purpose of training was to assist trainee teachers to bring 'the constant process of interpretation, action, reflection and adjustment that is necessarily involved in professional activity increasingly under their own control and understanding' (Furlong et al., 1988:125), traditional models of initial teacher education and training - involving the
'application' of rules which had been learned in a different (university) context - were inappropriate. Instead, curriculum and pedagogy would reflect an 'integrated code' - weaker classification would exist between curriculum / education studies and activities in schools, and weaker framing would give trainee teachers greater control, a more 'active' role, in the selection and organisation of knowledge about teaching.

In Chapter 1, problems in implementing this model of initial education and training were also recognised and discussed. The 'craft knowledge' involved in teaching was usually 'semi-conscious and not articulated' (McIntyre, 1988:102), and difficulties existed in making this available to trainee teachers. Learning from experience involved reflective practice; specific training and dependable support structures were needed to help beginning (and experienced) teachers overcome the 'vulnerability' of reflective approaches to teaching. The roles of participants - trainee teachers, classroom teachers and university staff - and the nature of knowledge sought required clarification; if knowledge about teaching was tentative (rather than prescriptive), an integrated school-university curriculum would emphasise investigation and evaluation, 'active' pedagogies concerned with how knowledge was created, rather than didactic pedagogies which emphasised states of knowledge and how these could be applied (Furlong et al, 1988:125-6). The ways in which electronic networking might help in implementing the curriculum and pedagogy envisaged in this model of professional education and training - the focus of the research completed - are explained in more detail in the remainder of this section.

The theoretical framework for the research which was completed also drew on the work of Shulman (1987). He maintained that since 'practical wisdom' was largely unrecorded, access to this knowledge about teaching depended on the sharing of information amongst practitioners. Sharing information required an audience of others with similar interests, and a system of notation for recording ideas about practice. Reflection about teaching provided the information - events, emotions, accomplishments - which could be recorded and shared with others.

The purpose of the research reported in this thesis was to investigate the extent to which electronic networking (computer conferencing) could maintain an audience, provide a forum in which ideas about practice could be notated, and foster reflective approaches to teaching amongst participants in initial teacher education. The sharing of information on an electronic network could provide a practical way in which the curriculum and pedagogy envisaged in 'school-based' teacher education could be implemented and developed. Network participation via conference messages had the potential to make explicit the 'craft', and other, knowledge on which decisions about teaching were made. Collaborative
arrangements might be facilitated when constraints imposed by time, and travel to venues, were removed. Communication on an electronic medium might also foster 'reflective practice'. Ideas could be researched and clarified before messages were contributed to conferences on the network. Explaining ideas in written form might encourage participants to make explicit the knowledge they held about teaching and the ways in which this knowledge was created. Opportunities for collaboration would also be available since contributions to conferences would be accessible to all members of the network.

Electronic networking also presented opportunities to implement ideas about the classification and framing\(^1\) of knowledge (Bernstein, 1971) envisaged in models of school-based initial teacher education. Weaker classification in the course might be facilitated; activities in schools would not be so clearly insulated from curriculum ('methods') subjects in university classes as participants sought the views of others on common issues and problems. Weaker framing might also be encouraged; control over what was investigated and reported could be determined by participants rather than the syllabus in the traditional course. In general, more 'active' and 'self-directed' learning might be anticipated to develop as participants interacted on the network, and introduced personally relevant issues and problems for comment (see Chapter 1).

Hence, electronic networking could have considerable potential in facilitating the epistemology of professional practice envisaged in thinking about school-based courses in initial teacher education; a pedagogical innovation to help trainee teachers (and others) understand and control the 'constant process of interpretation, action, reflection and adjustment' involved in professional activity. Participation on the network (reading and writing messages) might foster the development of skills and attitudes involved in 'reflective' approaches to the teaching-learning process, the investigation and evaluation of other perspectives on teaching, and the moral and ethical consequences of professional actions. Reflective approaches to teaching have often been difficult to implement; electronic networking may provide new opportunities to encourage and support beginning teachers adopt 'reflective' approaches in their own practice.

An opportunity to investigate the use of electronic networking arose when a 'school-based' program (fourth year) was introduced in an initial teacher education course. It was considered to be important to research this initiative because opportunities to do so occur infrequently - programs built on (some of the) ideas about the professional preparation of teachers already discussed rarely provide opportunities for electronic communication among

\(^1\) These concepts are defined in Chapter 1, fns #1 & #2.
participants. Only a limited number of studies about electronic networking with teachers, and beginning teachers, have been published (Chapter 3). The few published studies have been application-orientated descriptions and evaluations of specific courses; only one example, involving networking with experienced teachers (Castle, et al, 1991; Watts & Castle, 1992) has been grounded, like this case study, in theoretical perspectives about the acquisition and maintenance of professional knowledge about teaching, and a specific rationale for creating a 'virtual community' of participants in which issues and ideas can be shared and recorded.

While a case could be made for a 'match' between the objectives of school-based initial teacher education, and the characteristics of this new technology, it seemed important to 'test' (investigate and explain) the efficacy of the medium in practice. Although electronic networking has been used extensively in other contexts (Chapter 3), the ways in which the medium might be incorporated into teacher education has not been extensively documented. The use of electronic networking in the ways envisaged requires participants to adopt different roles, relationships and strategies, and their ability and willingness to do this must be seen as problematic. While networking provides new opportunities for collaboration between trainee teachers, classroom teachers and university staff, for instance, some individuals may be unwilling to join a wider audience in which ideas about practice is analysed. Moreover, in an electronic medium, where communication is based on the exchange of written messages, individuals may be reluctant to make the effort to record their ideas in a permanent form and offer these for scrutiny by others. However, other consequences of new communications technology might be difficult to foresee. Possible 'second-level effects' (see Chapter 1), unanticipated changes in behaviour and thinking, may also be important when integrating electronic networking into initial teacher education.

RESEARCH QUESTIONS

From these theoretical perspectives about school-based teacher education, and the ways in which computer communication might facilitate the curriculum and pedagogy envisaged in initial teacher education, specific research questions were formulated (Chapter 4). These related to anticipated 'first level' and 'second level' effects of using new technology. Research questions about first level effects were concerned with the conditions which were considered necessary (Shulman, 1987) if sharing of knowledge about teaching was to occur - the extent to which computer communication could maintain the audience, provide a forum to notate practice, and foster reflective approaches to teaching. Research questions about second level effects focused on other consequences of this innovation; the unanticipated
changes in behaviour and thinking which may result from 'negotiating' relationships with new technology.

RESEARCH DESIGN AND DATA COLLECTION

The 'case study method' was selected, for reasons outlined in Chapter 4, as the most appropriate design to investigate the research questions. Different sources of data were used to ameliorate internal validity in an effort to ensure that events reported, and the interpretations placed on them (by participants and the author), were representative of perceptions about what had happened, and why, during the 'school-based' program.

FINDINGS

The findings are reported and discussed in relation to the selected research questions - dealing with audience, notation and reflection - with reference to 'first level' and 'second level' effects of using computer communication.

However, a further sub-section discusses findings in terms of what might be considered 'third level' ('meta') effects - a perceived requirement to re-conceptualise relationships between participants, and to resolve issues about anonymity and 'lurking' in electronic communication, if the advantages of new technology are to be fully exploited in initial teacher education.

Audience

Data presented in Chapters 5 and 6 reveals that a public audience did exist on the electronic network but that this was not comprehensive - trainee teachers and university staff account for most logins, with only a few classroom teachers occasionally accessing the network. Trainee teachers and university staff also account for most public messages contributed to conferences. However, trainee teachers and university staff contributed relatively few messages to conferences. The network was mainly used for private messages; hence, there is little evidence of 'active' participation (contributing messages) in conferences from members of the three groups of participants in the 'school-based' program.

In interviews, trainee teachers advanced several reasons to account for their limited participation in electronic conferences. Many of these reasons had little to do with the network, and the purposes which it might serve. At the beginning of the year, trainee teachers were too busy 'negotiating' relationships in schools, and thinking about the major
project, to give the network much attention. Some perceived that they were in schools to act like 'real teachers' and accepted heavy teaching loads. Others were particularly concerned about clarifying the requirements of the project, and planning for its implementation in unfamiliar school surroundings. Despite training to use the network, and encouragement to participate on it (from university staff), trainee teachers had other priorities at the commencement of the school year. Consideration of what 'counted' in terms of assessment also reinforced decisions about initial priorities.

For classroom teachers, decisions about joining the network audience were influenced by other factors. Many teachers felt that time to do so was limited; teaching responsibilities, meetings about curriculum changes, and other school commitments, were far more pressing demands on time than using the network. Access was also a problem - computers were located in the trainee teachers' home room and were often in use. Difficulties with access prevented teachers - many lacking even basic computer skills - practising the procedures, and gaining the confidence, to use the network effectively.

For university staff, joining the audience was easy. All staff were in the privileged position of having computers on their office desks. All were experienced users of electronic mail (and other software), and skills were quickly transferred to use of the network software. Support was readily available; any uncertainties about procedures could be readily checked with the author.

These findings indicate that creating the teacher audience can be a major obstacle to comprehensive participation in electronic communication in a school-based teacher education program. Access to hardware was a major problem; schools simply lacked the equipment (ideally networked physically within the school setting) to enable teachers to gain ready access. Most teachers lacked even the basic computer skills needed to use computers confidently. And teachers were 'too busy', giving electronic communication of the kind envisaged a low priority amongst the many tasks they were required to complete.

Notation

While course demands, particularly early in the year, influenced trainee teachers' decisions about joining the electronic audience, and access (in a physical sense) was a difficulty for teachers, 'active' participation by trainee teachers and classroom teachers remained limited throughout the year. This case study revealed that deeply held concerns about discussing issues and recording ideas can be powerful reasons for limited network participation. Some of the reasons presented support, while others contradict, claims made about the benefits of
communication on electronic networks (Chapter 1). Hence, an examination of these concerns is valuable in assessing claims about electronic communication as well as accounting for events in a particular case.

