TEACHING AND LEARNING IN INTERNET ENVIRONMENTS IN
AUSTRALIAN NURSING EDUCATION

by

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ABSTRACT

Since the introduction of the Internet, there has been an increase in the adoption of this technology for educational purposes. This development and widespread availability of Internet technologies, alterations in the needs of clinical practice and the characteristics of students, have all inspired changes in nursing education (Mallow & Gilje, 1999). In response, nursing education has embraced the opportunity this communication medium offers to the diverse groups of students in nursing. These students may be studying at a distance, or due to other constraints such as time or professional commitments, studying in flexible ways where students may or may not be in the classroom. In other instances, Internet technologies are being used with the aim of enriching learning in nursing. However, despite widespread development and implementation of these innovations, the effects on nursing education have not been extensively researched (Cheek, Gilham & Mills, 1998; Gillham, 2002; Mallow & Gilje, 1999) and little is known about how the Internet contributes to teaching and learning, what learning outcomes are, or what support is required by teachers and students (Billings, 2000). At this time of rapid development of Internet-based and Internet-supported courses in the Australian nursing education system, there is a need to ensure such courses are educationally effective, clinically relevant, and that resources are appropriately assigned.

This exploratory study aimed to contribute to effective discipline-specific use of internet learning environments through increased understanding of students’ and academics’ experiences of teaching practices and learning processes. There were two phases to this mixed-method study, a survey of course coordinators, and secondly, interviews with eleven students and sixteen academics. The survey of diverse schools of nursing across Australia provided foundational information about the ways the Internet was integrated into nursing education, and the preparation and supports that were offered to students for Internet-based or Internet-supported learning. Guided by a constructivist theoretical framework, and analysed thematically, the key findings of this study were drawn from the academics’ and students’ experiences in a variety of nursing courses in universities located across Australia. The Internet was employed in these courses in a variety of ways. At the time of data collection for both the survey and the interviews, more courses were Internet-supported than Internet-based. A variety of Internet information and communication features were used in courses.
The survey findings provided both a context for the interview findings, and a degree of confirmation of these findings. The context reported was diverse, consistent with an emergent educational environment that has few precedents to guide its implementation. The academics’ experiences revealed that teaching in online environments was vastly different to face-to-face teaching and required different practices of teaching and learning that took into consideration the separation of teachers from learners, and learners from each other. While often enthusiastic about the new environment, many teachers needed specific preparation, support, and adequate resources to teach in this new environment. Similarly, students experienced a dislocation from the learning environments to which they were accustomed. Significant shifts were apparent in the students’ constructions of both individual and collaborative learning that were contingent upon the separation of teachers and learners, and the necessity of communicating in a written medium.

Both teachers and learners revealed how, consequent upon their dislocation, they were relocating to a new interpretation of time, place and relationships in Internet learning environments, and were reconstructing teaching and learning. The reconstructions of learning included ways of relating that built learning communities predicated on a shift in focus from teaching to learning. These included both a shift in individual student’s learning, and a constructed understanding that arose variously from shaping a fundamental comprehension or challenging thinking, to expand comprehension in the group. Through new understandings and practices, the participants were beginning to construct a place for students and teachers to realise the possibilities for enriched learning that online communities can provide. The findings of this study are discussed in terms of the possibilities for teaching and learning in nursing education, and recommendations are made.
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STATEMENT OF ORIGINALITY

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

..........................................................
CHAPTER ONE

THE NETWORKED SOCIETY: CHANGING EDUCATION

A new technology does not add or subtract something. It changes everything... New technologies alter the structure of our interests: the things we think about. They alter the character of our symbols: the things we think with. And they alter the nature of community: the arena in which thoughts develop (Postman, 1992, pp. 18-20).

INTRODUCTION

Just as the early learning technologies of pen and paper radically changed learning, teaching and thinking, the advent of Internet technology has created the potential for changes in education that are not merely incremental, but transformative. The purpose of this study is to examine how these changes are affecting nursing education in Australia. This research is about the alterations that are occurring in the “things we think about... the things we think with” and the community “in which thoughts develop” (Postman, 1992, pp. 18 - 20) in Australian nursing education.

The ubiquity of Internet communication and information technologies in wider society, and the consequent networking of knowledge, has led to changes not only in everyday social life, but also in higher education. It is claimed that “knowledge will be the most important currency of all” in the twenty-first century, creating an impetus towards transforming society into a learning society (West, 1998, p. 15) that will be positioned to reap the social and economic benefits of this networked environment. Australian nursing education is located within a society that espouses such a transformation. Positioned across the borders of both higher education and nursing practice, nursing education is subject to the wider concerns, issues, constraints and trends within both education and healthcare arising from the adoption of Internet technologies into society and the move towards a networked knowledge society.

The development and availability of information and communication technology, alterations in the needs of clinical practice, and changes in the characteristics of nursing students, are all factors that have inspired changes in nursing education (Mallow & Gilje, 1999). Increasingly, computer technology and the Internet are instrumental in meeting the
challenges in nursing education. However, despite widespread development in, and some implementation of technological innovations, the effects of these changes on nursing education have not been extensively researched (Cheek, Gillham & Mills, 1998; Mallow & Gilje, 1999) and little is known about how the Internet contributes to teaching and learning about nursing, what learning outcomes are, or what support is required by academics and students who use the Internet (Billings, 2000). Nursing is a practice discipline, requiring complex knowledge acquisition (Spiro & Jehng, 1990) to meet professional requirements and competency levels set by regulatory bodies. Nursing students are required to do more than simply recall knowledge. They must transfer and apply knowledge in clinical practice, where clinical situations will be different and require knowledge to be used in complex decision-making in unique contexts. Therefore, merely assuming that Internet-based information and communication technologies work equally well across varying disciplines and subjects, or geographical and socio-political contexts, may be an uncertain basis upon which to plan nursing courses with these discipline-specific requirements. This study aimed to address these concerns through:

- Examining the ways Internet technology is being integrated into learning environments in nursing education in Australia
- Exploring academics’ experiences and perceptions of teaching and learning in Internet environments.
- Exploring students’ experiences and perceptions of learning in Internet environments.

**NETWORKED KNOWLEDGE SOCIETIES**

The defining features of the new knowledge or information society emerging from the 1990’s, which is expanding rapidly in the new millennium, are the revolutionary information and communication technologies (ICT) that have shaped it (Kearns, 2002) and the exponential rate of change that propels it further into the future. This networked knowledge environment presents both opportunities and challenges for education. The transformation that is now recognised worldwide began amid the economic rationalism in the 1980’s, which shaped the higher educational context. Changes in how teaching and learning are perceived have been dramatic, and the central questions about learning are now set in a context that also encompasses purposes of efficiency, accountability and competition (Brabazon, 2002). Although rapidly adopted into training in private organisations, the
integration of Internet technology into higher education has had an erratic dissemination; adoption has been slower to develop and has been less comprehensive.

In the last decade, major government reports into education in several developed countries such as Australia (West, 1998), the United Kingdom (Dearing, 1997), and the United States (Kerrey, 2000), and the Ontario Universities Council in Canada (Johnston, 2000), have all addressed the need to transform education for the information age, and argued for the place of Internet-based education within the higher education structure. These reports have typically identified the Internet as a valuable tool, the use of which promises lifelong quality education for an increasing mass of students, and enables the internationalisation of higher education in a competitive global market. The Learning for Life review of higher education financing and policy in Australia (West, 1998) predicted that the Internet would continue to fundamentally change teaching and learning. The report stressed the need for universities to make an investment in information technology and infrastructure that could manage transformed teaching, research and administrative structures and processes of universities, and increase the global competitiveness of Australian higher education. The West review committee recommended policies and financing arrangements for higher education that would remain flexible and responsive to ongoing technological changes in society and higher education, and repeatedly called for investment in further information and communication technologies and infrastructure. It also predicted that the continuing flow of technology into everyday life would shape public and consumer expectations of higher education. New technical and pedagogical skills in academics were viewed as essential to university teaching in the future. A consistent theme in the report was that, through the use of Internet-based technologies, universities should become not only “better”, but also “more cost effective in their administration, in the way they teach and in the way they conduct research” (West, 1998, p. 59). Academics and students consulted in the process of the review were reported as raising concerns about equity, access and cost in a highly technological learning environment. However, it was the opinion of the review committee that Internet-based technologies offered opportunities to: enhance quality, accessibility and cost effectiveness through enhanced communication, interaction and collaboration between students and academics and students and students, increase active learning, promote safer learning (for example though the use of simulations), enhance the provision of feedback to students, increase efficient use of students’ study time by reducing travel time and increasing remote access to learning resources, and accommodating diverse student learning styles through the innovative presentation of learning materials (West,
The review argued that to achieve cost-effectiveness, however, universities needed to re-think and re-design programmes and courses rather than adopt an ‘add-on’ model of technology use. Universities were also urged to change their dominant individualistic stance to better utilise already developed computer-based learning materials in an effort to be cost-effective. The increase in information and communication technologies was regarded as a major driver of potential changes in cost structures and pressures for the globalisation of education that would significantly change universities in the following two decades.

In the United Kingdom, the Dearing Report (1997) described similar promises for Internet information and communication technologies in higher education, including an emphasis on technology as a means of ultimate cost effectiveness and improved efficiency in higher education. The Dearing report suggested that communication and information technology would improve quality, flexibility and effectiveness, and recommended coordinated strategies and increased funding for technology in higher education to reach that end.

In 2000, the Web-based Education Commission (Kerrey, 2000) reviewed the ways the Internet was being used in United States education and corporate training. Several significant changes in education that the Internet promised were: to shift the focus of learning to the student, to individualise learning, to make lifelong learning a practical reality. Their report further suggested that as a medium that is integrated throughout society, today’s young also expect to find Internet technology supporting their educational experience. Such a finding may not apply in developing and less affluent countries, but is likely to be relevant in countries such as Australia, which bear sufficient technological resemblance to the United States. In making the claims for the advantages of Internet-based education, the Commission noted that certain shortcomings existed, such as the potential for the widening of what they called a ‘digital divide’: educational and thus social disadvantage caused by a variation in access. The Commission handed down a series of recommendations aimed at moving “from promise to practice” (Kerrey, 2000, p.iv). Recommendations were made to the federal and state governments and policy makers for policy and strategic development including:

Make powerful new Internet resources, especially broadband access, widely and equitably available and affordable for all learners.... Provide continuous and relevant training support for educators and administrators at all levels.... Build a new research framework of how people learn in the Internet age.... Develop high quality online educational content that meets the highest standards of educational excellence.... Revise outdated regulations that impede innovation and replace them with approaches that embrace anytime, anywhere, any
pace learning…. Protect online learners and ensure their privacy…. Sustain funding - via traditional and new sources - that is adequate to the challenge at hand. (Kerrey, 2000, p.iv).

A Canadian report from the Task Force on Learning Technologies (Johnston, 2000) also supported the use of Internet-based learning technologies. The Task Force recommended specific strategic planning at institutional and system levels, adequate resourcing of learning technologies, and the removal of barriers and provision of a supportive environment for academics and students who use learning technologies. Interestingly, this report encouraged strategic partnerships and collaborations between both private and public sectors to realise the investment required in technologies for learning.

Worldwide attention paid to policy development, both by individual countries and international agencies such as the Organisation for Economic Cooperation and Development (OECD) and the Asia-Pacific Economic Cooperation (APEC) organisation, is an indication of the importance placed on information and communication technologies for education. Formal policies for the introduction of information and communication technology (ICT) in education exist in countries as diverse as Australia, New Zealand, Canada, the United Kingdom, Ireland, the European Community, the United States, Finland, Sweden, Singapore and Malaysia. Kearns (2002) in a study of these national policies noted that, in general, a sequential approach has been adopted, wherein policies for the adoption of ICT progressed from providing computers and some professional development of academics, to integrating and mainstreaming the role of ICT and linking it with educational strategies (Kearns, 2002). This progression of policy development is consistent with the findings of several Australian reports on technology in education, where findings indicate that the adoption of Internet technology into higher educational practice is somewhat piecemeal in its early stages (Hesketh, Gosper, Andrews & Sabaz, 1996; McCann, Christmass, Nicholson & Stuparich, 1998).

The entry of virtual universities and other global educational organisations into local markets was perceived by some as a threat in higher education in Australia (for example, see McCann, Christmass, Nicholson, & Stuparich, 1998; West, 1998). The Internet opened up the very real possibility of competition from non-local providers. A series of reports investigating ‘the business of borderless education’ commissioned by the then Department of Education, Training and Youth Affairs (DETYA) in Australia (Cunningham et al., 1997; Cunningham et al., 2000; Ryan and Stedman, 2001) investigated the business of corporate, virtual and for-profit education in the United States and the potential impact on universities in Australia. The early report identified the main trends driving growth in the education
sector as globalisation, and the rapid growth of new technologies. Undertaken at a time when the media proclaimed online learning and virtual universities as the panacea for all educational problems and likely to make traditional universities obsolete over time, the 1997 study showed little concrete evidence of successful virtual institutions (Cunningham et al., 1997). Significant differences between the United States and Australia that were likely to provide a less conducive context for online borderless education in Australia included demographic and economic differences, a lack of employer-sponsored education subsidies, stronger regulatory controls, and a higher pre-existing level of experience with distance and part time students. Thus, the first report concluded that there was, as yet, no great threat to Australian universities from United States’ virtual and for-profit institutions, and concomitantly a limited potential for this type of business to make profits in the Australian education market.

Declining government funds available for universities in Australia prompted another report on the borderless education market (Cunningham et al., 2000). The report identified that the virtual universities remained unproven, while still claiming the potential for profit for the institution. What was apparent in this study was that profit-making universities were unbundling education and, rather than providing a comprehensive higher education service, offered vocationally oriented, restricted services, with cost effective structures for offering courses that could not be replicated within a traditional university structure. Interestingly, the ‘borders’ had changed in the three years between these two reports. The borders being crossed were perceived in the earlier report as geographical, geopolitical, time and space boundaries, but by the time of the Cunningham et al. report in 2000, borders were understood as changes in the boundaries of traditional higher education practices: between university and vocational colleges, on and off-campus students, universities and corporations. The third report in the series, published in 2001 (Ryan & Stedman, 2001), identified the impact of the ‘dot com’ crash, and the effects of the slump in technology businesses on Internet-based education. The virtual universities, and even many individual courses, were no longer seen as a profitable business; for example, the Australasian Professional and Graduate Education consortium yielded only single figure enrolments (Gunn & Recker, 2001). Internet-based learning initiatives continue, but the reasoning for them no longer resides in business logic and, as experience has been gained, the rhetoric has changed. By 2001, many United States, and a few Australian universities were concentrating on niche courses. Although the technological imperatives and globalisation shift that prompted the first report had strengthened even further, by this latter report, there was more
caution in relation to borderless education and greater recognition of the barriers and issues that need to be considered.

Despite reports, such as the above, that adopted an increasingly conservative view of what virtual universities could actually achieve in practice, a policy push towards virtual institutions was still evident in at least one political party in Australia in 2001. Internet policy in the Australian Labour Party proposals (promulgated in the University of Australia Online Policy) continued to advocate a large scale, national, virtual university. This proposal repeated the promises identified early in the development of such institutions overseas, that the institution would be cost effective, able to offer places to students who cannot access traditional universities, and be capable of generating export revenue (Chen, 2001). It is questionable however, whether the funding structures and revenue predictions upon which this policy was predicated, were realistic and sustainable (Chen, 2001).

It is not only institutions that are recognised as changing in the networked knowledge society. The Internet is a transformative medium, the full potential of which has not yet been grasped, but one that is already changing learners, and the ways they learn (Bell, Bush, Nicholson, O’Brien and Tran, 2002; Seely-Brown, 2000). In a study at the Xerox research centre in the United States, adolescents who were observed using the Internet showed the characteristics of “digital learners” (Seely-Brown, 2000, p.13) that are predicted to become important in future learning in the networked society. Although described along separate dimensions by Seely-Brown (2000), digital learning skills are actually integrated cognitive skills. Multiprocessing - doing several things at once - was a key learning activity identified. Consistent with the structure and processes of the Internet, it is inconsistent with traditional notions of concentration. Other skills observed were shifts from text literacy, through image and screen literacy, to navigation literacy. The enormous amount of information now available through the Internet means that learning is predicted to shift from traditional deductive, abstract reasoning to being discovery-based and constructed from the multitude of information uncovered by the navigation literate. A tendency towards action in the young digital learner fits neatly back into the loop with the navigation and discovery learning, and shifts the focus to learning “in situ” with each other (Seely-Brown, 2000, p.15) and forming communities of practice, wherein the boundaries between consuming and producing are blurred. As Seely-Brown contends, on the web “we read and we write, we absorb and we critique, we listen and we tell stories, we help and we seek help” (Seely-Brown, 2000, p.15). Spender (2002) also noted transformations wrought in learning by Internet technologies that include shifts: from education that controls entry to learning for all; from qualifications to
learning as a lifestyle; from scheduled learning to any time, any place, any pace learning; from taking in content to doing something with resources; from remembering to accessing information; from memory testing to demonstrating performance with what you know; and from competitive to collaborative practices. Such predictions about learners of the future are valuable and useful, but still the everyday practices of Internet learning are yet to be fully understood and explicated in a widespread way. It is within this global context that nursing education is located, and shares with higher education many of the same imperatives and many of the issues.

FROM PROMISE TO PRACTICE IN AUSTRALIA

In Australia, geography and a widely dispersed population have ensured a relatively long history of distance education (Bell et al., 2002). For this reason Australia would be expected to provide a fertile ground for integrating Internet technologies, and ‘flexibilising’ programme delivery with Internet technology. These developments would be a response to current changes in both higher education (such as globalisation, lifelong learning policies and the ‘massification’ of education) and the student population (such as the emergence of ‘learner-earner’ and ‘earner-learner’ groups, and increasingly diverse age and socioeconomic groups). Nursing students, both undergraduate and postgraduate, make up a significant group of those who are not traditional school-leaver students, but more often are the earner-learners who need flexibility in education to accommodate work patterns. The changing demographics and resultant access needs require that universities respond in innovative ways to students who are not only the traditional users of distance education, but also those who are no longer captive in the local market through geography or time. However, the question remains as to whether the implementation of Internet education in higher education in Australia has equalled its early promise.

From 1995 onwards, the explosive global impact of the earlier gradual development of the Internet had arrived (Seely-Brown, 2000). Interestingly, the dramatic rise in online functions in society in general (such as for banking and shopping), the hyperbole that accompanied much of the media talk about Internet learning and virtual universities (Cunningham et al., 1997, 2000), and the large volume of online learning used as a training mechanism in the private sector (Ryan & Stedman, 2001) paint a different picture to that of the actual adoption of Internet-based practices in public universities in Australia.

The likely penetration of information technologies into traditional university education in Australia was reported as being very conservative by Hesketh, Gosper, Andrews and Sabaz (1996). Academics reported that they expected to incorporate
technologies such as PowerPoint and email into their teaching. It appears that, at this time, there was little idea of how Internet technologies themselves would transform, and how they would transform education. At the time, funding systems were thought to work against collaborative innovation, as did the lack of cross-institutional collaboration between universities, many of which perceived themselves in competition with each other. Academics suggested that changes were more likely with postgraduate teaching rather than with undergraduate groups. They perceived the greatest barriers to adoption were a lack of technical skills and support, cost, time and workload, and lack of career rewards for teaching with new technologies, which went unrecognised by the system. Hesketh and colleagues (1996) concluded that if approached passively, use of information technology in universities would remain patchy, dependent on the enthusiasm of individual academics. This proved to be the case, as reported five years later by Bell et al. (2002), who identified increasing, but unevenly distributed, online education predominantly dependent on individual universities’ philosophies and academics’ individual efforts.

Consequent upon universities needing to differentiate themselves in an increasingly competitive national and international environment, three complex strategies for managing the introduction of technology were identified by Yetton (1997). These strategies were: the value-added strategy adopted in the traditional high-status ‘old’ universities who were seeking to enrich and individually customise the students’ experience; the cost-based strategy used in ‘new’ universities that delivers convenient, reliable, relatively low cost programmes to a mass market; and a hybrid strategy combining the former two strategies and using standardised infrastructure to deliver customised programmes, which gained benefits of both lower costs and value-adding (Yetton, 1997). An issue for nursing education is whether or not each nursing school’s needs would be subsumed within the overall strategies for managing technologies within their universities, with little attention paid to discipline-specific concerns of nursing education, and preparation for practice.

Adoption of Internet information and communication in higher education

Australian national figures available from December 2001 (Bell et al., 2002) identified that 54% of all courses in universities had some course content available on the Internet. While these percentages sound small, this equated to 50,704 courses in universities across Australia. Internet-supported courses accounted for 46% of these courses. Only 1.4% (207) of all courses were Internet-based (0.8% of undergraduate courses and 2.4% of postgraduate courses). Of the Internet-based courses, 90% were at postgraduate level. Of the 207 Internet-based courses available, 32 were offered in health. There were no figures
available that discriminated nursing from other health disciplines in the higher education setting. While universities have been adopting online technology for the purposes of teaching, administration, and student support, only a minority were offering Internet-based courses. Other services described in 2002 included: 70% of universities provided off-campus access to an Intranet, with 95% providing online access to a library, 57% providing online learning support, and 45% providing online IT training (Bell et al., 2002). These latter figures demonstrated that while there were few Internet-based health courses, there was evidence of a growing infrastructure to support students undertaking Internet-based or Internet-supported courses. This commitment of resources to building such an infrastructure implied a commitment by the universities to increasing Internet support in teaching and learning. Further information is required however, to address the lack of knowledge of where specifically nursing courses are located within this growth pattern.

**Potential benefits of Internet learning**

Information and communication technologies have been regarded as increasing universities responsiveness to the requirements of both students and their future employers (McCann et al., 1998). This is an important consideration for nursing in higher education that, as noted previously, occupies a complex position between higher education and clinical practice. Flexible access, enhanced choice for students, enriched learning, the potential for increased quality of teaching, and increased competitiveness of Australian universities in the global market are seen as benefits of increased technology (Bell et al., 2002; McCann et al., 1998). However, few of these potential benefits have been substantiated by research at this time, nor have they been investigated specifically within Australian nursing education.

**Challenges of Internet learning**

Although there is consensus that Internet technology will be a major influence in universities, as it is in other places in contemporary society, a number of student, academic and organisational issues have yet to be effectively dealt with. These include establishing cost effective practices; the achievement and maintenance of quality in online delivery; ensuring access and equity in the delivery of programmes; and establishing practices which will enable online learning to both grow and be sustained as a mainstream activity in university teaching and learning (Oliver, 2001).

Beyond the challenges that can already be ascertained, the dynamic nature of the Internet learning environment is such that its challenges may be unique, or involve groups formerly not affected by it. For example, while information and copyright have always been
concerns for universities, Internet technology use has catapulted issues concerning fair use of information, use and re-use of resources, intellectual property and digital rights management in learning environments to a level of complexity previously unimagined (Iannella, 2002). The changes and challenges may be far-reaching with information management in an Internet environment to a large extent being devolved to the end user. Further, the issues directly involve a greater range of stakeholders than traditional systems, including system developers, content providers, academic staff, administrators and students in universities (Iannella, 2002).

THE NURSING CONTEXT

Since the introduction of the Internet, there has been an increase in the adoption of this technology for educational purposes, albeit in differing forms ranging from Internet-supported to Internet-based delivery. Nursing education has embraced the opportunity this communication medium offers to the diverse groups of students in nursing. However, Internet-based and Internet-supported education are barely considered in the reviews of nursing in Australia dating from 1994. In part, this is attributable to the lack of research about Internet learning in nursing (as reported in the systematic review of the literature in the National Review of Nursing Education report, (McKinley, 2001)).

A report from the Australian Council of Deans of Nursing (Johnson & Preston, 2001) recorded the following comment in relation to gaps they identified from an analysis of reports into nursing carried out between 1994 and 2001:

Another area which seems to have received no attention is the online education of nurses, whether at the undergraduate or postgraduate level, or in continuing education. This is an area currently receiving attention in the universities and amongst policy makers and politicians. Online provision is resulting in much activity in nursing course development and is especially suited at least to the continuing education needs of nurses: they should value its flexibility of time and place of access; they are likely to have access to computers in many workplaces; their workplaces may well be far from metropolitan areas. At the same time, online education poses particular problems in course development and delivery and system maintenance. Yet there do not seem to have been reports or evaluations of initiatives to provide online learning for nurses at any level (Johnson & Preston, 2001, p. 10).

SIGNIFICANCE OF THE CURRENT STUDY

At this time of rapid development of Internet-based and Internet-supported courses in the Australian nursing education system, there is a need to ensure such courses are
educationally effective, clinically relevant, and that resources are appropriately assigned on
the basis of specific outcomes. This exploratory study aims to contribute to effective
discipline-specific use of internet learning environments through increased understanding of
students’ and academics perspectives, and providing information that may:

- Inform pedagogical and policy decisions to enhance students’ learning and transfer of
  this into nursing practice.
- Assist educators in addressing difficulties that students experience with learning in
  Internet environments, and ensure that learning is a positive experience.
- Promote effective and appropriate support for student learning, particularly at a
distance.
- Contribute to knowledge of how to improve aspects of providing curricula via
  Internet-based delivery.
- Contribute to the development of standards for nursing education.
- Help provide a basis for allocation of specific educational resources for internet-
  based and Internet-supported courses.
- Provide a basis for further research into learning in Internet environments, and
  Internet technology's impact on nursing education and knowledge transfer to practice.

DEFINITIONS AND CLARIFICATION OF TERMINOLOGY

Terminology associated with Internet information and communication technology is
briefly described here to clarify the nomenclature and definitions that are encountered in this
field, and the ways this terminology is used within this dissertation. Although the
architecture and processes of the Internet are not the focus of this inquiry, these explanations
are given with the intention of decreasing the ambiguity of meanings related to the Internet
and its tools in the ensuing discussion of nursing education in the Internet environment.

The Internet and the World Wide Web

The term Internet refers to the network of computers that are connected world wide
through cable, fibre-optics or microwave radio transmission to facilitate data communication
and sharing between users (Dauvin, 1996). The term World Wide Web (www) although
often used synonymously with the Internet, is not the same. The World Wide Web refers to
the graphical interface on the user’s computer that facilitates entry to the Internet (Kurland,
Sharp & Sharp, 1997). However, many people make no such distinction between these
technicalities and use these terms interchangeably. For most people, other than those with a
deeper knowledge of the Internet’s structure and functions, the point at which they interact
with the Internet (that is, the web) becomes the organising focus for their understanding of the Internet. As Internet use has become ubiquitous, new words that have their genesis in people’s experiences of connecting to the Internet, such as ‘online’ are also being absorbed into the vernacular. The tendency to use these various terms synonymously appears to have increased. For this reason, within this dissertation the words Internet-based and web-based are used interchangeably. Similarly web-supported, Internet-supported, web-enhanced or Internet-enhanced are regarded as being synonymous. While this approach lacks precision, it reflects the ways in which these words are used in society generally, and the way they have been used in both the nursing literature, and by the respondents in this study. When a distinction between Internet-based and Internet-supported courses was unnecessary, the term online has been employed. The use of the term online refers, throughout this dissertation, to activities on the Internet that students or academics in both Internet-based and Internet-supported courses participate in.