For trainee teachers, recording ideas on a public electronic network presented special difficulties associated with written communication. They were uncertain about writing for an audience; previous experience recording their own ideas had been restricted to assignments read only by university lecturers. In these cases, the set topic, and 'knowing what particular lecturers look for', had structured the writing task. However, 'topics' in network conferences were not always as tightly prescribed as assignment questions, and 'a whole range of people', many unknown to trainee teachers, were potential readers. In these circumstances, determining what to write about for a broader audience created uncertainty about using the network for discussion purposes.

With no previous experience of 'network genre', knowing how to present ideas was also a difficulty. Uncertainties existed about whether a 'formal' or 'informal' style should be used, the amount of detail required - the need to 'really explain yourself a lot' - and the extent of 'editing' needed to reduce ambiguity. The loss of visual and verbal cues in face-to-face communication was also a problem. Interestingly, the comments by trainee teachers related to writing messages, rather than reading messages from others. In face-to-face communication it was possible to determine 'if they're understanding what you mean', and additional comments made to improve comprehension. In electronic communication, however, there was no way of knowing how the content of a message might be received. Despite the opportunities available to clarify points in other messages, 'getting it right' in the first message was considered important.

However, the overwhelming concern of almost all trainee teachers about presenting their own ideas was 'fear of criticism' from peers (in particular), and other participants on the network. In almost every interview, trainee teachers expressed concerns about the 'dangers' of putting their thoughts in writing, the scrutiny their messages might have received from others, and the public 'criticism' about what they wrote which might have appeared on the network. Suggestions (in interviews) that they might have used the network to articulate concerns, 'test' personally held ideas, or invite comment about current issues in curriculum and teaching, were resisted; this was considered 'risky' behaviour which might reveal personal 'inadequacies' with knowledge or understanding about events or issues. The knowledge that messages were stored on the network, and could be retrieved at some later date, simply heightened anxiety about the vulnerability of written communication; what was
written on one occasion may have to be defended at some later date when the views expressed initially were no longer held.

The many uncertainties about electronic communication expressed by trainee teachers may explain why most messages they contributed to public conferences were simply notices - about inservice programs and social activities - conveying information about forthcoming events. There was no ambiguity about how to write these messages, and nothing controversial about their content. These messages were unlikely to attract 'criticism' from others since they conveyed nothing about personal beliefs or behaviours.

Teachers were also unsure about recording their own ideas in an electronic form. Like trainee teachers, classroom teachers were concerned about the scrutiny their contributions might receive from other users, and the lack of visual and verbal cues which they had learnt to use in face-to-face communication. However, the major 'danger' for teachers was the possible repercussions of 'public comment' about curriculum policy and initiatives. Given the zeal with which their employer had attempted to discipline teachers at one school for criticising standardised testing of children, teachers thought it a lot 'safer' not to submit messages to network conferences dealing with curriculum issues. Like trainee teachers, classroom teachers were concerned that their comments, expressed in messages permanently stored on the network, might get them 'into trouble' at some later date. To these users, noting ideas in text-based messages which were archived (by the software), and retrievable by others at some later date, was daunting. None of the reported advantages (outlined in Chapter 1) of this feature of the medium were shared by classroom teachers in this application of electronic networking in this teacher education course.

Reflection

Since very few messages were contributed to conferences, there was little evidence of reflective stances to teaching and learning in network communication. Except for a few thoughtful messages in conferences like 'Computers' (by two trainee teachers) and 'Assessment' (by two teachers), the network was not used to share information and ideas about curriculum and teaching. Public examples of collaboration between participants was not evident, and the 'special knowledge' held by members in each distinct group of users was not elaborated and discussed. Messages were not used to request information or clarification about issues, to outline the processes by which decisions about teaching were reached, or to synthesise ideas from different sources. The potential of the medium to operationalise reflective practice was not realised.
Comments on outcomes

The data revealed only marginal use of electronic networking in relation to potential opportunities identified in Chapter 1, and investigated in specific research questions outlined in Chapter 4. In this initial teacher education course, a comprehensive audience did not develop, the network was not used to notate ideas and practices in teaching, and reflective behaviours were not evident. The potential of the medium to enhance initial teacher education courses was not realised in this specific case. The extent to which it might do so under different conditions is discussed further in the next section of this chapter.

These outcomes, and the factors which are perceived to account for them, have already been discussed. Some factors may have been special to this case. The teacher audience was limited because most teachers lacked access to equipment and the basic computer skills needed to use computers effectively. Trainee teachers were reluctant to notate ideas because of 'fear of criticism', and some appeared deficient in the basic skills needed in online activities. Classroom teachers were hesitant to participate because of concerns about commenting on government initiatives in curriculum and testing. In developing the 'school-based' program, electronic networking was an afterthought, with university staff (and other participants) failing, perhaps, to actively promote use of the network for course-related activities.

These, and other reasons discussed, may all be significant in accounting for limited participation in this particular case. However, in more general terms, the outcomes observed in this specific case study raise issues of a more fundamental nature about the purposes of initial teacher education and the ways in which the development of a 'virtual community' of participants might enhance the professional preparation of teachers. The possibilities of re-conceptualising teacher education to take advantage of the opportunities presented by new communications technology are outlined and discussed in the following section.

RESTRUCTURING INITIAL TEACHER EDUCATION

The reluctance of trainee teachers and classroom teachers to notate ideas about issues and practices has been extensively documented in this case study. This tendency to 'privatism' - 'a reluctance to disclose and discuss the nature of educational work' (McTaggart, 1989:346) - must be addressed for electronic networking to become a significant feature of this initial teacher education course. Clearly, a restructuring of the context under which participants work is needed if the conditions which promote 'privatism' are to be alleviated and the opportunities presented by new technology are to be realised. This section discusses some
of the conditions which are perceived to have influenced participation in this case, and identifies and discusses some initiatives which might be taken to promote network interaction amongst participants in initial teacher education courses.

The tendency to privatism, and the conditions of teachers' work which promote it, have been extensively documented in the educational research literature (Feiman-Nemser & Floden, 1986; Lanier & Little, 1986; Lortie, 1975). Many of these conditions can be identified in the setting in which electronic networking was introduced in this teacher education course. The 'school-based' program, despite objectives related to 'collegiate relationships', 'negotiated curriculum' and 'research on practice' (see Chapter 2) did little to change these conditions. Indeed, features like 'negotiated curriculum' may have reinforced existing behaviours and relationships which contributed directly to limited network participation. These factors are discussed in more detail in this section.

Teachers have few opportunities to interact with colleagues. As Lortie (1975:232) noted over twenty years ago in the United States of America:

the vast majority of classroom teachers continue to work apart from other adults. Opportunities for mutual consultation are limited during the working day, and contacts between teachers are peripheral to their major obligations.

Opportunities for interaction - in person, or electronically - were restricted for teachers involved in the 'school-based' program. These teachers were clearly busy people, with demanding classroom teaching responsibilities. Their major obligation, as one principal commented, concerned 'the delivery of curriculum to pupils'. They operated individually, in self-contained classrooms, and took no part when specialist teachers were timetabled to work with their class. Team-teaching, or other co-operative modes of teaching, were not featured in any of the submissions presented to the university when schools were selected to participate in the program (Chapter 2), and were not evident during the year when trainee teachers were in schools. Working individually was the accepted mode of teaching in the four schools selected in the 'school-based' program.

Other commitments were also demanding; when teachers did meet, the agenda focused on government directives (school charters and curriculum changes) rather than issues of mutual interest or concern. Special projects (such as curriculum planning and evaluation, policy development, and investigations of 'unique' problems) involving collaborative work amongst staff were not mentioned either in submissions from schools, and did not develop during the year the 'school-based' program operated. The major concern was to implement
the curriculum - working towards specified pupil outcomes using 'suggested' methods in new curriculum documents (see Chapter 6) - rather than investigations of alternative content and methods.

The 'school-based' program was also premised on notions of 'research' and 'reflection' on practice (see Chapter 2). Similar goals have proved difficult to implement in other programs. According to Lortie (1975:240), 'the ethos of the occupation is tilted against engagement in pedagogical inquiry'. In programs where reflective approaches have been integrated into course design, and active encouragement and support have been provided to classroom teachers and trainee teachers, traditional expectations about field experiences have persisted. As Zeichner and Liston (1987:41) note:

> despite . . . efforts to legitimize inquiry and reflection by student teachers, some student teachers and cooperating teachers still do not actively support these unconventional goals for student teaching and exert various pressures to focus the attention of program participants upon more narrow concerns characteristic of an apprenticeship.

A similar 'ethos' about inquiry and 'unconventional goals' was evident amongst teachers observed and interviewed in this case study. The 'school-based' program did little to challenge these orientations or support alternative activities. Confusion existed about requirements for trainee teachers' projects, and advice about the ways projects might be planned and implemented was limited (Chapter 2). Therefore, 'research' and 'reflection' were not key features of the proposals (presented in the 'Projects' conference) developed by trainee teachers. Liaison lecturers who met weekly with trainee teachers in schools had no guidelines about how to encourage reflective approaches to teaching and 'research' in schools, and reflection-on-practice was not included in the criteria by which trainee teachers' participation in the program was assessed. In the absence of any clear guidelines on expectations, and the procedures by which these could be met, classroom teachers and trainee teachers (and liaison lecturers?) resorted to what they knew from previous experience. As the Subject Examiner noted (quoted in Chapter 2), the 'school-based' program looked like 'a glorified teaching round' in which trainee teachers were 'teaching lesson series with no outcome other than teaching an effective lesson series'.