For the purposes of this research however, a greater degree of exactitude was required in gathering data. Particular definitions for ways of using Internet technology in specific academic units of study were specified in the survey. These definitions were supplied to the respondents in the information sheet that accompanied the questionnaire (Appendix 4). The distinctions made between different Internet learning environments were as follows:

- **An Internet-based course/subject**\(^1\) was defined as a unit of study able to be completed entirely using Internet delivery.
- **An Internet-supported course/subject** was defined as a unit of study where learning in a classroom is supplemented by using Internet delivery for some materials or communications.
- **A programme** was defined as a programme of study, consisting of components, usually courses, leading to an academic award (for example a certificate, or degree).
- **A subject/course** was defined as a discrete unit of study leading to the award of a grade.

Within nursing education in Australia, the title used by those who teach varies, (for example, academics, lecturers, tutors, educators, or teachers) between universities.

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\(^1\) Subsequent to data collection in this study, nomenclature in some universities has changed with subjects now being called courses. Throughout this dissertation the word course is used for the individual units of study, with the exception of when participants used the word subject in their interviews this has been left unaltered in ad verbatim quotes.
Throughout this dissertation, the word *academic* has been used to describe those teaching or managing the course. This word was specifically chosen, as it encompasses not only the teaching role, but also other roles that were evident in, and important to, the academic life of those teaching in Internet-based and Internet-supported courses in universities. The exceptions to the use of this word however, are:

- where participants used a different word, this has been preserved in their ad verbatim quotes in the findings chapters.
- where the researcher is specifically referring to teaching functions alone, the word *teacher* is employed in some places to enhance the clarity of meaning.

**Hypertext**

One other structure that requires defining for the purposes of this dissertation is hypertext, which is important to the World Wide Web’s functionality. Hypertext is text, that when selected by the user has an embedded link enabling a connection to the associated Internet address. This subsequently makes available other material that is embedded in the document to which it is linked (French, Hale, Johnson & Farr, 1999). Each link takes the user to other documents, which also have many embedded links, creating an electronic ‘web’ of links. This non-linear structure allows the user to move through multidimensional pathways that they determine themselves from within the available options (Gillham, 1998).

**STRUCTURE OF THE DISSERTATION**

**Chapter one - The networked society: Changing education**

This chapter has described the global and local context within which this study was located. The purpose and significance of the study are described. Finally, definitions and terminology, common in discussions about the Internet, and used throughout the dissertation are explained.

**Chapter two - Lessons learned from the Literature**

Chapter two reviews the literature concerning learning and teaching in the Internet environment. Because there has been rapid change and developments in Internet technologies, this review initially locates the study chronologically, providing a context within which the study was commenced. The international and specifically Australian literature that emerged throughout the duration of this study is then examined to provide a context for the changes that have emerged during the study as a whole.
Chapter three - Understanding constructions

Chapter three encompasses the conceptual framework of this study. An explanation of the dialectical conceptualisation of Constructivist and Constructionist theories is provided, along with a discussion of Cognitive Flexibility theory. Finally, the methodological approach to the study is described. The epistemological foundations of the study are outlined, and the rationale for the dialectical approach to mixing methods that was adopted in this study, is discussed. Taken together these theories provided the conceptual underpinnings of this study. These conceptualisations provided a guide for the researcher in making decisions about the conduct of the study and exploring the findings, and present the reader with a view of the researcher’s understanding of learning with which to audit the credibility of this study.

Chapter four - Constructing understandings

In this chapter, the design of the study is described, and the relationship of the constructivist theoretical frameworks to this design is explored. Reasons for using mixed methods, and the details of the specific methods employed in this study are discussed. This section includes the processes for accessing study participants, the data collection processes used in the study, the data analysis processes, the ethical considerations and the means used to address these.

Chapter five - Behind the screens

In chapter five, the first section presents the data from the survey of Internet courses in nursing schools and describes the structures and processes that characterise the integration of Internet courses in Australian nursing education. This is followed by the academics’ accounts of teaching and learning in an Internet environment gained from the interview data. These accounts are described through the themes of: Moving online; Another time, another place… Dislocating teaching; Learning to teach on the Internet; and Relocating teaching.

Chapter six - In front of the screens

Chapter six is comprised of the students’ accounts of learning in the Internet environment. This data is drawn from the interviews with the students and is described and interpreted in four themes: Accessing; Dislocating learning; Relocating learning; and Constructing Understanding.
Chapter seven - Reconstructing teaching and learning

Chapter seven brings together the implications of the findings described in chapters five and six in relation to the research purpose, so that conclusions may be drawn from this information. Recommendations for nursing education, and research are made. The limitations of this study are also discussed to demonstrate the context from which the recommendations emerged. Implications for the future are considered.
CHAPTER TWO

LESSONS LEARNED FROM THE LITERATURE

INTRODUCTION

This literature review is structured in two chronological sections. The purpose of this structure is to divide the literature into that which was available at the time the study was planned in 2000 and the data collection begun, and that which subsequently became available up until 2003. Separating the earlier literature enables the study to be clearly situated within the knowledge and understandings of the time. The recent literature reflects that the adoption of Internet technology into nursing education is becoming increasingly widespread in many areas of the world. Commensurate with this trend, information about online learning has increased exponentially over the last three years. From a field that was practically devoid of research, there is now a growing body of literature in nursing about teaching and learning in Internet environments. It is important that this recent knowledge is included in this review to give a more comprehensive understanding of how this rapidly changing field of nursing education is unfolding and where the findings of this study are situated relative to this knowledge.

Within this chapter, the research literature salient to this study is reviewed and the anecdotal accounts of developing Internet-based and Internet-supported courses are described. These anecdotal accounts are included as they are important in establishing the early understandings of teaching and learning using the Internet, when there were few formal research studies. They are important to place alongside more established knowledge, because such publications signalled innovative approaches to technology use in nursing education that may prove to have discipline-specific importance in the future. Following the description of the research studies and accounts, they are critiqued methodologically and in relation to their contribution to learning and teaching in Internet environments in nursing education.
SITUATING THE STUDY - THE EARLY LITERATURE

Internet learning in nursing - the early years

Information related to computers in nursing existed in the nursing literature from as early as the 1980’s. However, literature from that period is of less relevance to this study, other than historically because the technologies, (and their capabilities and capacities), available at the time bear little resemblance to those available today. Current information and communication concerns are related to technology that has advanced not only quantitatively, but also qualitatively. Thus, literature reviewed in this chapter is, predominantly, limited to literature from 1990 onwards. At the commencement of this study in 2000, research literature about learning in Internet environments was relatively scarce, reflecting the early stage of development and use of the Internet as an educational technology in nursing.

In early online courses there was often a convergence of the message and the medium, with course content frequently being concerned with informatics (Anthony, 2000). International, and some Australian literature showed, however, that more recently Internet delivery of information and communication had been used in a variety of situations in nursing, such as in course delivery for students at varying academic levels (for example: Andrusyszyn, Iwasiw & Goldenberg, 1999; Martyr, 1998; Wambach, Boyle, Hagemaster & Teel, 1999), for research (for example: Dauvin, 1996; Fawcett & Buhle, 1995), in online communication between students (for example: Roberts et al., 1998; Trick et al, 1999) or between practising nurses (Brunt & Varcoe, 1999; Ribbons, 1998; Sparks, 1993 ) and for online conferences (Nelson, Curran, McAfooes & Thiele, 1999). Research that systematically examined learning in Internet environments in nursing education, although growing, was less frequent in the literature than anecdotal reports of the experiences and perceptions of those who prepared or facilitated the delivery of such courses (Ryan, Hodson-Carlton & Ali, 1999). However, this latter body of literature was helpful in revealing the ways in which the Internet was being used in nursing education, academic and student perceptions and experiences of online teaching and learning, and their judgments about the outcomes of Internet-based or Internet-supported courses.

Findings from these studies suggested that students appreciated the flexibility of access to subjects that are time and location independent (Martyr, 1998), which enhanced their opportunities for learning. However, the very technology that made remote access possible also caused frustrations for students when technical difficulties arose (Cunningham & Plotkin, 2000). A lack of knowledge about how to use computers and the Internet was also reported by nursing students (Mastrian & McGonigle 1997; Theile, Allen & Stucky, 1999),
who found that a lack of support and tuition with regard to using computers and the Internet inhibited their learning (Roberts et al, 1998). Other findings pointed to a lack of knowledge of how to use technology, and frustrations about technological problems: problems that are reported fairly consistently in the available literature (Halstead & Coudret, 2000; Martyr, 1998; Mastrian & McGonigle 1997; Roberts et al. 1998; Soon, Sook, Jung & Im, 2000; Trick et al., 1999; Todd 1998).

The evidence concerning Internet-based communication is inconsistent, including those who found electronic communication enhanced learning (Cunningham & Plotkin, 2000), those who claimed students found it more difficult and isolating (Rosenlund, Damask-Bembenek, Hughie & Matsamura, 1999) or a complex interaction of both perceptions (Andrusyszyn, Iwasiw & Goldenberg, 1999). Further questions remained about the effects on students’ learning, and of not having the physical presence of other students and the teacher. Problems related to the absence of a teacher, and the consequent loss of cues that enabled coverage of the depth and breadth of content, and the means by which presentation could be tailored to the learning needs of the students have also been noted (Diekelmann, 2000; McWilliam, 1997).

Identifying contemporary information specifically about the extent of delivery of Internet-based or Internet-supported learning in Australian nursing was difficult at the commencement of this study, in that there appeared to be little published formal research that discussed the adoption of Internet technology across nursing education. Roberts et al. (1998) and Trick et al. (1999), both reported online assignments within Australian undergraduate courses where students emailed nurses in other locations to exchange information, and searched the Internet. While acknowledging the potential for remotely located students to gain more global interactions, these authors described students experiencing a large number of technical problems, which affected their perceptions of their learning. Martyr (1998) compared Internet-based and classroom delivery of a course in Australia, in which students self-selected into their preferred course delivery mode. This course was also fraught with technical difficulty. Most students liked the Internet-based mode of delivery for its convenience, either for time or travel distance. A significant number of students felt they had improved their basic information technology skills and knowledge through involvement in the online discussion. Overall evaluation showed that there was a positive trend in students’ perceptions of online learning from those who selected the Internet-based course option. It is notable however, that the cohort of students asked for a simultaneous classroom-based course (that would not otherwise have been offered) and the
majority of students in this cohort (80%) selected the classroom option over the Internet-based offering. There is, therefore, considerable bias in these findings.

**Internet learning in higher education - the early years**

At the commencement of the current study, some research into Internet learning was being conducted within higher education across the various subject areas subsumed within that field. These studies ranged across various subjects and academic levels. In the context of the current study, however, this literature was not without its limitations. It is not known whether such information is directly transferable between disciplines, particularly to a complex, practice-based discipline such as nursing. Although pedagogic information from education may be helpful to nursing “the extent to which theoretic work from higher education is generalizable to nursing situations is, in most cases, assumed rather than demonstrated” (Ironside, 2001, p.73). This literature is briefly described here to locate the nursing literature within the broader higher education literature.

The emerging higher education literature at the commencement of the current study provided some evaluation-based information about learning in Internet environments. This body of knowledge claimed Internet-delivery of courses may enhance learning, but there was also uncertainty about whether learning outcomes, as measured by course grades and examination scores, are substantially different from those gained in face-to-face or distance education contexts other than the Internet (Carswell, Thomas, Petre, Price & Richards, 2000; Phipps and Merisotis, 1999; Wegner, Holloway and Garton, 1999).

Chang and Fisher (1999) evaluated undergraduate (n = 71) and graduate (n = 15) students’ perceptions of an online commerce course in an Australian university. Findings indicated that students generally viewed the course positively in relation to convenience, access, enjoyment, confidence, success, and co-participatory aspects of the course. Another Australian higher education study (Chin, 1999) examined students’ perceptions of learning experience, quality, and communication across five different university courses (n = 203). Again, students perceived online learning as useful, but in this study the majority of students did not want classroom teaching replaced by Internet teaching, believing it was better used as a supplement.

Barriers to learning in Internet-based courses in higher education have also been reported. The main areas of frustration that inhibit students’ learning include technological problems, including the student’s own inadequate computer skills, a lack of immediate feedback from academics, ambiguous instructions and a lack of guidance for students (Hara & Kling, 1999).
These studies in higher education demonstrated findings not unlike those found in the early nursing studies where students reported some positive experiences, but the findings provided insufficient evidence to suggest improved learning outcomes. Questions remain about the effects of Internet delivery on learning in higher education. The remainder of this chapter reviews nursing literature - the trends revealed in the literature (including the descriptive and anecdotal literature), and the findings from research studies that have emerged over the period of the current study.

**TRENDS IN INTERNET LEARNING IN NURSING**

**The dissemination of Internet technology in nursing education**

The nursing education literature from the last decade shows some trends in the development of courses in Internet environments. Some commentaries depicted online learning, with its electronic access, as particularly appropriate for remedying some of nursing’s ills, particularly nursing workforce shortages, the scarcity of nurses in underserved areas such as rural and remote locations, and a lack of nurses holding specialist qualifications (AACN, 2000; McConnell, 2000). Considerations of internet education at the level of school administration rather than the individual course are few, but the American Association of Colleges of Nursing (AACN) (2000) provides one account of the issues involved at the school administrative level. Financial costs, both tangible infrastructure costs and intangible costs, such as faculty time are highlighted. Both the AACN (2000) and Ward (1997) mention intellectual property and ownership, privacy of information, and quality concerns as potential issues for institutions, but offered few insights into how these could best be managed.

Much of the literature encompasses accounts of the development and implementation of courses, or less frequently entire programmes. Courses that are either Internet-based or use Internet-supported are offered at all levels of nursing education. Field (2002) described limited use of online technologies with enrolled nurses in Australia. While a number of providers used some online resources, there were no Internet-based courses specifically identified for enrolled nurse education (Field, 2002).

Where continuing education is a requirement of licensure, such as in the United States, United Kingdom and Australia, online learning is increasingly being considered as a way to meet the ongoing educational needs of registered nurses (Atack & Rankin, 2002; Billings & Rowles, 2001; Hayes, Huckstadt & Gibson, 2000). Registered nurses have
traditionally faced barriers to further education, such as work commitments or practice in remote locations away from university campuses.

The literature also contained accounts of Internet courses offered to registered nurses in baccalaureate programmes (Broome, Daniels, Ryan, Davis & Tucker-Allen, 2000). Undergraduate nursing students face similar access barriers to registered nurses seeking continuing education. However, in response to the need to improve access, there was only one programme described that enabled completion of an entirely online RN baccalaureate degree (Wambach, Boyle, Hagemaster & Teel, 1999). Baccalaureate level programmes are also offered to pre-registration undergraduate students (Cheek, Gillham & Mills, 1998; McAllister & Mitchell, 2002), although these tend to be of an Internet-supported nature rather than Internet-based or are only selected courses within a programme that is predominantly structured around face-to-face classroom delivery.

Postgraduate courses are by far the most frequently described Internet-based courses in the literature. Increasingly, honours courses (Herrman, Downie & O’Connell, 2001; Young, Marks-Marans & Macklin, 1999) and masters courses (Andrusyszyn, Iwasiw & Goldenberg, 1999; Kaas, Avery, Kubik & Vellenga, 2001; Wambach, Boyle, Hagemaster & Teel, 1999; Wills, Stommel & Simmons, 2001) are being offered online. Specialist graduate courses, such as those for nurse practitioners, are offered in North America (Bolan, 2003). It appeared that nurse educators deem courses at this academic level to be appropriate for development for the Internet, because of the needs of graduate students for flexible educational offerings, the prior educational experience of these students that are already deemed competent as an RN, and the suitability of content to this form of delivery.

At all academic levels, Internet technologies have been harnessed to provide either Internet-based or Internet-supported courses in a wide variety of content areas in nursing. These include: professional issues (Kozlowski, 2002; Siktberg & Dillard, 1999), contemporary nursing, nursing theory (Wambach, Boyle, Hagemaster & Teel, 1999), information systems (Bachman & Panzarine, 1998; Kenny, 2002), child and adolescent health (Martyr, 1998), acute nursing (Oliffe, 2001), a clinical practicum (Cunningham & Plotkin, 2000), research, (Cox, 2002; Wills & Stommel, 2002), health promotion (Wambach, Boyle, Hagemaster & Teel, 1999; Young, Marks-Marans & Macklin, 1999), bioethics (McAlpine, Lockerbie, Ramsay & Beaman, 2002; Pinch & Graves, 2000), pathophysiology (Teikmanis & Armstrong, 2001; Yucha & Princen, 2000), epidemiology (Rose, Frisby, Hamlin & Jones, 2000), occupational and environmental health nursing (Olsen & Carlson, 2000), and aged care (Wills & Stommel, 2002).
Several authors have described particular features of computer and Internet technology that are judged to have specific relevance to nursing and preparing students to be clinicians. Some authors assert that Internet courses encourage lifelong learning and promote a dual learning experience in which the student concurrently learns about the content and the computer and information technology (Brennan, 1999; Washer, 2001).

Gillham (1998) argues that hypertext capabilities of the Internet - the ability to connect numerous information sources and efficiently retrieve material - makes it a promising aspect of Internet technology for developing cognitive flexibility in nursing students, increasing their ability to think critically. Such critical thinking skills assists students to meet the demands of complex knowledge, skills, and judgements required in safe nursing practice. Gillham reasoned that information is not presented in a linear fashion to nurses in clinical practice, and thus educating students to become adept at managing information through a hypertext structure helps to prepare them for clinical practice.

Rossignol and Scollin (2001) described using computerised testing with undergraduate nursing students in North America in order to accustom them to this kind of testing before they undertook their National licensure examinations (NCLEX-RN). They found that, following this experience students perceived themselves to be more confident to undertake the computerised examination.

Simulations are a field of computer technology that are becoming increasingly sophisticated, moving rapidly into the realm of virtual reality (Simpson, 2003). Ravert (2002) in a review of studies of computer simulations in healthcare education reported that, of the few studies available, 75% showed positive effects on skill or knowledge acquisition. Ravert concluded that computer-based simulation has a large potential for nursing education. Simulations of medical devices, such as for medications delivery, have been claimed to enhance psychomotor skills learning in an environment that carries no patient risk (Koerner, 2003). Cheek, Gillham and Mills (1998) described simulating hospital computerised care plans, information systems, and clinical databases in an Australian undergraduate nursing programme and asserted that students learning in this way enhanced both their clinical competence and their credibility with the clinical areas in which they undertook subsequent practice experiences.

The adoption of computer and information technology in schools of nursing

Two studies (Carty & Rosenfeld, 1998; Wells et al., 2003) surveyed the adoption of computer and information technology in nursing programmes nationally in the United States. Carty and Rosenfeld (1998) surveyed a sample of NLN accredited nursing schools in 1996

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to determine the technology available, the place of computer and information technology in curricula, and the decision-making and resource allocation for technology. They determined that all the responding schools (n=190, a 55% response rate), had access to computers, but prevalence among different users varied. Less than half of the schools reported that all academics had access to a computer. Those that did were in programmes at a higher academic level, such as baccalaureate level. Students, however, had almost universal access (97.8%) albeit in common use computer areas of the universities. Uses within the curricula were mainly confined to computer-based patient simulations and assessment activities for students. Less than one third of the schools offered nursing informatics within the curriculum, showing a disparity between the availability of computers and the integration of information technology into curricula at this time. Funding for computer and information technology was found to be inadequate, as were personnel resources, with few schools planning comprehensively and strategically for integration of these technologies into courses.

Wells et al. (2003) carried out an online survey in early 2000 of all undergraduate nursing programmes in the United States to determine their technological capabilities. The 380 responses (a 29% response rate) represented all geographical regions and 25% of all US undergraduate nursing programmes. Of the responding schools, 83% had multimedia computers available although, as in the earlier study, availability varied. Only 26% of programmes always had access, 67% usually did and 7% seldom had access to a multimedia computer. As in the Carty and Rosenfeld (1998) study, most respondents in the Wells et al. (2003) study noted that there was no comprehensive plan for technology implementation in their institutions. Funding constraints were problematic in many nursing schools, where computer and information technology was only upgraded when budgets allowed, not at a time that academics thought it would be desirable. At the other end of the spectrum, a few schools made major commitments to technology. The researchers suggested that variations in academic expertise with computer and information technology remained a challenge. Overall these results suggest that there are still many issues and concerns related to technology infrastructure in nursing education in the United States.

**Evaluation studies of Internet learning environments**

A valuable body of knowledge developing in the nursing literature is that of reports of course evaluations. Discussions of these specific examples of Internet teaching and learning are important in advancing practice. The context-dependent nature of these evaluations provides significant information for nurse educators by explicating the
parameters of Internet learning and teaching in nursing, as well as providing evaluative information of the experiences and perspectives of students and academics within various constructions of Internet learning environments. An understanding of both variations and commonalities is particularly useful when a technology is in the early stages of dissemination.

The evaluation tools employed varied within the literature. Some teachers continued to use the standardised evaluation tools that were provided in their schools for classroom evaluations and found these did not adequately address the new educational experience (Rosenlund, Damask-Bembenek, Hugie & Matsamura, 1999); others devised new tools specifically for their online courses. There is scant evidence in the nursing literature with regard to the most effective tools for evaluating Internet courses. However, the information gained from the course evaluations reported in the published literature provides a useful beginning for future research.

**Conceptual framework and benchmarking of Internet learning environments in nursing**

To date, Billings (2000), an American nurse researcher, is the only author to have published a conceptual framework for evaluating technology-based educational offerings specifically in nursing. Evaluation of technology in nursing programmes, and accreditation standards for online nursing education have not as yet been integrated systematically in nursing education (Billings, 1999). Billings’ framework contributes significantly to this process by beginning to identify the principles and practices of online nursing education and drawing attention to the importance of attending to online learning at the level of the programme as well as the individual course. The framework builds upon earlier work on technology in higher education and the emerging literature from nursing pilot projects and anecdotal accounts. Billing’s framework is structured around five major concepts: outcomes, educational practices, faculty support, student support and the use of technology. The relationships among these aspects are conceptualised thus: the use of technology affects the educational practices which are also influenced by the faculty and student support, which then impact upon the outcomes. A limitation identified in this framework is the linear and unidirectional relationships depicted between the variables (Thurmond, 2002). In reality, it is more likely that influences between these variables may be multidirectional.

Billings and others (Billings, Connors & Skiba, 2001) used this framework to benchmark best practices in web-based nursing courses. This represents an important step in advancing knowledge of Internet learning given the dearth of examples of benchmarking in
nursing education. In this study Billings, Connors and Skiba describe the process of defining the benchmarks and mapping the process itself. In collaboration with The Flashlight Program (part of the Teaching, Learning and Technology group, an affiliate of the American Association of Higher Education), schools of nursing in three large universities in the United States surveyed 219 students about educational practices, outcomes enabled by the technology, and uses of the technology.

The survey was developed from The Flashlight Program’s question bank. Many of the 52 questions asked students to answer based in their comparison of web-based and face-to-face learning experiences. Means for each indicator provided the benchmarks in this study. Results indicated that 42% of students were taking the online courses for reasons of accessibility. Students also found the web courses convenient, and were generally satisfied with the courses. Older, and more distant students rated both convenience and satisfaction with web courses more positively than younger students and those closer to the campus (less than 30 miles). Similar findings emerged for the indicator of isolation. The older and more distant students felt more connected and less isolated. These findings are of particular interest given that nursing’s typical student cohort includes many mature-age students with multiple work and family responsibilities. The findings about educational practice indicated that students in these web courses spent a similar amount of time participating in learning to what they would have in an on-campus course. Students perceived they were learning actively, and receiving feedback. Students found, however, that they interacted less with both fellow students in the courses and faculty than they would in an on-campus course, although there were variations in the results with older students interacting more than younger ones with both faculty and other students. In the technology use section of the survey, students found that the technological infrastructure was unreliable and unsupportive of effective use of students’ time, a finding that increased the further students were from the campus. Benchmarking exercises such as this provide valuable information for evaluation of online education at academic, technical and administrative levels both for those involved in the study and as a contribution to the emerging body of knowledge about best practice in online nursing education.

**Students’ perspectives in evaluation studies**

Some publications reported student testimonials of the experience of undertaking online courses (for example, Healy, 2000). Generally these described the difficulties overcome and the eventual benefits perceived by the individual student. Although such literature is unlikely to impact greatly on decisions to develop courses made by either
schools or individual academics, it may contribute to knowledge about potential students and is certainly worthy of the attention of nurse educators.

Most course evaluations found variability in students comments from those that were enthusiastic and positive about Internet learning to those that were very negative (Ali, Hodson-Carlton & Ryan, 2002; Kaas et al. 2001; Wills, Stommel & Simmons, 2001). In some instances faculty noted that students who were resistant at the beginning of the course became more enthusiastic as they gained skills and confidence in the use of computer and Internet technologies (Andrusyszyn, Iwasiw & Goldenberg, 1999; Kozlowski, 2002; Mastrian & McGonigle 1997). A lack of computer and Internet literacy is a persistent finding among nursing students (Ali, Hodson-Carlton & Ryan, 2002; Cartwright & Menkens, 2002; Todd, 1998). Oliffe (2001, 2002) in an evaluation of an Australian undergraduate course that used an Internet-based patient scenario simulation noted that even by 2000, not all nursing students were computer literate when they entered their programmes. Ribbons and Vance (2001) found a similar result in another Australian evaluation, with 67% of the undergraduate students in a course that used email for a critiquing activity never having used email prior to the course. Students at all academic levels who were novice computer and Internet users reported frustration, anxiety and apprehension about online assignments and courses (Herrmann, Downie & O’Connell, 2001; Kenny, 2002; Mastrian & McGonigle 1997; Roberts et al. 1998; Theile, Allen & Stucky, 1999). Gender inequity still appears to exist in relation to computers and Internet usage (Washer, 2001). Females’ reticence with computer technology remains a barrier to computer and Internet use, and a concern for nursing educators because women constitute the largest group in nursing.

Students have identified a lack of support and tuition with regard to using computers and the Internet (Roberts et al, 1998). In most courses the demand of content is such that there is little time to teach computer and Internet skills (Leasure, Davis, Thievon, 2000). Students’ learning of content can be slowed until they become sufficiently competent to manage the technical demands of the course (Mastrian & McGonigle 1997). Some students would prefer to have increased information and the opportunity to become technically proficient before courses start (Kaas et al. 2001).