Another premise of the 'school-based' program was 'negotiated curriculum'. The expectation of members of the Planning Team (Chapter 2) was that trainee teachers and classroom teachers would 'negotiate' activities which reflected mutual 'research' interests, and work collaboratively to complete them. However, without specific preparation
(seminars, printed guidelines) about activities which might be selected and methods which might be used, classroom teachers' and trainee teachers' 'negotiations' were based only on past experiences with teaching rounds. In these circumstances, it was not surprising that 'negotiated' activities were extended sequences of classroom teaching which reflected mutually shared interests in 'delivering the curriculum'. There was little which could be done to remedy these developments, despite protests from the Subject Examiner (Chapter 2); the university had lost the initiative to influence developments as 'negotiated curriculum' transferred control of what happened in the program to classroom teachers and trainee teachers.

In these circumstances, the electronic network was redundant. In the absence of any concerted efforts by the university to encourage or require 'collegiate relationships' and 'research/reflection' on practice, participants resorted to conventional goals and activities related to the 'delivery of curriculum'. As a result, attention was focused on immediate concerns; potential long-term gains from collaborative interactions on the network were not commensurate with the sacrifices (time and effort) which had to be made (see also: Lortie, 1975:240). While the notion of computer conferencing was reported to be 'interesting' by both classroom teachers and trainee teachers (Chapters 5 & 6), participation on the network conferred no immediate benefits in terms of the ways in which classroom teachers and trainee teachers had defined ('negotiated') their roles and activities in the 'school-based' program. In these circumstances, the network was a novelty - an 'interesting' innovation - but never central to the activities, as defined by classroom teachers and trainee teachers, completed throughout the year.

While the conditions which promote 'privatism' are present, electronic networking is unlikely to become widely adopted in initial teacher education courses. This pessimistic assessment is also based on other factors, identified in this case study, which may mitigate against adoption of this new technology in initial and continuing teacher education programs. Most classroom teachers and trainee teachers interviewed had no preparation (as part of the 'school-based' course) and no experience with inquiry as pedagogy, and lacked the skills required to 'research' classroom events. They were concerned that they may not be able to express their views adequately in written messages. They were also concerned about the permanency of messages stored on the network, and the 'criticism' they may have received from others.

For most teachers and trainee teachers, the notion of 'discussing' educational issues via written messages on an electronic network was foreign and disconcerting. If the views of participants interviewed in this case study are typical of other teachers and trainee teachers, it
is likely that electronic networking will fail to gain acceptance as a useful medium for discourse about teaching.

The reason for this lack of enthusiasm for written (electronic) discourse may be related to the status which teachers and trainee teachers attribute to the knowledge they bring to educational debate, and to the difficulties they perceive in expressing this in written form. This explanation is based on references by Lanier and Little (1986:553) to the work of Buchmann (1983):

the very emphasis the academic community places on verbal acumen makes it difficult for teachers to see themselves as competent to think through educational issues. While there is value to clear thought and careful argument, there is no need to throw out the wisdom gained from teaching simply because teachers have not been able to cast this wisdom in compelling verbal form... Teachers understand that teaching is context dependent and usually does not lend itself to straightforward generalization and prescription.

If teachers (and trainee teachers) find it difficult to express 'craft knowledge' in 'compelling verbal form' (as Bachmann claims), they may also consider it difficult to express this knowledge in written electronic messages. The difficulties may be exacerbated when the potential audience is considered. For trainee teachers, writing about teaching understandably conveys limited understanding of issues and techniques; as one trainee teacher (quoted in Chapter 5) stated: 'I'm new to it all. I know I need a lot of developing of my thoughts and I'm very reluctant to say too much'. For classroom teachers, written comments may also be revealing to novices (trainee teachers), experienced colleagues and university academics. As Perkins and Newman (1995:617-8) note, a problem with electronic networking is that respect can be won, or lost, on the basis of written exchanges:

Among strangers in electronic discussion, people are represented only by their communicative competence. Claude Baltz, quoted by Freeberg (1989), puts it very well: 'instead of identity having that status of an initial given (with which the communication usually begins), it becomes a stake, a product of the communication'. Status is gained or lost directly from message exchanges, mediated by [written] language.

Therefore, teachers and trainee teachers would be unlikely to agree that judgements about their professional competence should be based on written acumen. Expressing ideas and opinions in permanent written form involved obvious 'risks'. However, in the 'school-
based' program, there were no requirements to contribute messages to 'The Conclave'. Hence, many participants may have adopted the 'easy way out' and avoided the 'risks', particularly when no immediate benefits accrued from network participation.

Given the data collected in this case study, and the interpretations placed on it by the author, a pessimistic assessment of the place of electronic networking in initial teacher education courses has been presented. In this case, an attempt had been made to design and implement a different 'school-based' model of initial teacher education, and to incorporate electronic discussions of educational concepts and issues, but the electronic network proved to be redundant to the ways in which teachers and trainee teachers defined ('negotiated') their roles and activities in the program. If the potential of new technology is to be realised in initial teacher education, four issues would appear to be particularly relevant in integrating electronic networking into initial teacher education courses.

First, course objectives and activities, and the roles of participants, particularly as these relate to collaboration, would appear to require consideration. Before electronic networking is contemplated, the question - 'What type of teacher education program would offer opportunities to support collaboration?' - needs discussion and clarification. In the planning and implementation of this 'school-based' course, this question was not comprehensively addressed as issues about procedures and other practical concerns predominated (Chapter 2). Once the program was underway, trainee teachers and classroom teachers were left to 'negotiate' activities, roles and responsibilities. In doing this, they focused on immediate concerns ('delivering the curriculum') rather than 'problem-centered' objectives dealing with 'research' and 'reflection' which might involve collaboration with colleagues. The roles of university staff, responsible for curriculum studies subjects in which trainee teachers were concurrently enrolled, was never discussed; hence, strong classification remained between coursework and practical experiences in schools. In short, the conditions under which participants worked in schools determined what happened, rather than the objectives of the program and the structures which might have been put in place to encourage collaborative endeavours and the sharing of knowledge about teaching.

As Campbell et al (1995) have noted (see Chapter 3), the nature of 'partnership arrangements and collaborative agreements between universities and school systems' are fundamental to the use of new technology for the purposes envisaged in this application:

In some form the universities, the schools, and the student teachers must form an alliance that is value-added for all three parties. These alliances must be formed to
solve commonly held problems and exploit mutual opportunities. (Campbell et al, 1995:302)

In developing an alliance based on 'mutual self-interest', the nature of educational practices, and the boundaries between the responsibilities of participants, need to be clarified before the use of new technology is contemplated.

Second, the potential of electronic networking, and the purposes it might serve in a specific program, would appear to require discussion and clarification. Hence, the initial question (noted two paragraphs above) becomes:

'What type of teacher education program would offer opportunities to support collaboration, and how could this be facilitated using electronic networking?'

The question involves re-examining the perceived 'efficiency gains' ('first level effects') which are believed to accrue from the use of new technology (discussed in Chapter 1). While the technology has the potential to deliver 'efficiency gains', these may not be recognised by participants as being sufficiently compelling to warrant changes in normal patterns of behaviour. This has been recognised in other studies comparing 'successful' and 'unsuccessful' applications of electronic networking (Eurich-Fulcer & Schofield, 1995; Riel and Levin, 1990); asynchronous network communication needs to be demonstrably more efficient than other forms of communication before participants will see the advantages of using it.

In the 'school-based' program, the gains which could be made from asynchronous communication remained ambiguous for most participants. When tasks did not involve collaborative interaction between participants at different sites, the 'efficiency' of the network revolved around practical considerations. Trainee teachers (located in schools about 20 minutes drive from the university campus) found it easier, for instance, to talk personally with a member of staff about their individual project rather than follow, and contribute messages to, a conference which discussed issues to do with projects. University staff found it easier to visit schools to observe 'first hand' what was happening, and to 'brief' teachers about expectations, than to enter this information on the network. Trainee teachers

---

1 For instance: (a) reading and writing messages needs to be seen as a more efficient use of time than travelling to, and participating in face-to-face seminars; (b) delays in receiving information due to the asynchronous nature of communication need to be 'traded-off' against more immediate contact possible by telephone.
could be summoned (via the network!) to attend on-campus seminars to deal with matters which arose during the year. Moreover, liaison lecturers, who shared their time between the university and schools, conveyed information between participants, resolved problems and, in weekly seminars with trainee teachers, discussed educational issues and concerns.

In combination, the failure of the 'school-based' program to discuss and resolve the nature of the collaboration sought between participants, and the inability of the network to delivery any demonstrable efficiencies in achieving these tasks, contributed to the limited use which was made of the network. In outlining the features of 'successful' networks, Riel and Levin (1990:164) noted:

Network communities can be organised either by well established relationships among people who seek new ways to coordinate their collective work or a shared commitment among relative strangers to a specific task... a network of strangers seeking to find their common interests is likely to fail.

In the 'school-based' program, the network of strangers failed to find any common interests and, hence, failed to discover any compelling reasons to participate on the network. In these circumstances, individual interests could be pursued just as 'efficiently' by means other than asynchronous communication on the network. On the other hand, if the nature and purpose of collaborative arrangements (such as the objectives of the 'school-based' program, and the reasons why these were considered to be important) had been discussed and clarified, attention could then be given to the ways in which electronic networking might assist in making collective work more efficient. If this had been done, the 'efficiency gains' (less meetings, reduced travel, participation at convenient times) could have been clearly demonstrated.

Third, special attention needs to be directed to the problems of notation experienced by trainee teachers and classroom teachers. The data gathered in this case study would appear to indicate that these problems would be likely to persist in situations where collaborative tasks had been clearly defined and the 'efficiencies' of electronic networking could be demonstrated.