There has been an increasing expectation over the last decade that nurses will have computer and Internet skills for clinical practice, and that nursing education will provide students with these skills (Kenny, 2002). Nurses’ lack of computer competence and low usage is of concern in the workplace. An Australian study of nurses and midwives
knowledge of, and attitudes towards computer use in practice (Webster, Davis, Holt, Stallan, New & Yegdich, 2003) found the nurses in this study had a reasonably high level of computer use at home (75%), but less frequent computer use at work. Nurses who had undertaken further nursing education (probably because of the demand for these skills in university level study) were more confident in computer use, as were younger and male nurses. Of concern was that only 33.2% of the nurses surveyed used the computer to access networked information database systems regularly. The authors concluded that attention needed to be paid to assisting nurses gain appropriate computer literacy skills if they are to base their practice on research evidence. A Canadian study (Estabrooks, O’Leary, Ricker & Humphrey, 2003) also found that despite a sharp increase in home use of computers and the Internet between 1996 and 1998, these changes were not reflected in nurses’ workplaces. Only 5.1% of the 6256 nurses Estabrooks et al. surveyed in 1998 used the Internet at work to search for practice information.

A positive benefit of online courses has been the increased computer skills that students gain by the end of courses and the belief that this will advantage them in the future (Atack & Rankin, 2002; Cunningham & Plotkin, 2000; Halstead & Coudret, 2000; Herrmann, Downie & O’Connell, 2001; Morris, Buck-Rolland & Gagne, 2002). Most accounts reviewed in this body of literature described students increasing their computer skills and, to varying degrees, their Internet skills. Earlier studies make little specific mention of particular Internet skills, addressing mainly increased usage of, and skills with computers. As Internet and computer technology has become increasingly sophisticated, and nursing programmes have incorporated multimedia into courses, an increasing need for nurses to gain not only basic computer skills, but also advanced computer and information skills, has become apparent. Several researchers have undertaken studies to try and provide research-based information about the specific computer competencies required by different levels of practising nurses, and to guide curriculum development for nursing programmes (Saranto, Leino-Kilpi & Isoaho 1997; Staggers, Gassert and Curran, 2002). Hobbs (2002) analysed instruments and reviewed the studies that measured nurses’ computer competency published from 1988 onwards and found there was little consistency in the specific computer competencies recommended for nurses. Hobbs concluded that the only generalisations able to be made from the accumulated research were that computer-competent nurses have general knowledge and understanding of computers, a positive attitude towards them, and skills suited to their own particular environment.
Technical problems with computer hardware, software and Internet connectivity are a source of difficulty for students. The inability to connect or an interruption of services causes considerable frustration and dissatisfaction for students (Ali, Hodson-Carlton & Ryan, 2002; Cartwright & Menkens, 2002; Halstead & Coudret, 2000; Harden, 2003; Herrmann, Downie & O’Connell, 2001; McAlpine, Lockerbie, Ramsay & Beaman, 2002; Morris, Buck-Rolland & Gagne, 2002; Roberts et al. 1998; Soon, Sook, Jung & Im, 2000; Trick et al., 1999; Todd 1998).

Positive evaluation findings consistently suggested that nursing students like the flexibility of access to subjects that are time and location independent, thus enhancing their opportunities for learning (Ali, Hodson-Carlton & Ryan, 2002; Atack and Rankin, 2002; Boyle & Wambach, 2001; Cartwright & Menkens, 2002; Halstead & Coudret, 2000; Martyr, 1998, 2001; Mastrian & McGonigle 1997; Morris, Buck-Rolland & Gagne, 2002; Udod & Care, 2002). This finding was particularly apparent for postgraduate and post-registration undergraduate students. However, the location from which students access online courses may have a significant impact on students’ learning. Results of a Canadian survey (Atack & Rankin, 2002) indicated that access to online continuing education from workplaces was problematic for nurses who found the pressures of the work environment less conducive to learning in an ongoing education course, potentially lessening the assumed advantage of flexible access.

For nurses in Australia who are required to meet levels of competency in relation to their practice abilities, Cheek, Gillham and Mills (1998) have raised important issues regarding the regulatory and legal issues inherent in Internet-based learning, particularly in relation to the lack of boundaries arising from flexible access. Whilst there may be gains in a global learning environment such as an Internet-based course (Roberts et al., 1998; Trick et al., 1999) there may also be losses, and difficulties not previously encountered. Cheek et al. (1998) identified the situation whereby knowledge and practices in one state or country may, in fact, be illegal in another. For example, scope of practice is variable between countries.

An online approach offers students flexible pacing of their learning (Kozlowski, 2002; McAlpine, Lockerbie, Ramsay & Beaman, 2002; Siktberg & Dillard, 1999). However, such flexibility can become a disadvantage to effective collaborative learning when some students fail to make contributions in a timely manner and impede the contributions of others (Mastrian & McGonigle 1997; Harden, 2003; Siktberg & Dillard, 1999).

Internet learning also requires students to be self-directed and active learners to a large extent, and students’ readiness for this responsibility is variable (Boyle & Wambach,
Thus flexible pacing may present more difficulties for students who are less self-directed and organised. In an Australian study, Kenny (2002) interviewed 21 undergraduate nursing students, individually and in focus groups, and reported their experiences and perceptions of what enhanced and detracted from learning in an online information technology course. Students described experiencing the online class as active and collaborative, which increased their motivation, and as they progressed through the course increased their ability to be self-directed. Consistent with the trends throughout the literature, these students expressed considerable anxiety due to inexperience with computers early in the course, and increased confidence with computers by completion of the course.

Frustration with technical difficulties and a perception of a lack of technical support were identified. Students with less computer experience wanted smaller and more homogenous classes to assist learning, while those with more computer skills and greater experience were ambivalent about the structure and composition of the class. Students reported positive attitudes towards flexible accessibility, and the ability to complete work at their own pace. Interestingly, a majority of students in the online course chose to attend the face-to-face classes (offered concurrently in an on-campus version of the course) in addition to the Internet-based course. Although often linked with positive learning outcomes, students report the time and work required for learning substantially increases in Internet environments (Ali, Hodson-Carlton & Ryan, 2002; Cartwright & Menkens 2002; Halstead & Coudret, 2000; Soon, Sook, Jung & Im, 2000).

Findings related to the impact of Internet-based learning environments on communication and interaction between academics and students, and among students are contradictory. The evidence concerning communication varies from those who found that online communication was positive and enhanced learning (Ali, Hodson-Carlton & Ryan, 2002; Cunningham & Plotkin, 2000) to those who identified that students found communication more difficult or felt they were more isolated (Atack and Rankin, 2002; Halstead & Coudret, 2000; McAlpine, Lockerbie, Ramsay & Beaman, 2002; Morris, Buck-Rolland & Gagne, 2002; Rosenlund et al., 1999). Andrusyszyn, Iwasiw and Goldenberg, (1999) provided evidence that students may perceive online communication in both these ways, that is, despite feeling isolated when communicating through this medium, students still perceived that computer conferencing helped them to learn. Similarly complex perceptions were reported in another study, where students who rated communication in their online courses positively, still reported a preference for face-to-face classroom
communication and learning interaction when given the choice (Wills, Stommel & Simmons, 2001). Some students (often those characterised by faculty reporting the evaluation as ‘quiet’ in class) contributed more readily in an online environment (Kaas et al., 2001; Kozlowski, 2002; Martyr, 1998; Siktberg & Dillard, 1999). Both academics and students have described student communications in some online discussions as in-depth and critical, with an increased level of feedback between students (Andrusyszyn, Iwasiw & Goldenberg, 1999; Halstead & Coudret, 2000; Kaas et al. 2001; Oliver & Naidu, 1997; Morris, Buck-Rolland & Gagne, 2002; Todd, 1998). In other evaluations, students have described contributions to discussions, both their own and their peers, as repetitive and shallow (Martyr, 1998).

**Academics perspectives in evaluation studies**

While many of the course evaluations make some mention of academics’ perceptions of Internet learning, there is scant research specifically addressing the perceptions, experiences, or skills of academics in courses that are delivered via the Internet. Although academics collected information about their teaching in course evaluations, there is no systematic accumulation of research in the nursing literature with regard to teaching online. Research is required about what is best teaching practice for nursing education in online environments, and how this may be ascertained. Cobb, Billings, Mays and Canty-Mitchell (2001) described a process for peer review of teaching web-based courses adapted for nursing and technology from higher education principles of good practice. Cobb et al. elucidated processes for peer review and evaluation criteria appropriate to teaching web-based courses such as, student-faculty interaction, student collaboration, active learning, feedback, time on task, faculty expectations of students, respect for diversity, instructional design, and graphic design of courses.

Evaluations of courses revealed some commonalities in academics’ perspectives. A major disadvantage for academics is the time required for preparation of materials and online teaching. Between 300 hours (Rose, Frisby, Hamlin & Jones, 2000) and 360 hours (Kozlowski, 2002) of faculty time for course development have been reported. Kozlowski estimated a further 6-14 hours per week for maintenance of the site and communication with students online in one course. Other academics have not reported specific hours, but many describe the increased time and workload that Internet teaching brings (Andrusyszyn, Iwasiw & Goldenberg, 1999; Cunningham & Plotkin, 2000; Halstead & Coudret, 2000; Harden 2003; Kaas et al. 2001; Mastrian & McGonigle 1997; Morris, Buck-Rolland & Gagne, 2002; Roberts et al., 1998; Rosenlund, Damask-Bembenek, Hugie &
Matsamura, 1999; Siktberg & Dillard, 1999; Todd, 1998). In addition to increased preparation and teaching time, academics themselves often needed technological and design education, along with technical supports and resources to enable them prepare and deliver effective online courses (Udod & Care, 2002). Multidisciplinary teams that include technical, as well as content experts have been found to be the best approach (Udod & Care, 2002; Wills, Stommel & Simmons, 2001). The development of online courses also raises issues for academics, that are as yet largely unexamined in nursing education, around copyright and intellectual property (Martyr, 2001; Wills, Stommel & Simmons, 2001), and the need to recognise Internet teaching in career progression for academics (Morris, Buck-Rolland & Gagne, 2002).

In the international literature, diverse findings have been reported about nurse academics’ perceptions of online communication. Some academics found students treated online courses as distance learning and only interacted as much as necessary to complete assignments (Udod & Care, 2002) creating challenges for academics, while other academics have identified that the quality of students interactions in Internet courses can be high, showing evidence of in-depth and critical thinking (Andrusyszyn, Iwasiw & Goldenberg, 1999; Halstead & Coudret, 2000; Harden, 2003; Rosenlund, Damask-Bembenek, Hugie & Matsamura, 1999) and increased writing skills (Oliver & Naidu, 1997). Because of the requirement for written communications in Internet-based courses, teachers have a stronger basis to identify students who are failing to understand (Herrmann, Downie & O’Connell, 2001, Todd, 1998). Some academics also reported increased depth in their own feedback to students in Internet courses (Kaas et al., 2001), but for many, time did not allow for in-depth feedback to every student communication posted on discussion boards (Halstead & Coudret, 2000; Harden 2003). All reports agree that communicating online is far more time consuming, but some academics appreciated the flexibility that allowed them to respond at a time most convenient to them in asynchronous discussions (Andrusyszyn, Iwasiw & Goldenberg, 1999).

Gillham’s (2002) research is unique in that he conducted a national survey of Australian nurse educators (n = 210) in university schools of nursing, which examined levels of Internet use, attitudes to online delivery, requirements for online delivery, and educators’ perceptions about the implementation of online delivery. Online usage from most to least frequent was reported as email, use of the web for personal professional development, databases use (for example, CINAHL or Medline), electronic journals, websites for teaching preparation and the Cochrane database, web authoring software and professional discussion
lists. While they agreed that online delivery could provide access and flexibility, resources for discussion, and encouragement of lifelong learning, nurse educators had concerns about equity of access, workloads and the need for nursing education to retain face-to-face contact, particularly with undergraduate students and for teaching clinical courses. Support for online teaching was stronger for postgraduate courses where convenience and flexibility played a large role. However, while access has positive aspects, academics also raised concerns about equity issues including the cost of buying a computer, and reliable access to the Internet in remote areas. Workload issues for academics were consistently identified, with insufficient time and resources allocated to preparation and delivery a major concern. Inadequate technical support and lack of infrastructure were also issues raised. Overall, Gillham concluded that while Australian nurse educators are willing to teach online, they question the quality of learning for students in the absence of adequate infrastructure, technological support, and resources, particularly if workload issues are not addressed.

Although there is a growing amount of published literature, as described in this review, claiming positive benefits for online learning, there are fewer descriptions of specific online teaching strategies that contribute to this. VandeVusse and Hanson (2000) used transcripts of online discussions from two graduate nurse-midwifery courses to examine the ways faculty communicated to promote active student involvement in the discussions. They identified six categories of teacher communication that fulfilled this purpose: assisting with navigation, explaining expectations for students, clarifying the teacher’s role, stimulating critical thinking, sharing expertise, and encouraging students. Assisting with navigation also included diverse technical support and information that went beyond just navigation to include help with troubleshooting, using various types of software and so forth. Stimulating critical thinking was viewed as a particularly important type of communication for promoting learning. However, no students’ comments were coded in the data analysis, so the relationship of the students’ learning (as evidenced in the discussion) to the teacher’s comments could not be ascertained in this study.

**LEARNING AND LEARNING ENVIRONMENTS**

**Comparative studies of online learning in nursing**

Several North American studies compared nurses learning in classrooms and in Internet courses (Bachman & Panzarine, 1998; Leasure, Davis & Thievon, 2000; Rose, Frisby, Hamlin & Jones, 2000; Ryan, Hodson-Carlton & Ali, 1999; Woo & Kimmick, 2000;
Yucha & Princen, 2000; Zucker & Asselin, 2003). These studies provide comparisons of outcomes and various process factors.

Bachman and Panzarine (1998) compared the computer skills, attitudes and knowledge of information technology of 20 RN-MSN students in an Internet-based health care information systems course (the pilot group) with that of 23 students enrolled in a face-to-face community health course, at a comparable stage of the programme. All the students reported weekly computer use, self rated their computer skills from low to high, completed the Stronge and Brodt attitude to computerisation questionnaire, and the online students gave qualitative information on a weekly basis. Findings indicated a significantly greater amount of computer time and types of use in the Internet-based group, along with increased knowledge and perceived computer skills. Differences in attitudes were not significant between the groups. Qualitative findings indicated increased information literacy, and understanding of the potential application of Internet technology in health care. However, due to the convergent nature of the content and delivery medium in the online course, it is difficult to disentangle the effects of the content from the learning environment, and this makes the comparison between these groups somewhat problematic.

Ryan, Hodson-Carlton, and Ali (1999) evaluated 96 graduate students’ perceptions of teaching, comparing face-to-face classroom with online teaching approaches in a course that required participation in both learning environments. The students completed a questionnaire that addressed content, interaction, participation, critical thinking, faculty preparation, communication and technical skills: aspects believed by the researchers to be central to both teaching approaches. Finally, students reported likes, dislikes and suggestions for improvement. Significant differences in perceptions in favour of the classroom approach were found for content coverage, interaction and participation, importance of faculty preparation and expertise, and increased communication skills. No significant differences in perceptions were identified for critical thinking skills or appropriateness of time required for assessments. Findings indicated the need for a higher level of technical skill in the online modules of the course. The students perceived classroom communication more positively with regard to feelings of connectedness with academics and other students. The students evaluated communication in the online section of the course as less effective in connecting them to others, they felt isolated and lacked the spontaneity they had in the classroom. Comments suggested, however, that even while students experienced online learning as less personal, they perceived that communication online assisted their learning. Students valued the convenient access and flexibility of online modules, but felt a lack of direction, and were
concerned about technical problems emerged with the online approach. Students indicated that combining classroom and Internet learning was the best approach. The authors concluded that positive perceptions of online classes depended on course structure and process, and the preparation of faculty and students for online teaching and learning. The methods Ryan, Hodson-Carlton and Ali (1999) used in the research had the advantage of overcoming any self-selection bias that might arise in other comparisons, as all students undertook both online and classroom modules in the same course.

Yucha and Princen (2000) compared students’ grade outcomes in a graduate pathophysiology course taught on the Internet with students’ grades from four years of classroom offerings. The authors themselves noted several uncontrolled variables such as previous content knowledge, student motivation, and availability of computers at work or home, to students. They also identified a confounding variable in that the classroom students in two of the comparison years also had access to the Internet-based module as a support to the classroom course. On average students took slightly less time than expected to complete the online work. An end-of-course questionnaire completed by 13 students from the Internet-based group indicated that the majority increased computer and Internet skills, but believed they actually learned less with online learning than they would have in a classroom. Their examination results, however, did not support this perception. There were no significant differences in student grades on the final examination between the students in the Internet-based course and the students in the classroom courses. Technical difficulties were reported, and attitudes in the Internet-based group towards the online course delivery were generally negative. Twelve of the online students reported they would not take another Internet-based course by choice. Students did, however, respond positively to the critical thinking exercises that included immediate automated feedback. The authors noted that the students in the Internet-based group did not communicate collaboratively, that is, they did not build their knowledge on previous responses from other students, but each responded as if they were alone.

Rose, Frisby, Hamlin and Jones (2000) compared the effectiveness of an Internet-based graduate epidemiology course (n=14) with the classroom version of the same course (n=38). The courses were delivered concurrently. Students in the Internet-based course were self-selected. Reasons for selecting the online course included time and distance convenience and the challenge of something new. Evaluation was extensive, with process feedback from students after each of the five modules of the course, a midcourse evaluation, and midcourse and final examination. Midcourse evaluation showed that online students progress through
the course material varied, with some students demonstrating difficulties with study methods, procrastination and self-motivation. There were no significant differences between the group means on the midterm examination scores, the final examination scores, or course grades (grade included a written assignment grade and graded participation in a discussion board for the Internet-based group, but only the written assignment for the classroom group), nor were there any significant differences between the groups on measures of satisfaction with the course. Students in the Internet-based course, however, were less confident overall in their ability to do well in an epidemiology course than students in the classroom course. Feedback about specific areas of the online course indicated that students were least satisfied with listserv communication. Consistent with the findings of Yucha and Princen (2000), Rose et al. found that students responded to questions in the online discussion, but did not engage collaboratively or respond to each other’s comments.

A comparison between the classroom and online offerings of a graduate nursing research course was conducted by Woo and Kimmick (2000). Examination scores and student satisfaction measures were compared between two groups of students (n = 44 in the Internet-based group and n = 53 in the lecture-based group). The researchers measured students’ satisfaction related to the overall course, course organisation, class objectives and stimulation of learning. There were no significant differences reported between the outcome scores on the midterm and final examination for the two groups. While there was a great need for technical support early in Internet courses, there were no significant differences on measures of overall course satisfaction, course organisation or class objectives, but students in the Internet group rated learning stimulation significantly higher. As with the Yucha and Princen (2000) study, students in the Internet group were able to attend lectures if they wished and 73% attended three or more of the ten lectures in addition to the Internet classes. The most common reason given for this was apprehension about ‘missing something.’ This crossover effect limits the ability to draw clear conclusions from this study with regard to Internet-based classes.

Leasure, Davis and Thievon (2000) compared outcomes between Internet-based (n = 18) and classroom-based students (n = 48) in a baccalaureate level research course. A pre-course survey established socio-demographic and academic similarity between the groups and identified the reasons students enrolled in the classroom-based course (perception of increased interaction, immediacy of feedback, increased structure and accountability that decreased procrastination, and more meaningful learning activities) or the Internet course (convenience, flexibility and cost saving). Eight students who changed from the Internet
course to the classroom course had originally enrolled for reasons of convenience, but changed their enrolment to the classroom as they struggled with the content in order to gain greater access to lecturer explanations. Comparison of the outcomes showed that there were no significant differences between the groups for examination scores or course grades. The authors noted that, over time, students in the Internet-based course developed a more collaborative learning environment, building on each other’s information and showed less dependence than the classroom group on academics to providing the correct answer immediately.

Zucker and Asselin (2003) reported on a comparison of final course evaluations, course grades, and students’ satisfaction in a pilot study of an undergraduate research course offered in an Internet-based mode to 20 registered nurses in a RN-BSN course and 15 other undergraduate students. However, these 15 extra students were not included in the data collection for this study and thus any effect they might have had on the Internet group’s results is unknown. The remainder of the RN-BSN class (n = 36) comprised the classroom comparison group. Results showed no significant difference between the two groups on students’ course grades or evaluative ratings of the course.

Only one study of Internet learning has compared students at different academic levels with each other. A survey carried out in the United States by Thiele, Allen and Stucky (1999) compared graduate (n = 13) and undergraduate students (n = 58). There were no differences in computer expertise between the groups prior to undertaking the courses, but course content was different, as was teacher expertise. The graduate students were enrolled in an informatics course, while the undergraduate course was a foundations of nursing course. A survey composed of 32 Likert-type scale items, derived from the Flashlight Project inventory, ascertained students’ access to computers and the Internet, computer skill level, attitude to computer use and online activities, and determined their personal learning style based on students’ self-report. The majority of undergraduates were visual or kinaesthetic learners, but the graduates’ learning styles were not reported, so no information about the influence of individual learning styles could be drawn from this study. Results showed differences between these two groups, with graduate students finding an Internet environment helped them learn the content, while the undergraduates disagreed with this. The differences in course content (as with the Bachman & Panzarine, 1998 study) suggest the results may be influenced by this factor. The numbers of students in each class could also have been influential as the graduate group was considerably smaller and received a greater degree of support. However, the overall findings about students’ perceptions of learning do
suggest that learning in an Internet environment may not be experienced or perceived in a consistent way by nursing students at different academic levels.

Wills and Stommel (2002) compared graduate nursing students’ perceptions and preferences for Internet courses across two different content areas, a research course (n = 31) and an aging and health course (n = 29). In a pretest - posttest design, students’ perceptions and preferences, were measured using a questionnaire based on Billings (2000) framework for assessing web-based nursing courses. Findings indicated that both groups generally became more positive in their perceptions of Internet learning over the period of the courses, but there was a greater increase in positive perceptions in students in the aging course. No significant differences were found within groups in pre-course to post-course perceptions for intellectual challenge, application of the content and importance to practice. Overall the students in the aging course were more positive in their perceptions than the research course students, more of whom expressed a preference for the course to be taught face-to-face. The authors suggested salient differences between the groups that may explain the differences in students’ perceptions included prior experience of post-graduate education and degree of experience with Internet courses, both of which were less in the (research course) group that was less positive about Internet learning (a finding that concurs with that of Andrusyszyn, Cragg & Humbert, 2001). In addition, the research course, unlike the aging course, was compulsory rather than elective and progression in the graduate programme depended upon satisfactory completion of this course. These factors related to the student population rather than the online course, suggest that further investigations into the relationships between Internet technology and learners are needed to determine differences that may otherwise be concealed by the ‘no significant difference’ findings common to outcomes evaluation.

The comparison studies cumulatively identified that when students were at the same academic level, there was no demonstrated significant difference on outcomes as measured by course grades and examination scores in Internet-based and classroom-based courses. Evaluation of students’ satisfaction indicated the majority generally felt a closer communication with fellow students and academics in classroom courses, although there have been positive interactions noted in online courses. Online courses were perceived as being more convenient and flexible, but students felt they lacked direction, and were more isolated, although increased stimulation for learning has been reported. No significant differences were noted in the level of critical thinking that students attained in either delivery mode.
Cravener (1999) compared the advantages and disadvantages of online and classroom teaching in a review of faculty experiences from the distance learning literature. Advantages of online courses were listed as increased access to educational resources for students, support for individualised instruction, and promotion of active learning. Challenges for teachers include the increased workload and time required for teaching on the Internet, supporting students as they learned to use the technology, and the impact of communicating online on management of courses, where there was a vast increase in the volume of student to teacher communications and more time required to write responses. New skills were also required for teachers to facilitate courses, rather than instruct students.

Methodological limitations existing in the comparison literature included the effects of self-selection bias, crossover effects when students participated in both class and Internet offerings, the influence of content and medium convergence on learning content, and a lack of consistent, valid evaluation tools. The difficulty with these limitations is they confuse the interpretation of differences. The crossover effect both dilutes the ability to distinguish differences between classroom and Internet-based teaching and learning, and does not sufficiently discriminate what may be important influences on constructing learning in Internet-supported courses, where students have access to both online and classroom environments. When courses are compared, and one of the courses is an Informatics, or a computer skills course, convergence of the content and the medium advantages one course over the other, in the media comparison. The effects of using graded course assessment as a comparison have also been noted as methodologically problematic (Lockee, Burton & Cross, 1999). Lockee et al. argued that those students who usually attain high grades would work harder to overcome the problems of a new delivery technology and may negate potential differences. The comparative evaluation studies reviewed above are however, strengthened by the variety of other outcomes, such as student perceptions and satisfaction, that are measured and reported along with the course grades outcome measures, and provide insights into why a difference did or did not occur.

**Learning styles and online learning**

Three studies were found that examined students learning style, or other characteristics that may influence learning, within the Internet environment. Andrusyszyn, Cragg and Humbert (2001) in a Canadian investigation of nurse practitioners preferences for distance education, compared students learning style, delivery preferences for different content and achievement in a correlational study. Eighty-six students enrolled in any of five different courses across an entire programme. They completed a questionnaire and six
participated in follow up interviews. The researchers found that among the methods of delivery, which included print, videotape, audiotape, computer conferencing, video conferencing, audio teleconferencing, and CD-Rom, computer conferencing was one of the methods least preferred by the students (the other least preferred method was audiotapes). In explanation of this finding, the researchers noted that 95% of the students had little or no experience with computer conferencing prior to the educational programme that was the basis of this study, and suggested the difficulty of learning to use the technology and learning new content concurrently may have influenced students’ perception of this medium, which requires a degree of technical expertise. Importantly, Andrusyszyn, Cragg and Humbert’s (2001) study compared online delivery to other distance teaching methods, rather than the more common classroom - online comparisons. This report of the interrelationships between learning styles, course content and delivery methods is a valuable study that begins to draw finer distinctions about learning at a distance with information and communication technologies. Further research such as this into the relationships among specific variables in online learning would be useful to planning and developing online nursing courses.