---

1 Clarifying the purposes of collective action and, as a result, being able to point to the efficiencies which would be likely to accrue from electronic networking is considered to be more appropriate than making participation compulsory, and including it in assessment criteria, as is often the case in distance education courses.
Ironically, anxieties about network participation may be best overcome by supplementing computer-mediated communication with face-to-face meetings. Other studies have indicated that this can be successful in overcoming the inhibitions experienced by many beginning and experienced teachers. Three such studies are briefly outlined here.

Lai and Ki (1995:9) introduced face-to-face meetings for secondary English teachers on the TeleNex network in Hong Kong in response to suggestions that 'lack of response was that they were not yet familiar with this new forum of communication and they were not used to the idea of communicating with people they have never met before'. Teachers reportedly valued the opportunity to exchange views and ideas before commencing collaborative work on the production of curriculum materials. Similar observations about the importance attached to personally meeting other network participants on the TeleNex network have been reported by Tsui (1995).

The first (1994) Virtual Team Case Competition sponsored by The University of Virginia, which combined electronic networking and case method teaching 'to promote the use of technology and problem solving among teams of pre-service teachers' (Kent et al, 1995:137), also incorporated extensive face-to-face meetings. While interaction between teams at different sites was by electronic messages to a mailing list, research about the case, and the preparation of electronic responses, was completed by 'live' rather than 'virtual' teams. According to participants from The University of Virginia:

the Virtual Team Case Competition allowed them to co-operate in a non-threatening but professional stimulating experience. At their first organizational meeting, the team of general and special educators discussed their own professional backgrounds so they might craft a response to the case that reflected general and special points of view. They believed that the range of individuals' areas of expertise has expanded their own perceptions of the case.

When this technique is used, the opportunity to formulate a response which incorporated 'general and special points of views' may help to overcome individual inhibitions about the 'value' of personally held ideas and the responses they may invoke from recipients.

In the School Renewal Network (Chapter 3), 'local outreach' is used to broaden participation by teachers in network activities, particularly in the early stages (as well as to overcome difficulties associated with limited access to computers). Teachers at each site discussed information provided before contributing a group response to the network. In this
way, ideas were first discussed among known colleagues, then with strangers on the computer network (Watts & Castle, 1992:68).

Situations like these, in which teachers (and trainee teachers) talk about issues before submitting a collective response to a network conference, may assist teachers to overcome concerns about expressing craft knowledge in 'compelling verbal form' and the perceived 'risks' of criticism in the future about contributions permanently archived by the software. In these cases, the collective response would be comprehensive, overcoming possible omissions or inadequacies in individual messages. Responsibility for the conference contributions would be shared by members of the group which compiled it; hence, concerns about 'criticism' from others would be ameliorated. As participants gained experience in articulating knowledge about teaching in written form, and concerns about 'fear of criticism' subsided, increased individual participation might be expected to occur.

Support for the suggestion that face-to-face meetings, with clearly identified purposes, can complement electronic communication is also based on extensive experience with computer-mediated communication (CMC) in distance education courses. As Mason and Kaye (1990:20) conclude:

The fact that CMC possesses certain advantages over other interactive media, however, does not necessarily mean that it should be considered as a complete substitute for other forms of interaction... it is surely better to make available a range of options for interaction than to assume that one technology can cope with people's varying communication needs, moods, and situations.

When considering the application of electronic networking in initial teacher education, a crucial consideration would appear to be the ways in which traditional face-to-face experiences, with a limited audience, can be used to sustain new opportunities for sharing and notating teaching with a broader audience.

Fourth, the teacher education curriculum, and the expectations of trainee teachers about their roles in the course, need to be addressed. While this may occur as collaborative arrangements between universities and schools are clarified, specific attention to content, pedagogy and skill development would also appear to be warranted. In relation to content, present pre-occupations with technical skills (knowledge of specific curriculum guidelines; how to write lesson plans) about 'orchestrating' classroom teaching episodes need to be supplemented with investigations of competing views of teaching and learning and the bases in which these views are grounded. In terms of pedagogy, present practices based on
passive roles for trainee teachers (lectures, and pseudo-discussions in 'tutorials') need to be replaced by other activities (investigation, debates, critical reading) in which trainee teachers play more active roles in examining knowledge about teaching. Moreover, activities in schools need to be based on investigation and analysis (inquiry-based approaches) of classroom events, rather than repeated practice with different ways to 'deliver the curriculum' to pupils. Skills, other than those related to the management of classrooms, need to be developed. These include writing and negotiating skills, as well as specific research skills (observation, data analysis) which might be needed in investigations of classroom events. If attention is not given to content, pedagogy and skills in the initial teacher education course, the reflective practices which can be facilitated by electronic networking will be unlikely to occur.

Hence, in the context of initial teacher education four aspects - the nature of collaborative partnerships, the purposes of electronic networking, the problems of notation for teachers and trainee teachers, and the curriculum and pedagogy of the course as a whole - require clarification and development before the advantages of electronic networking can be realised. When these aspects have not received attention, an electronic network is likely to remain under-utilised, as occurred in the specific example investigated in this case study.

ANONYMITY AND NETWORK PARTICIPATION

One of the intriguing findings of this case study was the impact of an anonymous account ('Mary Smith') on network participation.1 While this account was only used in one conference concerned with evaluative comments about the 'school-based' program, the number of messages posted in this conference was much higher than other conferences. The interview data (Chapter 5) indicated that the anonymous account assisted trainee teachers to overcome inhibitions about writing, and the criticism which messages might receive, when their actual names were attached to messages. In view of this finding, the literature was again reviewed to locate any previous research which might-present insights about anonymity and network participation. The potential impact of pseudonyms on network participation is discussed in the remainder of this section.

Some electronic networks have provided opportunities for participants to use pseudonyms without always justifying the decision to provide this option or explaining its effects. For

---

1 The circumstances surrounding the creation of the anonymous account ('Mary Smith') and the conference called 'Course Comments' were outlined in Chapter 2. The use which trainee teachers made of this account was discussed in Chapter 5.
instance, teachers who used computer conferencing in an inservice course had 'the option of using a regular signature, pen name or anonymity' (Kimmel et al, 1988:469). However, the reasons these options were presented and the extent to which they were used were not outlined or discussed. In another reported application, a computer conferencing activity was incorporated into a first year elementary teacher education course:

In an attempt to encourage nondominated dialogue, the instructor of the course does not participate in the discussions and all students do so anonymously. (Harrington & Quinn-Leering, 1995a:7)

Again, a justification for the decision and its impact on participation were not presented.

Two case studies located in the literature did provide some justifications for decisions taken and effects observed. At San Diego State University, computer conferencing was used as a supplement to face-to-face lectures and class discussions in one subject:

The faculty member wanted to determine if the use of anonymous pen names for students in the conferences would elicit more candid comments about the poems and essays required in his course on modern American literature. (Bellman, 1992:59)

The 'majority' of students in the class were 'adult Hispanic women' who were reported to have become 'very assertive' by the end of the course:

In the evaluation of the experiment, the faculty member strongly maintained that the development of such assertiveness by the women in the course could not have occurred in the face-to-face classroom setting. (Bellman, 1992:60)

In this case, the use of 'pen names' was considered to be important in initiating discussion but not necessarily in sustaining it:

When students met in class, they did not engage in heated debate, nor was any attempt made to criticise the ideas and comments of anyone in the class. Although the class began with no one knowing anyone else's identity, the students soon began to share their pen names with friends. Within the first two weeks, either through direct revelation or second-hand gossip, all identities became known. Consequently, the use of anonymous identities was a valuable pedagogical resource for initiating the discussion, but it was the anonymity provided by the medium that sustained it and promoted the strong assertive remarks. (Bellman, 1992:60)
The 'anonymity provided by the medium' was not fully explained but presumably referred to network discussions in which 'women are able to express themselves much more easily and fully without being interrupted or ignored' (Bellman, 1992:59) by other (male?) participants. If the 'characteristics of the medium' sustain discussion, anonymity may only be important in the initial stages of network interaction.

The impact of anonymity in the initial stages of network use has also been identified in a case study of the TeleNex (Hong Kong) network for non-native speaking English teachers. After four months, teachers reported that it was 'very threatening to have their names appearing in the messages, and even more threatening to have their school names appearing as well (Tsui, 1995:159). These teachers were concerned about perceptions of their personal competence with English, their knowledge about teaching English as a second language, and, as a result, the reputation of their schools which might be held by others.

Modifications were made to the software so that public messages to conferences could be:

anonymous, using personal name only, using school name alone, or using both ... Subsequently, it was felt that signing off a message as anonymous has an undesirable effect on secrecy and this option was changed to 'An English Teacher'. (Tsui, 1995:160)

Data on usage patterns with these options were not presented but Tsui (1995:160) noted that:

The implementation of this modification ['An English Teacher'] for two months shows that most new users preferred to use 'An English Teacher' whereas the old users, especially panel chairs, used the default option of having their personal and school names appearing.

Hence, it would appear that 'pen names' may be useful in the initial stages of network use. As participants develop confidence in writing messages, and gain familiarity with the ways other users respond to messages, the use of actual names may be generally adopted.1

1 The effects of pseudonyms may be more complex that indicated here. An experimental study (Jaffe et al, 1995) of the impact of pseudonyms on network participation was located in the literature. This study, directed towards gender-based communication patterns, reported that 'overall participation levels were significantly higher in the pseudonymous conference than in the real name conference' and that 'women tended to mask their gender with their pseudonym choice while males did not' (p.2). These findings suggest that
In the 'school-based' program investigated in this case study, anonymous participation on 'The Conclave' was organised by creating a fictitious account ('Mary Smith') which all participants could use. This approach was not the most appropriate way to arrange anonymous access.\(^1\) A better option would have been to advise users to self-register under any name they chose (a facility provided by the FirstClass software). This would have enabled users to create and use pen names for as long as they wished to do so, potentially overcoming concerns about writing messages and receiving comments from others, particularly in the initial stages of network use.\(^2\)

**CONTRIBUTION OF THIS CASE STUDY TO KNOWLEDGE IN THE FIELD**

Case study research is embedded in a social context and influenced by it. While research questions are established \textit{a priori}, other aspects investigated may arise surreptitiously as research proceeds. Hence, what is examined will vary from case to case as significant aspects are identified and investigated. Some findings may be applicable in other contexts, but many aspects will be unique to the situation investigated. Hence, care must be exercised in generalising findings to other contexts.