Brown, Kirkpatrick and Wrisley (2003) evaluated an online registered nurse baccalaureate nursing leadership course (n =33) that included four face-to-face meetings in the course structure. The researchers evaluated student’s confidence in meeting course objectives, time management and the faculty role. Within this survey, the researchers included a student self-profile that determined the extent of student’s self-direction, motivation, liking for technology, liking for new experiences, seriousness about education, degree to which the student was a concrete or a critical thinker, Internet competence, degree of independence, flexibility, and whether the students usually met or exceeded expectations. The students’ profiles indicated that they had the characteristics that have been suggested as important for success in online learning such as being assertive, being a risk-taker, taking responsibility for one’s own learning and readily letting teachers know what they needed to succeed in their learning. Students described the most helpful teaching and learning strategies that teachers employed as a cultural diversity Internet assignment, a popular culture review, a concept analysis paper, discussion and chats, and case studies. Over half of the students felt that there was more work in an online course than a classroom course. They did, however, find time flexibility helpful for learning. Again this study has begun to provide information that may assist nurse educators to determine for whom online learning may be most useful. A limitation is that the study was conducted with only one course and a single group of students.
In Australia, Ross and Tuovinen (2001) reported the relationship of students learning approaches and specific multimedia features encapsulated in an interactive learning programme called *WoundCare*. *WoundCare* was developed to assist students in learning wound assessment and management. This evaluation study was conducted with second year undergraduate nursing students (n = 35). Students completed an initial questionnaire (to describe the sample) used the *WoundCare* activity and then completed two written assignments, one of which reviewed the *WoundCare* activity, the other required them to develop a case study that could conceivably be used in the activity. They then completed a second questionnaire that evaluated components and features of the activity and students’ computer use. Students also kept a reflective diary of their experiences. The authors reported mixed responses from students about active learning across the whole *WoundCare* activity, with some parts more effective in promoting deep learning. The case study required students to learn and apply knowledge and this did stimulate engagement and deep processing of content, although some participants felt the case study lacked realism. A lack of feedback to students about their learning in this activity, however, impaired fuller use of deep processing functions. The less interactive parts of the tutorial, such as finding information in the database were seen to promote a more surface approach to learning. The researchers suggested that adding hypertext to the activity may improve the use of deeper learning strategies in the activity. This finding is consistent with Gillham’s (1998) assertion that providing hypertext structures in online information promotes cognitive flexibility and critical thinking in nurses.

**Internet-based programmes**

Much of the published literature focuses only on individual courses and not the programme within which they are located, or how the course fits with the rest of the programme (only two studies was found in which the whole programme was online). Consistency within a whole programme is of concern to academics, learners, and administrators. Thus, the place of the Internet within programmes, not just courses, needs to be understood. Kaas et al. (2001) described the drawbacks of ‘patchy’ implementation of Internet-based courses in a graduate programme, where some courses are online and others are not. These concerns included the risk of not meeting the needs of distant students, and an adverse effect on recruiting students from diverse geographic areas if an integrated programme of study is not available. In their school of nursing, Kaas and colleagues developed specific areas of graduate study in response to market needs and demands, and
within available financial and faculty resources, providing a complete area of study that could be undertaken online.

**Costs**

The costs involved in Internet courses go largely un-remarked in the nursing literature about online learning. Both short and long-term, and tangible and intangible costs need to be more fully researched in Internet courses and programmes. For example, despite the knowledge that computers are an occupational hazard, scant attention is paid to the potential health costs for both students and educators, of the exponential increase in computer usage (Ward, 1997).

“The financial impact of Internet instruction is often either ignored, inferred to be similar to that of traditional education, or assumed… to be less” (Woo & Kimmick, 2000, p.138). While there is some mention of students facing costs to equip themselves with computers and Internet connections (Gillham, 2002), few details of financial costs of either individual Internet courses, or Internet programmes are reported. This may be because of commercial sensitivity of the information, or perhaps because much of the published literature in nursing journals is authored at the level of the academic, and in many university schools of nursing, the start-up costs, and ongoing costs such as technology infrastructure are funded at the level of the institution, making it difficult at a course or school level to determine actual costs for online courses and programmes. Although equipment costs are easily quantified, areas like technical support are not easily defined or measured (Woo & Kimmick, 2000). Some information is beginning to appear, for example, the course development and maintenance hours cited by Kozlowski (2002) and Rose et al. (2000), but this is sporadic and only presents some of the overall costs. This is an area that needs research if evaluation of the effectiveness of Internet learning is to be comprehensive.

**SUMMARY OF LITERATURE**

While the early anecdotal literature focused on the positive aspects of the Internet and descriptions of the wide variety of courses being developed using Internet technology, current literature is providing a more balanced view of the advantages and disadvantages of online teaching. However, orientations towards technology are often reported as either positive or negative. It is questionable as to whether this is sufficient, as increased use of the technology brings an increased need for more comprehensive understanding. The complexity of Internet technology is such that there may be some aspects that are positive and some that are negative. While there are some studies that questioned which situations might be the
most appropriate for use of the Internet to deliver nursing education, further knowledge is needed. To do this, a greater understanding of the ways in which the Internet is used in nursing education is required. Within the literature there appears to be an assumption that Internet learning is an homogenous activity. The computer interface is the common denominator, and the one frequently dominating reports of online knowledge and skills for learning. There is, however, insufficient understanding of the interaction of the various multimedia aspects or multiple technologies used, for example, text-based online material compared with video or audio embedded in learning activities within Internet courses. There is also a paucity of research into courses that are designed and implemented as Internet-supported rather than Internet-based. While some studies have evaluated courses that have both face-to-face and online components, they have been treated as being a summation of already known entities, rather than regarding the Internet-supported course as a different form of learning. Further research is needed into the nature of Internet courses and programmes in nursing and what online learning is possible and promoted in the various manifestations.

There are only a few studies reported as having been located within an explicit conceptual or theoretical framework (for example, Boyle & Wambach, 2001). Further development of studies within specific conceptualisations could afford a clearer view of the findings of research into online learning in nursing, and also provide a forum to challenge assumptions about face-to-face learning that may no longer hold true in nursing education, but are used in comparisons and as the standard by which online courses are judged. This would also provide a template for the development of standardised measurement instruments.

Methodologically, the greater part of the published literature consists of surveys from course evaluations. While valuable in many ways, there is room for broadening understandings through use of methodologies that harness other perspectives and give nurse educators knowledge of both the meaning and uses of Internet teaching and learning. A limitation of many of the evaluative studies is their location within one course, and one setting, with a focus primarily on the course itself. Studies using methodologies that are specifically student-centred are needed to enable teachers to make the use of technology beneficial for students. Another factor limiting generalisation is the self-selection processes that are prevalent in many studies into online courses. Findings derived from these studies may not be applicable to students or teachers who learn or teach in online courses where there was no option. Samples in the studies are predominantly at the postgraduate level.
Widening the participants to other groups of nursing students who are undertaking Internet courses will enable the strengths and weaknesses of Internet learning for different groups of students to be discerned. Very few studies have been concerned with teaching practices, and the experiences and perceptions of teachers. As teachers play a significant role in the learning - teaching relationship, this is a major gap in the nursing education literature.

In summary, the trends in the anecdotal, descriptive, and nursing research literature show a new learning environment that has begun to be widely disseminated and used, and is now at the stage of needing formal investigation to determine specific effects on learning from the perspective of both the students and teachers. The literature suggests overall that the integration of this learning environment into nursing education is not clearly documented. While the early problems of unreliable connections, difficulty with access, technology failure, and students’ lack of knowledge of how to use the technology have been consistently reported in the nursing literature, and many of the evaluations show generally positive perceptions of, and satisfaction with, online learning, the more complex questions about learning at the level of both the student and the discipline are not well understood. Studies that focus on teaching practices are needed in addition to studies that have a learning focus to develop Internet pedagogies that are beneficial to nursing education.

The literature also demonstrates the need to contextualise studies of Internet learning. The vast majority of research reports in the English language nursing journals originated from North America, with a few from the United Kingdom and Australia, and even fewer from Asian sources. This distribution of publications renders the greater part of the reported knowledge and practices unsuitable for a direct translation into Australian nursing education without examination of the applicability of the information to the existing educational, technological, and social context of Australia. Until more is known about Internet teaching and learning in nursing education in Australia then information from other parts of the world is less useful.

The current study was therefore designed to address the gaps in knowledge relating to understanding Internet teaching and learning in the Australian context. Firstly, the ways in which the Internet has been integrated into Australian nursing education needs to be mapped, as there is little information about the variety of structures and processes that constitute Internet teaching and learning environments. As research that goes beyond the evaluation of particular Internet-based courses in localised settings, is largely unreported in the Australian literature, students’ and academics’ experiences and perceptions of teaching and learning in
Internet courses need to be further explored. The next chapter describes and discusses constructions of learning which provide a conceptual framework for this study.
CHAPTER THREE

UNDERSTANDING CONSTRUCTIONS

Worldmaking as we know it always starts from a world already on hand; the making is remaking (Goodman, 1978, p.6 cited in Schwandt, 1994, p. 126).

INTRODUCTION

Constructivism and cognitive flexibility theory are significant concepts in framing this study. Although described separately in this chapter for clarity, these theories are related to each other, and both focus on the notion of learning as constructed understanding. Together, they provide a conceptual framework for this study. The purpose of using this conceptual framework is to provide a link between nursing education and learning theory that demonstrates how learning and teaching are constructed. Theories of constructivist learning are accepted as a valid explanation of learning in general educational settings, and are presumed here to provide a useful tool to enhance an understanding of teaching and learning in the discipline of nursing, and in an Internet environment. The first section of this chapter introduces and briefly explains each theoretical perspective. This explanation is not exhaustive, but is intended to provide the reader with a sufficient overview to enable understanding of the way in which the conceptual framework is interpreted and used by the researcher in this study. The next section of the chapter demonstrates the place of the conceptual framework, that is, how it is used in this study. The latter part of this chapter links the epistemological foundations and the research approach, and provides a synopsis of the major paradigmatic debates relevant to the methodology of this study. Finally, the dialectical approach to understanding constructions in research that was chosen for this study is explained.

CONSTRUCTIVIST THEORIES

Located within constructivist theory are two main schools of thought - the radical constructivist, and the social constructionist views of learning. The contradictions and comparisons within these positions give rise to the multiple descriptions of constructivism that are found in the literature.
Foundations beneath Constructivist theory: Interpretive philosophy

Constructivism is a theory of learning. It is, however, a far from homogenous theory. Rather, it is a term that covers several theorizations of learning (Larochelle & Bednarz, 1998). Fundamental to all the perspectives, however, are common philosophies from which emerge the limits and the possibilities of constructivism for education. To more fully understand the following theories of learning, the assumptions accepted in this study about the nature of human beings, the world, relationships between human beings, and relationships between human beings and the world need to first be made explicit (Gergen, 1995). To this end an outline of some salient points of interpretive philosophy follows.

Constructivist epistemology accepts the interpretive view, that knowing is derived from being. Interpretation, or constructed understanding, is constitutive of being human, rather than being something humans do (Polkinghorne, 1983). Interpretive philosophy maintains that human existence is characterised by ‘being-in-the-world’ (Heidegger, 1927/1962). The world in this philosophy is the relational whole in which humans exist, and in which the self and the world cannot be separated (Palmer, 1969). That is not to say that there are not objects in the world, separate from human beings: there are. But objects only have possibilities for meaning, not actual meaning, until humans experience them (Crotty, 1998).

There is no meaning in the human world, separate to our knowing of it. Thus, there is a sense of human beings both constructing, and being constructed by, their relationship with the world and those with whom they share their world. Individual understanding is made possible through understanding of the shared world (Magee, 1987). This happens through shared pre-understandings (Dreyfus, 1991) of people that constrain the possibilities for individual interpretations. Central to understanding is the uncovering of meaning through language (Gadamer, 1994). Inherent in this view then, is the rejection of dichotomies such as idealism/realism, or subjective/objective. A human being is always constructing meaning through language. Thus individual cognition is in the context of being part of the world (Wilson, 1997). This brief outline of interpretive philosophy is not intended to be comprehensive, but merely provides a background for the following discussion of constructivism, that enabled an exploration of questions related to learning in this study. It should also be noted that in using a constructivist framework in this study, the pervasive nature of this stance was inescapable. The role of the researcher here was also necessarily constructivist and, as Larochelle has noted, we present
the perspectives set forth by the various authors, knowing full well, of course that such an exercise brings into play our understanding of their viewpoints and our capacity for locating distinctions and particularities therein. In short it is clear we will be presenting our own understanding of constructivism (Larochelle, Bednarz & Garrison, 1998, p. 4).

Thus the section that follows is also a marker of one aspect of the trustworthiness of this study. By starting to develop a picture of the researcher’s understandings in using the conceptual framework, the reader gains insight into the confirmability of the findings.

Constructivism: Schools of Thought

Constructivism is an epistemology, a learning or meaning-making theory that offers an explanation of the nature of knowledge and how humans learn...[constructivism] is a theory of learning, not a theory of teaching.” (Abdal-Haqq, 1998, p. 1)

This theory of learning is explored here with the intention of providing an account of how learning was defined in this study. Constructivism is an approach to knowledge and knowing that departs from a purely objectivist epistemological stance claiming an independent world separate from our knowing of it (von Glaserfeld, 1995). In this break with the tradition of objectivism, constructivism is denying the possibility of a ‘mirror’ epistemology (Schwandt, 1994). However, constructivism does not advocate a solipsistic position (Larochelle & Bednarz, 1998; Schwandt, 1994; von Glaserfeld, 1995). Instead, the central principle of constructivism is that the individual is an active constructor of knowledge. Influenced by his or her experiences, previous knowledge, and purposes of knowing, the learner reinterprets information (Larochelle & Bednarz, 1998). Thus the learner is not conceived as a discoverer of the world around them, but as a constructor, or as Goodman (1978, cited in Schwandt, 1994, p. 126) describes, a “worldmaker.” When meaning is constructed, it emerges from the interplay of the subject and the object, wherein attention to the object constrains the possible meanings that may emerge (Crotty, 1998). Consequent upon this view, constructivism advances a theory about the cognitive activity of the person constructing their world, rather than a theory of the world itself (Larochelle & Bednarz, 1998).