Despite this cautionary note, it might be claimed that this case study of the use of electronic networking in a specific 'school-based' initial teacher education course has arrived at some significant findings which should be considered when electronic networking is contemplated in courses concerned with the acquisition and maintenance of professional knowledge about teaching. These include difficulties involved in establishing a comprehensive audience of all participants (in particular classroom teachers), and the reluctance of some participants (both trainee teachers and classroom teachers) to notate educational ideas and practices. In this case, the potential of computer conferencing to foster reflective stances to teaching, professional problems and issues, was not realised. In situations where the components of the initial teacher education course, and the conditions under which teachers work, are similar to those described in this case study, comparable outcomes may be obtained. Hence, 'masking' identities may have important effects on communication patterns, compounding the 'democratic' characteristics (eg, equal opportunities to participate, no interruptions by assertive members) of asynchronous communication.

\(^1\) This account could have been abused (eg, libellous statements about others) since it was impossible to determine who had sent a message using the 'Mary Smith' account.

\(^2\) As noted earlier (Chapter 5), this opportunity to investigate the effects of anonymity on network participation and message contributions was not realised by the author while the research was in progress.
the findings from this case study may inform other attempts to introduce electronic networking, possibly enabling the difficulties encountered in this course to be mitigated.

Other findings may also have wider applicability beyond the typical contexts in which initial teacher education is conducted. These concern the characteristics of electronic networking which are often reported (Chapter 1) as particular advantages of the medium - the text-based nature of communication and the archiving of messages for retrospective review and analysis. Respondents in this case study did not consider these characteristics as advantages of the medium; instead, they found they posed special difficulties (such as describing teaching in written form) and in some cases disconcerting (such as the 'criticism' they might receive from others about an earlier contribution). These findings suggest that assumptions about the 'advantages' of electronic networking should not be accepted before case studies in specific situations are assessed (Burge, 1994).

Findings about the reasons for lurking, and the impact of anonymity on participation, might also have wider significance. While lurking in electronic discussions is widely recognised (and often decried), the reasons for it have not been researched. The findings in this case study revealed special reasons for this behaviour, which may help to focus further research on the special difficulties experienced by some users, particularly when participation is mandated. The effects of anonymity on participation have also not been extensively researched. In most electronic networks, participants have used actual names (as in this case study). However, an opportunity to access the network using an anonymous account lead to increased participation (in one conference). As noted (Chapter 5), the effects of anonymity on network participation and messages were not systematically investigated in this case study. However, the effects observed, and the limited research reviewed earlier in this chapter, would appear to indicate that anonymity may alter communication patterns (particularly in the early stages of network use) and that these potential changes should be the focus of further research.

FINAL COMMENT

The research completed, while drawing on the work of other researchers, has directed attention to the potential of electronic networking in professional education and training. The techniques which were used provided valuable data on the research questions selected. The difficulties experienced by participants when negotiating relationships with an electronic networking were documented. Suggestions were made about the ways in which the opportunities provided by this new medium might be facilitated. The possibilities for further research were also raised. The research completed has made a significant contribution to the
knowledge base about the use of electronic networking, and about the possibilities and difficulties inherent in innovations of this nature particularly as these apply to initial teacher education courses.
USING THE CONCLAVE ON THE NETWORK
or with MODEMS

If you are contacting The Conclave using a modem, make sure your modem is switched on.

To login on to The Conclave follow these steps.

Open the FirstClass folder on your desktop and then double-click on The Conclave icon.

This will take you to the Login Form.

![Login Form]

The first line will be highlighted so you can type in your User ID. When you have done this, press TAB to highlight the second line. Enter your password. Then click on Login (or press RETURN) and you will be quickly connected to The Conclave.

To DISCONNECT from The Conclave, drop the File menu and choose Quit.
INTRODUCTION TO THE CONCLAVE

This section describes the basic operation of The Conclave. These operations are the same for both network and modem users.

Once you have connected with The Conclave, the standard Conclave Desktop will be displayed.

This is your mailbox which stores your incoming and outgoing mail.

This folder contains news about the school-based program and information about The Conclave. You can can only read messages in this folder (you can’t send messages to this folder).

This folder contains all the conferences which you have access to. Various public and private conferences will be added to this folder during the year.

Inside this folder you will see the Staff Room conference.

Use this conference for notices, introductions and trial messages.
This folder contains online help information.

Each of these folders may contain additional files, folders, conferences and messages. To open any of these simply double-click on the icon (or click once and choose Open from the File menu).

MAILBOX

When you open your mailbox, it looks likes this.

The solid flag means the message is unread.

The Mailbox displays incoming and outgoing mail. The latest message sent or received is displayed at the top of the list.

To help you keep track of messages in your mailbox (or in other conferences) small flags may be displayed beside some items.

- A solid flag indicates that a message is unread.
- A hollow flag indicates that the message is unsent - ie, you have created it, but not sent it.
- A file icon indicates that the message has attached files.
- Bold Bold type indicates urgent messages.
To open your mail, simply double-click on the message. The message will then be displayed in a new window.

---

**Request for help**

**Monday, 16 January 1995 12:04:35 PM**

**Message**

**From:** lyndal pearson  
**Subject:** Request for help  
**To:** Administrator

---

Hello John,

I've been having a few problems connecting with my modem. Can you help me with the following problem.

---

**PALETTE**

A Palette for quick and easy access to commands can be displayed by choosing *Palette* from the *View* menu.

---

1. **New message**  
2. **Send message**
3. **Forward message**  
4. **Reply to message**
5. **Attach file**  
6. **Show message history**
7. **Find**  
8. **Find next**
9. **Directory**  
10. **Delete**
11. **Open previous unread**  
12. **Open next unread**
13. **Open previous in thread**  
14. **Open next in thread**
15. **Open previous**  
16. **Open next message**
The use of these commands is explained in later sections of this documentation.

OPENING UNREAD MESSAGES

A simple way to read all unread messages is to:

(a) open your mailbox

(b) click on the NEXT button from the Palette [Alternatively you can choose Open Unread from the Conference menu, or use Command-U from the keyboard]

CREATING NEW MESSAGES

To compose and send your own messages, follow these steps.

1. Choose Compose from the Message menu. A New Message window is created with your name automatically entered in the From field. The Subject field is highlighted.

2. Type in the subject of your message. Then press TAB and the cursor will move to the To: field so that you can address your message.

3. Type in the name of the person you are sending the message to. Note that you only have to type in enough characters for the name to be recognised. For instance, if you type “ad” the message will be addressed to the “administrator” when you press TAB.

If more than one name is found that matches what you have typed - for instance, “administrator” and “adrian” - a list of users will be displayed. Simply click on the name you want and then click on the Select button [or, double-click on the name of the person you want your message to be addressed to].
If you press the RETURN key after typing in a name the cursor will move to a new line within the To: field. A second name can be entered here if you want the message to go to more than one person. Press TAB to move to the Cc: field.

4. Enter name(s) in the Cc: field if you want to send copies of your message to other people.

5. Once you have addressed your message, TAB to the bottom pane of the message window (or, position the cursor using the mouse) to compose your message.

The message window gives you full-text editing (Cut, Copy, Clear, Paste). Choosing Select All from the Edit menu will select the entire message. You can also use italics, bolding, different fonts and different sizes. You can change the appearance of your text after you have written your message by (a) selecting it, and (b) changing it using Font, Size, Style or Colour from the Edit menu.

However, please be careful with the fonts you use. Different fonts may be installed on each Macintosh; readers of your message must have the same fonts installed on their machines to be able to read your messages. Hence, only use different fonts if you really think this helps to draw attention to parts of your message and, in any case, only use the standard system fonts (Geneva, Monaco, Courier, Helvetica and Times) which are installed on most Macintoshes.

6. To send your message, choose Send from the Message menu. When the message is sent, a Postmark is automatically stamped on the message.

If you close the message without sending it, it will appear in your mailbox with the hollow flag displayed. If you want to send this later, you can open the message and then Send it (see Step 6 above).
REPLYING TO MESSAGES

If you have a message open, you can reply to it by choosing Reply from the Message menu. A new message will be automatically created with the From, Subject, To, and Cc fields filled in. Then move to the message window and compose and send the message in the usual way.

FORWARDING MESSAGES

If you have a message open, you can forward it to another person by choosing Forward from the Message menu. A copy of this message is made, which has the From and Subject fields completed. "Fwd:" is inserted in front of the original subject. You can edit the message before you send it, as shown in the following example.

```
Fwd: Connecting via modem

Unsent Message
From: Administrator
Subject: Fwd: Connecting via modem
To: 
Cc: 
Attachments: Telecom connection 4K

Here is some information I sent another user. You might also find that this is useful in your case.

The attached file will give you further information about contacting The Conclave.
```

SENDING FORMS

In addition to the standard office-style message, other forms can also be used. These include File Transfer, Phone Call, Request for Information and the Requisition Form.

To send a form, choose New Form from the Message menu, then select the form you want to use from the sub-menu. The following example displays a completed Phone Call form. [If you use this form, note that you must move the cursor to the message window at the bottom of the form to write your message].
ORGANISING YOUR MAILBOX

You can keep your mailbox tidy by creating folders within your mailbox for various types of messages.

To create a folder in your mailbox, open your Mailbox and choose New Folder from the Conference menu. A new folder will be created in the top pane of the window. To rename the folder, click on the name and then type the new name.

You can create multiple folders in your mailbox as shown in the following simple example.

Here new folders called “Sent”, “To Do” and “Help from Administrator” have been created. To put messages into folders, all you need to do is drag the message into the folder. You can also shift-click to select several messages and drag them into a folder.
DELETING MESSAGES

To delete messages from your Mailbox, select the message(s) [shift-click for multiple messages] and choose Delete from the File menu.

You can delete messages you have sent without having to worry about whether they have been read by the recipient(s).

EXPIRY OF MESSAGES

At this stage, an expiry date has not been set for messages, so please delete any messages you have finished with.

You can see the expiry date of a message by selecting (highlighting) the message and choosing Get Info from the File menu.
CONFERENCING

WHAT IS CONFERENCING?

Conferences are where most of the action will occur during the year, so take some time to read these notes about conferencing and how you can use The Conclave for this purpose.

Conferences are shared spaces or forums focusing on particular topics. For instance, there might be specific conferences on “music curriculum”, “classroom management” and “Schools of the Future” if these are topics which arise for discussion/investigation during the year.

Messages containing the ideas of participants are sent to particular conferences. Over time, the messages in each conference increase as concepts and ideas about teaching are discussed. Hence, these messages provide a valuable, and permanent, record of the discussion (unlike face-to-face discussions where most dialogue is lost) and can be revisited periodically to re-examine ideas, refer to the contributions of others or to synthesise material.

One advantage of computer conferencing is that communication is asynchronous (delayed). Unlike face-to-face meetings which have to be scheduled at particular times and places, the conferences on The Conclave will be available 24 hours a day, 7 days a week, so you can contribute your ideas when it is convenient for you to do so. If you get to like this way of working (as I do) you may never want to attend a face-to-face meeting again!

As a new member of The Conclave, the Conference folder on your desktop will initially contain only one conference - the Staffroom. However, during the year additional conferences will appear in this folder and you can read/subscribe to those which interest you.

Conferences can also be created for small group work. For instance, participants at the same, or different, schools could use The Conclave to discuss their project. In this case, the conference will be a private one - only members of the group will belong to this conference (the conference icon will only appear on the desktop of members of the group).

There are many different ways in which access to conferences can be controlled. Individual requests should be sent (as private electronic mail) to your Administrator.

There are other ways in which computer conferencing can facilitate discussion between participants and some of these will be used during the year.

HOW TO PARTICIPATE IN CONFERENCES?

There are a few conventions ("netiquette") which you should follow as a member of conferences. These will ensure that conferences run efficiently.
1. There is no need to reply immediately to messages you read in a conference. One of the advantages of asynchronous communication is that you have time to reflect on the content of messages and to think about any possible response which you might make. You may like to review previous messages, look up a reference book, or do some other research before you respond.

One of the real benefits of computer conferencing is that discussions are often more detailed and better researched than discussions in face-to-face seminars, where responses have to be made immediately.

2. You do not have to delete messages you have read in conferences. Another advantage of having the text of all messages readily available is that messages can be reviewed at a later date if needed.

This does not mean that you have to read all messages each time you open a conference folder. Remember that unread messages are flagged and that you can choose which ones you want to read. Alternatively, you can open the conference and choose Open Unread from the Conference menu. Continue to do this until you have read all unread messages, or simply click on Next from the palette.

3. Make sure your messages (contributions to conferences) are placed in the correct conference. This is very important. It is very annoying to come across irrelevant messages (such as “chit-chat” type messages, or messages on another topic) when following the messages in an interesting conference.

4. Plan to login on regularly (eg, 3 times each week) to check your mail and conferences. Conferences will be successful if there is regular exchange of messages between participants.

5. Prepare your messages carefully - content and format. Other participants will be interested in your contributions if you have thought about the content of your messages, and if you have checked them carefully for spelling and expression. Poorly presented messages, which contain hasty prepared responses, are of little interest to other participants. Remember that you can prepare your responses offline, and paste them into your message later.

6. Be careful how you express your ideas. The text-based nature of computer conferencing does mean that some of the social context cues (eg, humour, irony, facial expression, gestures, etc) normally associated with human communication are lost. Your message might not always be read in the same way as you intended. Hence, if you are uncertain about the acceptance of some part of your message add an explanatory word - eg, write [joke] or [just kidding], *emphasise* particular words, or use other available message editing features (eg, bolding, italics, etc). Alternatively, you can use some of the conventions (a file of these may be posted later in the year) which have been developed to assist communication. For instance, :-) is usually used to indicate a joke (rotate this page 90 degrees to read the symbol).
7. Be careful how you respond to messages. Ill-considered emotive reactions ("flaming") to messages may be something you regret later.

Your responses should reflect professional discourse, similar to that in a staff meeting. Be careful about reference to people, places and events which could be construed as "unprofessional" behaviour by teachers.

While The Conclave is a private electronic network (only participants in the SBTE program, or invited guests, are members), the messages are available to all users and could be distributed on paper or electronically [this should only be done after permission is obtained]. Hence, messages are in a public arena and should be written with this in mind.

8. Fill in the Subject: field on the message field. Try to indicate the content of your message using as few words as possible. For instance, “Technology. Reply to Fred” would give a good indication of what your message is about.

CONFERENCING ON THE CONCLAVE

Conferences

Opening the “Conferences” icon displays the conferences inside that folder. Initially, there is only one conference inside this folder - the staff room conference, which you should use for notices, introductions and “welcome” messages.

Staff Room

OPENING MESSAGES

When you open a conference, a listing of the messages in the conference is displayed. Messages that you have not read are marked with the unread message flag, and messages with attachments have an attachment flag.

- A solid flag indicates that a message is unread.

- A file icon indicates that the message has attached files.
You can open messages by double-clicking on the filename. You can close the message by using the Close Box (top left of screen).

To read all unread messages in a conference, you can open the conference and:

(a) choose Open Unread from the Conference menu;
(b) use the Next button on the palette (or Command-U).

REPLYING TO MESSAGES

If you are reading a message in a conference and you want to reply to it, choose Reply from the Message menu. A new message will be created with the From:, Subject: and To: fields filled in. You can then move to the message section and write your message.

When you send your message (choose Send from the Message menu) your message is sent to the conference for all participants to read.

If you only want to reply to the person who created the original message, drop the Message menu and choose Reply Sender from the Reply Special sub-menu.

SENDING MESSAGES TO CONFERENCES

To send a new message to a conference, open the conference and choose New from the Message menu. A new message will be created, with the To: field filled in with the name of the conference. Once you have entered in the subject and written the message, you can send it by choosing Send from the Message menu.

FORWARDING MESSAGES

You can forward messages to other conferences or participants. Open or select the message and choose Forward from the Message menu. A new message (including any attachments) will be created. You can then edit the text (if necessary), address the message and Send it.

CREATING AN ALIAS OF A CONFERENCE

If you open a conference frequently to read or send messages it may be more convenient to open an alias of this conference on your desktop. This can save time moving through layers of folders looking for an individual conference.

In the following example, the Staff Room conference has been created as an alias on the desktop.
Double-clicking on the Staff Room icon will open this conference.

To make an alias of a conference, select (click on) the conference and choose Make Alias from the Conference menu. An alias of the conference will appear on your Desktop.

Note that:
(a) you might have to resize the Desktop window to see the icon.
(b) the conference icon also stays in the folder in which you originally created it. All you have done here is create an alias of the original conference.

If you want to delete an alias to a conference, select (click on) the alias and choose Delete from the File menu. Deleting the conference will have no effect on the conference itself, which remains at the original location at which you created it.

MESSAGE THREADS

In large conferences, it is sometimes useful to follow a “thread” of messages on a particular aspect. For instance, within a conference on “Technology”, there might be several references (in the Subject: field) to the Curriculum and Standards Framework or CSF, and you want to quickly review what participants have said about this document.

To follow a thread, open the first message (i.e., the last on the list of messages in a conference) which contains “CSF”. If you choose Next in Thread from the Conference menu, the next message in this thread will be opened. Repeating this process (use Next on the palette) will enable you to move through all the messages in the conference.

ATTACHMENTS & FILE TRANSFERS

Files can be exchanged with other participants as attachments to private mail or conference messages. Any file stored on your microcomputer can be sent as an attachment to a message.

Saving Attachments to Messages

Messages with attached files have the attachment icon [ ▷ ] displayed beside the message in the summary list.
The attachments are also shown in the top pane of the message window.

To save an attachment to your microcomputer, select it and choose Save Attachment from the File menu (or, double-click on the attachment). A dialog box will appear so that you can choose the destination folder and filename. Then click Download and the file transfer will begin.

A File Transfer Progress window displays the progress of the file transfer.
It will appear only briefly when short files are transferred, and disappear when the
file transfer is complete.

When long files are transferred, you may want to move (drag) this window and
continue to use other features (eg, a message to a conference) while the file
transfer is in progress.

If you close this window the file transfer will be cancelled.

Sending Attachments to Messages

To add an attachment to an unsent message choose Attach from the File menu. You
will be prompted to select the file. Then click on the Attach button to transfer the file
to The Conclave.

The File Transfer Progress window will appear while the file is being transferred
and disappear when the transfer is complete. The attachment is listed in the top
pane of the message window.

You can add as many attachments as you want to. An attachment can be removed
(eg, if you make a mistake) by selecting it and pressing the delete key on the
keyboard.

Attachments could be text, picture or sound files.

Viewing Attachments

You can view an attachment online by selecting it, holding down the option key, and
choosing View Attachment from the Message menu (or hold down the option key
and double-clicking on the attachment).

The attachment is displayed in a new window. You can then copy the attachment.
APPENDIX B: FOURTH YEAR SCHOOL-BASED PROGRAM QUESTIONNAIRE

INSTRUCTIONS

Please place a circle around your response to each question. 
SA=Strongly Agree; A=Agree; N=Neutral; D=Disagree; SD=Strongly Disagree

SECTION A

1. I am not very confident about using computers. SA A N D SD
2. Computers help me to work more productively. SA A N D SD
3. I use computers in many things I do. SA A N D SD
4. I don’t use computers unless I really have to. SA A N D SD

SECTION B

5. Initial training in the use of "The Conclave" was sufficient. SA A N D SD
6. I would have liked some extra training after using "The Conclave" for a while. SA A N D SD
7. The User Guide was easy to follow. SA A N D SD
8. The online HELP folder was a useful place to get additional information. SA A N D SD
9. There was little need for training or the User Guide since you can learn to use the software by yourself. SA A N D SD
10. The online resumes helped me to get to know other participants and what they were doing. SA A N D SD

SECTION C

11. "The Conclave" was easy to use. SA A N D SD
12. "The Conclave" was fun to use. SA A N D SD
13. I found this software very threatening. SA A N D SD
14. At what level do you think you are now in using "The Conclave". Tick one only:

(a) at a basic level of knowing the procedures of sending and receiving messages; [ ]
(b) at a higher level of feeling comfortable about sending messages to others and using some of the other features of the software; [ ]

(c) at an advanced level because I know how to confidently use nearly all the features of the software. [ ]

SECTION D

15. There wasn't enough time for computer conferencing. SA A N D SD

16. I didn't contribute to conferences because I didn't think I could express my ideas clearly enough in written messages. SA A N D SD

17. Reading messages in conferences is interesting. SA A N D SD

18. I was reluctant to contribute my ideas because they might be criticised. SA A N D SD

19. I couldn't see the point of computer conferencing. SA A N D SD

20. I didn't think I had many ideas to contribute to conferences. SA A N D SD

21. The conference topics were of little interest to me. SA A N D SD

22. Computer conferencing is a useful way of presenting a diverse range of views. SA A N D SD

How satisfactory do you think "The Conclave" was for the following activities? 5=completely satisfactory; 4=satisfactory; 3=neutral; 2=unsatisfactory; 1=completely unsatisfactory

23. Receiving information. 5 4 3 2 1

24. Social contacts. 5 4 3 2 1

25. Discussing teaching projects. 5 4 3 2 1

26. Discussing educational issues. 5 4 3 2 1

27. Dealing with personal or professional problems. 5 4 3 2 1

28. Developing a "sense of community" amongst participants. 5 4 3 2 1
SECTION E

29. I was not really interested in the school-based program.  
30. The school-based program helped me to develop my teaching skills.  
31. The school-based program was very demanding.  
32. I enjoyed planning and teaching my individual project.  
33. I received a lot of help with my individual project.  
34. I would have liked the program if I had selected, and been placed in, a different school.  
35. My liaison lecturer was helpful and encouraging.  
36. I didn't really like the school-based program and I'll be glad when its over.  

THANK YOU FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE.
APPENDIX C: QUESTIONNAIRE DATA - TRAINEE TEACHERS

1. I am not very confident about using computers.

   Q.1 Strongly Agree (2) Agree (3) Neutral (2) Disagree (5) Strongly Disagree (9)
   0% 10% 20% 30% 40% 50%

2. Computers help me to work more productively.

   Q.2 Strongly Agree (9) Agree (10) Neutral (2) Disagree (0) Strongly Disagree (0)
   0% 10% 20% 30% 40% 50%

3. I use computers in many things I do.

   Q.3 Strongly Agree (7) Agree (10) Neutral (0) Disagree (4) Strongly Disagree (0)
   0% 10% 20% 30% 40% 50%

4. I don't use computers unless I really have to.

   Q.4 Strongly Agree (0) Agree (2) Neutral (3) Disagree (6) Strongly Disagree (10)
   0% 10% 20% 30% 40% 50%

5. Initial training in the use of “The Conclave” was sufficient.

   Q.5 Strongly Agree (2) Agree (13) Neutral (1) Disagree (4) Strongly Disagree (1)
   0% 10% 20% 30% 40% 50%

6. I would have liked some extra training after using “The Conclave” for a while.

   Q.6 Strongly Agree (2) Agree (10) Neutral (2) Disagree (6) Strongly Disagree (1)
   0% 10% 20% 30% 40% 50%

7. The User Guide was easy to follow.

   Q.7 Strongly Agree (6) Agree (12) Neutral (3) Disagree (0) Strongly Disagree (0)
   0% 10% 20% 30% 40% 50%

8. The online HELP folder was a useful place to get additional information.

   Q.8 Strongly Agree (4) Agree (7) Neutral (8) Disagree (2) Strongly Disagree (0)
   0% 10% 20% 30% 40% 50%
9. There was little need for training or the User Guide since you can learn to use the software by yourself.

Q.9 Strongly Agree (0)
Agree (1)
Neutral (9)
Disagree (11)
Strongly Disagree (0)

10. The online resumes helped me to get to know other participants and what they were doing.

Q.10 Strongly Agree (3)
Agree (11)
Neutral (3)
Disagree (4)
Strongly Disagree (0)

11. "The Conclave" was easy to use.

Q.11 Strongly Agree (11)
Agree (8)
Neutral (1)
Disagree (1)
Strongly Disagree (0)

12. "The Conclave" was fun to use.

Q.12 Strongly Agree (10)
Agree (6)
Neutral (4)
Disagree (1)
Strongly Disagree (0)

13. I found this software very threatening.

Q.13 Strongly Agree (0)
Agree (0)
Neutral (4)
Disagree (3)
Strongly Disagree (14)

14. At what level do you think you are now in using "The Conclave". Tick one only:
(a) at a basic level of knowing the procedures of sending and receiving messages;
(b) at a higher level of feeling comfortable about sending messages to others and using some of the other features of the software;
(c) at an advanced level because I know how to confidently use nearly all the features of the software.

Q.14 Advanced level (8)
Higher level (10)
Basic level (3)

15. There wasn’t enough time for computer conferencing.

Q.15 Strongly Agree (3)
Agree (11)
Neutral (1)
Disagree (6)
Strongly Disagree (0)
16. I didn’t contribute to conferences because I didn’t think I could express my ideas clearly enough in written messages.

Q.16   Strongly Agree (0)  Agree (2)  Neutral (7)  Disagree (6)  Strongly Disagree (6)

17. Reading messages in conferences is interesting.

Q.17   Strongly Agree (8)  Agree (10)  Neutral (1)  Disagree (2)  Strongly Disagree (0)

18. I was reluctant to contribute my ideas because they might be criticised.

Q.18   Strongly Agree (1)  Agree (5)  Neutral (4)  Disagree (7)  Strongly Disagree (4)

19. I couldn’t see the point of computer conferencing.

Q.19   Strongly Agree (0)  Agree (3)  Neutral (3)  Disagree (11)  Strongly Disagree (4)

20. I didn’t think I had many ideas to contribute to conferences.

Q.20   Strongly Agree (0)  Agree (7)  Neutral (2)  Disagree (9)  Strongly Disagree (3)

21. The conference topics were of little interest to me.

Q.21   Strongly Agree (1)  Agree (3)  Neutral (5)  Disagree (7)  Strongly Disagree (6)

22. Computer conferencing is a useful way of presenting a diverse range of views.

Q.22   Strongly Agree (8)  Agree (10)  Neutral (3)  Disagree (0)  Strongly Disagree (0)

How satisfactory do you think “The Conclave” was for the following activities?

23. Receiving information.

Q.23   Strongly Agree (10)  Agree (9)  Neutral (2)  Disagree (0)  Strongly Disagree (0)

Q.24  Strongly Agree (13) Agree (7) Neutral (0) Disagree (1) Strongly Disagree (0)

25. Discussing teaching projects.

Q.25  Strongly Agree (6) Agree (12) Neutral (2) Disagree (0) Strongly Disagree (1)

26. Discussing educational issues.

Q.26  Strongly Agree (5) Agree (12) Neutral (3) Disagree (1) Strongly Disagree (0)

27. Dealing with personal or professional problems.

Q.27  Strongly Agree (8) Agree (7) Neutral (2) Disagree (4) Strongly Disagree (0)

28. Developing a "sense of community" amongst participants.

Q.28  Strongly Agree (5) Agree (12) Neutral (3) Disagree (0) Strongly Disagree (1)

29. I was not really interested in the school-based program.

Q.29  Strongly Agree (0) Agree (3) Neutral (1) Disagree (0) Strongly Disagree (12)

30. The school-based program helped me develop my teaching skills.

Q.30  Strongly Agree (15) Agree (4) Neutral (0) Disagree (2) Strongly Disagree (0)

31. The school-based program was very demanding.

Q.31  Strongly Agree (15) Agree (4) Neutral (1) Disagree (1) Strongly Disagree (0)
32. I enjoyed planning and teaching my individual project.

Q. 32
- Strongly Agree (8)
- Agree (9)
- Neutral (2)
- Disagree (1)
- Strongly Disagree (1)

33. I received a lot of help with my individual project.

Q. 33
- Strongly Agree (3)
- Agree (7)
- Neutral (7)
- Disagree (4)
- Strongly Disagree (0)

34. I would have liked the program if I had selected, and been placed in, a different school.

Q. 34
- Strongly Agree (2)
- Agree (2)
- Neutral (0)
- Disagree (6)
- Strongly Disagree (9)

35. My liaison lecturer was helpful and encouraging.

Q. 35
- Strongly Agree (6)
- Agree (5)
- Neutral (6)
- Disagree (6)
- Strongly Disagree (0)

36. I didn't really like the school-based program and I'll be glad when its over.

Q. 36
- Strongly Agree (1)
- Agree (2)
- Neutral (3)
- Disagree (10)
- Strongly Disagree (6)
APPENDIX C: QUESTIONNAIRE DATA - CLASSROOM TEACHERS

1. I am not very confident about using computers.
   Q.1 Strongly Agree (1)
   Agree (1)
   Neutral (2)
   Disagree (2)
   Strongly Disagree (2)

2. Computers help me to work more productively.
   Q.2 Strongly Agree (5)
   Agree (2)
   Neutral (1)
   Disagree (0)
   Strongly Disagree (0)

3. I use computers in many things I do.
   Q.3 Strongly Agree (3)
   Agree (1)
   Neutral (1)
   Disagree (1)
   Strongly Disagree (0)

4. I don't use computers unless I really have to.
   Q.4 Strongly Agree (0)
   Agree (0)
   Neutral (0)
   Disagree (4)
   Strongly Disagree (4)

5. Initial training in the use of “The Conclave” was sufficient.
   Q.5 Strongly Agree (1)
   Agree (3)
   Neutral (0)
   Disagree (3)
   Strongly Disagree (1)

6. I would have liked some extra training after using “The Conclave” for a while.
   Q.6 Strongly Agree (2)
   Agree (3)
   Neutral (2)
   Disagree (1)
   Strongly Disagree (0)

7. The User Guide was easy to follow.
   Q.7 Strongly Agree (3)
   Agree (2)
   Neutral (2)
   Disagree (0)
   Strongly Disagree (0)

8. The online HELP folder was a useful place to get additional information.
   Q.8 Strongly Agree (0)
   Agree (7)
   Neutral (0)
   Disagree (0)
   Strongly Disagree (0)
9. There was little need for training or the User Guide since you can learn to use the software by yourself.

10. The online resumes helped me to get to know other participants and what they were doing.

11. “The Conclave” was easy to use.

12. “The Conclave” was fun to use.

13. I found this software very threatening.

14. At what level do you think you are now in using “The Conclave”. Tick one only: (a) at a basic level of knowing the procedures of sending and receiving messages; (b) at a higher level of feeling comfortable about sending messages to others and using some of the other features of the software; (c) at an advanced level because I know how to confidently use nearly all the features of the software.

15. There wasn't enough time for computer conferencing.
16. I didn't contribute to conferences because I didn't think I could express my ideas clearly enough in written messages.

Q.16  Strongly Agree (0)
      Agree (0)
      Neutral (2)
      Disagree (1)
      Strongly Disagree (5)

0%  100%

17. Reading messages in conferences is interesting.

Q.17  Strongly Agree (1)
      Agree (4)
      Neutral (2)
      Disagree (0)
      Strongly Disagree (0)

0%  100%

18. I was reluctant to contribute my ideas because they might be criticised.

Q.18  Strongly Agree (0)
      Agree (0)
      Neutral (1)
      Disagree (5)
      Strongly Disagree (2)

0%  100%

19. I couldn't see the point of computer conferencing.

Q.19  Strongly Agree (1)
      Agree (0)
      Neutral (0)
      Disagree (4)
      Strongly Disagree (3)

0%  50%

20. I didn't think I had many ideas to contribute to conferences.

Q.20  Strongly Agree (0)
      Agree (0)
      Neutral (2)
      Disagree (2)
      Strongly Disagree (3)

0%  100%

21. The conference topics were of little interest to me.

Q.21  Strongly Agree (0)
      Agree (1)
      Neutral (2)
      Disagree (2)
      Strongly Disagree (2)

0%  100%

22. Computer conferencing is a useful way of presenting a diverse range of views.

Q.22  Strongly Agree (2)
      Agree (5)
      Neutral (0)
      Disagree (0)
      Strongly Disagree (1)

0%  100%

23. How satisfactory do you think “The Conclave” was for the following activities?

Q.23  Strongly Agree (1)
      Agree (7)
      Neutral (0)
      Disagree (0)
      Strongly Disagree (0)

0%  100%

Q.24
- Strongly Agree (1)
- Agree (3)
- Neutral (2)
- Disagree (1)
- Strongly Disagree (1)

25. Discussing teaching projects.

Q.25
- Strongly Agree (1)
- Agree (5)
- Neutral (2)
- Disagree (0)
- Strongly Disagree (0)

26. Discussing educational issues.

Q.26
- Strongly Agree (1)
- Agree (4)
- Neutral (3)
- Disagree (0)
- Strongly Disagree (0)

27. Dealing with personal or professional problems.

Q.27
- Strongly Agree (0)
- Agree (2)
- Neutral (3)
- Disagree (1)
- Strongly Disagree (2)

28. Developing a "sense of community" amongst participants.

Q.28
- Strongly Agree (0)
- Agree (3)
- Neutral (4)
- Disagree (0)
- Strongly Disagree (1)
1. I am not very confident about using computers.

Q.1 Strongly Agree (0)
Agree (0)
Neutral (0)
Disagree (2)
Strongly Disagree (2)

2. Computers help me to work more productively.

Q.2 Strongly Agree (4)
Agree (0)
Neutral (0)
Disagree (0)
Strongly Disagree (0)

3. I use computers in many things I do.

Q.3 Strongly Agree (4)
Agree (0)
Neutral (0)
Disagree (0)
Strongly Disagree (0)

4. I don't use computers unless I really have to.

Q.4 Strongly Agree (0)
Agree (0)
Neutral (0)
Disagree (1)
Strongly Disagree (3)

5. Initial training in the use of "The Conclave" was sufficient.

Q.5 Strongly Agree (1)
Agree (2)
Neutral (1)
Disagree (0)
Strongly Disagree (0)

6. I would have liked some extra training after using "The Conclave" for a while.

Q.6 Strongly Agree (0)
Agree (2)
Neutral (1)
Disagree (0)
Strongly Disagree (1)

7. The User Guide was easy to follow.

Q.7 Strongly Agree (2)
Agree (2)
Neutral (0)
Disagree (0)
Strongly Disagree (0)

8. The online HELP folder was a useful place to get additional information.

Q.8 Strongly Agree (1)
Agree (1)
Neutral (2)
Disagree (0)
Strongly Disagree (0)
9. There was little need for training or the *User Guide* since you can learn to use the software by yourself.

10. The online resumes helped me to get to know other participants and what they were doing.

13. I found this software very threatening.

14. At what level do you think you are now in using "The Conclave". Tick one only:
(a) at a basic level of knowing the procedures of sending and receiving messages;
(b) at a higher level of feeling comfortable about sending messages to others and using some of the other features of the software;
(c) at an advanced level because I know how to confidently use nearly all the features of the software.

15. There wasn't enough time for computer conferencing.
16. I didn’t contribute to conferences because I didn’t think I could express my ideas clearly enough in written messages.

Q.16 Strongly Agree (0)
Agree (0)
Neutral (1)
Disagree (1)
Strongly Disagree (2)

20. I didn’t think I had many ideas to contribute to conferences.

Q.20 Strongly Agree (0)
Agree (0)
Neutral (0)
Disagree (2)
Strongly Disagree (2)

21. The conference topics were of little interest to me.

Q.21 Strongly Agree (0)
Agree (0)
Neutral (0)
Disagree (2)
Strongly Disagree (2)

22. Computer conferencing is a useful way of presenting a diverse range of views.

Q.22 Strongly Agree (2)
Agree (2)
Neutral (0)
Disagree (0)
Strongly Disagree (0)

How satisfactory do you think “The Conclave” was for the following activities?

23. Receiving information.

Q.23 Strongly Agree (2)
Agree (2)
Neutral (0)
Disagree (0)
Strongly Disagree (0)

Q.24 Strongly Agree (2)
    Agree (1)
    Neutral (1)
    Disagree (0)
    Strongly Disagree (0)

0% 50%

25. Discussing teaching projects.

Q.25 Strongly Agree (1)
    Agree (2)
    Neutral (1)
    Disagree (0)
    Strongly Disagree (0)

0% 50%

26. Discussing educational issues.

Q.26 Strongly Agree (1)
    Agree (1)
    Neutral (0)
    Disagree (2)
    Strongly Disagree (0)

0% 50%

27. Dealing with personal or professional problems.

Q.27 Strongly Agree (0)
    Agree (2)
    Neutral (2)
    Disagree (0)
    Strongly Disagree (0)

0% 50%

28. Developing a "sense of community" amongst participants.

Q.28 Strongly Agree (0)
    Agree (4)
    Neutral (0)
    Disagree (0)
    Strongly Disagree (0)

0% 50% 100%
REFERENCES


and practice for site-based school renewal. Paper presented at the annual meeting of
the American Educational Research Association, Boston, April. ED321402

renewal: Electronic networking in schools, across schools and across groups. Paper
presented at the annual meeting of the American Educational Research Association,
Chicago, April. ED335762

(ed), Computers-Contributing to Chaos or Change? (Conference Proceedings of the
Computers in Education Group of Victoria). Melbourne: Computers in Education
Group of Victoria, 32-45.

Christensen, B. B. (1990). Teachers and CMC at Jutland Open University: A case
study. In: A. W. Bates (ed), Media and Technology in European Distance Education.
Heerlen (Netherlands): European Association of Distance Education Universities,
253-258.

Croom Helm.

possibilities. Journal of Information Technology for Teacher Education, 4 (2), 117-
135.

Commonwealth Tertiary Education Commission (1986). Improving Teacher
Education (Report of the Joint Review of Teacher Education). Canberra:
Commonwealth Schools Commission.

they catch on? Canadian Library Journal, 47 (6), 413-417.

campus the Riverina way. In: J. Bartlett & J. Hedberg (eds), Using Computers
Intelligently in Tertiary Education. ASCILITE.


education. Journal of Distance Education, 3 (2), 55-69.

D'Cruz, J. V. (1990). Technology in Education. A Study of Policy and Practice in

Distance Education. Rockhampton: University College of Central Queensland.


Resource Development. (Proceedings from an International Symposium on Computer Conferencing at The Ohio State University, Columbus, Ohio, June 1991), 41-45.