Whilst the two major schools of the constructivist perspective in education explain learning as “meaning making” (Abdal-Haqq, 1998, p. 1), they differ somewhat in how this is accomplished. Certain commonalities exist between radical constructivist's (von Glaserfeld, 1995) and social constructionist's (Gergen, 1995) views of learning and knowledge. Both
theories contend that learning is a process of making meaning. Likewise, both views hold that the learner actively constructs knowledge, and that there is no absolute external reality that can be known independently of human interpretation (Shotter, 1995). However, differences exist in their epistemological positions, largely related to the emphasis placed on the individual and the social aspects of construction in learning. This difference became an important feature of the way in which the conceptual framework was shaped to underpin this study, therefore the following discussion will elucidate some of the differences that were pivotal to the conceptual framework used in this study.

**Radical Constructivism**

Derived from the work of Piaget, von Glaserfeld’s radical constructivism has an emphasis on the individual, and his or her acquisition of knowledge. Radical constructivism introduces a conception of learning that proposes a particular relationship between knowledge and reality, namely that of viability (von Glaserfeld, 1998). Thus, instead of a view of knowledge as representational, following the Piagetian view, knowing is adaptive. Rather than accepting a foundationalist notion of truth, the viability of knowledge is relative to the context and purpose of knowing (von Glaserfeld, 1995). This concept of viability, however, does not give way to relativism that accepts all solutions as equal, rather the desirability of one answer over another depends on the goals that have been chosen (von Glaserfeld, 1995).

Social interaction and communication within a radical constructivist view begin from an individual representation. von Glaserfeld focuses on this aspect of his theorizing by posing the question “If all knowledge is the knowing subject’s own construction, how can one know of other subjects?” (von Glaserfeld, 1995, p. 12). The way in which von Glaserfeld proposes this occurs is through making predictions based in one’s own constructions. In this way others are constructed out of what the individual understands about himself or herself and, ultimately others contribute to ones own construction of oneself (von Glaserfeld, 1995). Similarly, interactions with objects at an experiential level when young, allows humans to later conceptually construct their world from their individual point of view (von Glaserfeld, 1995). Where constructions fail, adaptation occurs and allows for a reconstruction of understandings (Shotter, 1995). This understanding of interaction signals the place of language and communication in radical constructivism. Although social interaction is necessary, the emphasis remains foremost on the individual learner and the constructions they make (Dougiamas, 1998), not on the social interactions themselves or the cultural and historical influences pertaining in any given context. Understanding in a radical
constructivist view is a mental act (Richards, 1995), and thus what counts as knowledge within the radical constructivist perspective is an individual’s construction “that is reasonable and appropriate in the conceptual contexts in which we want to use it” (Shotter, 1995, p. 45). Contrary to some of the criticisms of radical constructivism (for example, see Gergen, 1995) the roles of social interaction, language and communications are not ignored in this particular theorization. However, the human environment and its effect on learning are considered as part of the total environment (Dougiamas, 1998), and not given the primacy that is accorded to human interaction in social constructionism.

Social Constructionism

Kenneth Gergen has been influential in the social constructionist view of learning that places social interaction at the centre of understanding. Social constructionism proposes that the fundamental concern in the social construction of knowledge has language as the crucial point, rather than the notions of either the processes of the individual mind, or representation of the external world (Gergen, 1995). Moreover language, and thus knowledge, gains its legitimacy through social negotiation. Following Gergen’s social constructionist viewpoint leads to the idea that meaning is achieved only through communal interaction. Thus it follows that meaning is context dependent, influenced by cultural, social and historical circumstances, and serves communal functions. Gergen (1995) uses the metaphor of dialogue or conversation to express how knowledge is continuously being produced. Care must be taken at this point, however, not to oversimplify the notion of conversation. Conversation is taken here to include not merely verbal interchange, but also importantly in an educational context, all the ways in which learning communities may converse. For example, the active construction of meaning can also be recognised in the way published literature is used for learning and knowledge development in any given discipline. There is abundant evidence of academics quoting each other, combining and extending ideas through a written interchange (Dougiamas, 1998; Seaton, 1998) that may be understood as an ongoing conversation. Understandings of both ‘conversation’ and ‘community’ now also include those conversations taking place, and the communities that are being built, via electronic means, in other words, these concepts now include the Internet. Social constructionism questions the traditional notions of authority in knowledge production, revising the roles of both learners and teachers in the learning community towards collaborative learning through interaction (Gergen, 1995).
Comparisons and Contradictions

Both radical constructivism and social constructionism reject foundationalist conceptions of knowledge generation. Both also question the view of mind as a passive recipient of knowledge that accrues information with each input, favouring instead the idea of active construction of knowledge. There are, however, also significant tensions between the two schools of thought. Primarily, the differences are located around where each theory positions the source of construction (Confrey, 1995). Several commentaries on both these positions raise relevant points of critique and discussion (Confrey, 1995; Lewin, 1995; Richards, 1995; Shotter, 1995). Gergen’s theory of social constructionism has been criticised on several counts. Firstly, by overemphasising the claim to the exclusivity of language in the social constructionist perspective, the radical constructivist position is somewhat misrepresented (Richards, 1995). The radical constructivist view does not entirely ignore the place of language and society, but places rather less emphasis upon the aspect. There has been criticism of the social constructionist position on the grounds that it underplays the place of mental acts in understanding. Knowing is a mental act, and whilst knowledge may be socially constructed, there is also a mental act of knowing involved on the part of the individual (Richards, 1995). Radical constructivism, by contrast, places little emphasis on the influence of social history, being more interested in the inner mental processes of the individual. This does raise a problematic issue in radical constructivism, wherein the place of society and authority in the viability of knowledge is undervalued (Shotter, 1995). The relationship between the knower and knowledge, particularly publicly shared knowledge, is therefore complicated (Lewin, 1995). In practice, society, the authority of the teacher, and of the discipline they represent, do influence the learner’s construction within any given learning situation. Moreover, social influences in the form of pre-understandings of learners are ever present in all acts of construction (Confrey, 1995).

Understanding constructions in this study

A dialectical approach was taken within this study to locate an understanding of knowing and the construction of knowledge. It is argued that both these approaches may be used interactively to provide the conceptual framework. Consistent with the underlying interpretive philosophy in this study, the contention here is that “the social already inhabits the epistemie” and cannot be separated from it (Lewin, 1995, p. 428). This perspective is made possible when the ontological position is accepted as necessarily prior to the epistemological, and the individual is not seen as separate from the world, but is accepted as
being-in-the-world (Heidegger, 1927/1962). Thus, this study is concerned with exploring and understanding both the individual and the social aspects of learning in Internet environments. This exploration is important because new ways of learning, and new pedagogies, may be emerging in the Internet environment and a narrow view that ignores one or other aspect of learning may miss important features. Furthermore, taking notice of both individual and social aspects of learning enabled the researcher to overcome some limitations of each approach through the understandings provided by the alternative view. That this study is concerned with teaching and learning in an Internet context makes it particularly appropriate to use a constructivist framework. The Internet has the potential, more than any previous educational media, for a participatory approach, that shifts students from being a passive audience to being a participating public (Blood, 2000) who construct individual and social knowledge.

KNOWLEDGE ACQUISITION IN ILL-STRUCTURED AND COMPLEX DOMAINS

The second aspect of the conceptual framework underpinning this study locates constructivist knowledge acquisition in cognitive flexibility theory. The original authors of cognitive flexibility theory (Spiro, Feltovich, Jacobson, & Coulson, 1992; 1995) developed their theory in contexts not entirely dissimilar to nursing, namely medical settings. Given the similarities in the context, it is argued that this theory can be applied to nursing with a degree of confidence that it will provide a useful explanation of some of the challenges of learning in the discipline.

Spiro, Feltovich, Jacobson, and Coulson (1992; 1995) advanced an argument criticising the assumption that a learning environment should provide learners with simplified, clearly structured information, and associated skills, in all learning situations. They asserted that such an environment is inappropriate for learning in some knowledge domains, and contributes to failure of learners to reach advanced learning goals in those domains. Instead, Spiro et al (1992; 1995) offered a theory of cognitive flexibility that explicitly recognizes the “complexity and ill-structuredness of many knowledge domains” (Spiro et al, 1995, p. 85). The contention in this study is that nursing is one such domain, and furthermore that nursing’s public mandate for clinical practice, requires advanced learning goals for an acceptable level of nursing knowledge and skills.

Key features of ill-structured and complex domains

Spiro et al (1995) asserted that there are two main properties to ill-structured domains:
(1) each case or example of knowledge application typically involves the simultaneous interactive involvement of multiple, wide-application conceptual structures (multiple schemas, perspectives, organizational principles and so on), each of which is individually complex (i.e., the domain involves concept- and case-complexity): and (2) the pattern of conceptual incidence and interaction varies substantially across cases nominally of the same type (i.e., the domain involves across-case irregularity). For example, understanding a clinical case of cardiovascular pathology will require appreciating a complex interaction among several central concepts of basic biomedical science, and that case is likely to involve differences in clinical features and conceptual involvements from other cases assigned the same name (e.g., other cases of “congestive heart failure”) (Spiro et al, 1995, p. 88).

An ill-structured domain is characterised by knowledge that will have to be used in a variety of ways. Those designing the learning environment cannot always anticipate the ways in which knowledge will be used, and the uses for that knowledge (Spiro et al, 1992, p.66).

**Nursing as an ill-structured and complex domain requiring advanced knowledge acquisition.**

Nursing educators, responding to the requirements of the profession, and competency levels set by regulatory bodies (such as State Nursing Councils) set advanced learning goals. Advancing the goals of learning entails two conceptual shifts. Firstly a shift is required from attaining superficial knowledge of concepts, to constructing complex conceptual understanding (Spiro & Jehng, 1990). Secondly, the learner must progress from merely being able to reproduce knowledge, to transferring and applying knowledge (Spiro & Jehng, 1990) in clinical practice.

Congruent with the constructivist understanding of learning, cognitive flexibility theory (Spiro et al., 1992; 1995) was used in this study to further define the context in which learning is situated for nursing students in relation to clinical practice. This framework begins to describe some of the qualitative elements of learning, showing how students may experience learning nursing in Internet environments. That the Internet is structured in a similarly complex way, with myriads of potential connections available linking various resources, information, and people makes the use of this specific constructivist theory in this research, particularly apposite. Using this theoretical understanding of cognitive flexibility in this study enabled the relationship between student learning and the context of Internet learning environments to be examined, a matter of key importance in an area that is still in the stage of early exploration.
EPISTEMOLOGICAL FOUNDATIONS OF THE RESEARCH APPROACH

Consistent with the above understandings of constructions of learning, careful consideration was given to choosing a method that was consistent with such a conception. A mixed methods approach was chosen for this study. Such an approach is most appropriate to the research questions as it makes possible the examination of the context of learning, the understandings and constructions of those within that context, and the relationships of the various constructions made to each other. In making this choice for these reasons, the researcher made a conscious decision to take a dialectical stance within the research methodology. Thus, the next section of this chapter uncovers and critiques assumptions underlying various research paradigms to further elaborate on the reasoning for using such an approach, and to allow the reader to progress along the audit trail of this study.

Paradigmatic debates in mixed method research

After a period of prolonged debate in social science (Greene & Caracelli, 1997; Tashakkori & Teddlie, 1998) concerning the place and relative positions of diverse paradigms in research, some agreement over the possibilities of coexistence has now been reached as researchers have gained knowledge of, and experience with mixing methods (Patton, 2002). The contentious discussion in the mixed-method research literature is dominated by an exchange of views over the acceptability of integrating positivist, post-positivist and interpretivist paradigms (Greene & Caracelli, 1997; Patton, 2002; Tashakkori & Teddlie, 1998). These debates have resulted in exploration of epistemological, ontological and axiological issues such as the relationship of the knower to what can be known; the nature of reality (Guba & Lincoln, 1994); and the role of values in research (Tashakkori & Teddlie, 1998). Central to this dialogue is the question regarding the commensurability, and acceptable use of competing paradigms in mixed-method studies. That discussion has produced a greater understanding of methodologies and acceptance of diverse applications in research (Patton, 2002).

The stances taken by the main protagonists in the mixed-method debate, fell into three main categories. The “purist” stance (Greene & Caracelli, 1997, p. 8) maintained the incompatibility of different paradigms, arguing that the contrast between the ontological, epistemological and axiological assumptions made it meaningless to mix paradigms in a single research study (Greene & Caracelli, 1997; Guba & Lincoln, 1994; Tashakkori & Teddlie, 1998). Those taking this position extrapolated these differences to the technical level, and asserted that methods cannot be combined. Clearly, this stance cannot help shape a
mixed-method study. It does, however, provide a counterpoint and serves as a useful critique in evaluating the justification provided for the use of, and the appropriateness of the design of a mixed-method approach to the purposes of the research.

In contrast, those who adopted a “pragmatic” position (Greene & Caracelli, 1997, p. 9), while accepting that paradigmatic differences are real, maintained that the primary focus should be on results rather than the underlying philosophies. Patton (2002) argued that the pragmatist researcher is not required to resolve theoretical contradictions, but rather to respond to the needs and situation of the research problem. As Datta (1997, p. 34) has stated, “pragmatic means the essential criteria for making design decisions are practical, contextually responsive, and consequential.” Pragmatism holds that at the level of methods, there is compatibility (Tashakkori & Teddlie, 1998), and that a research problem may be studied with different methods addressing different specific questions within a mixed-method study (Brewer & Hunter, 1989).

The third stance, more recently evident in the paradigm debate, was the “dialectical” position (Greene & Caracelli, 1997, p. 8). A dialectic has been defined as a “discussion involving the juxtaposition or conflict of opposites” and a “process whereby contradictions merge to form a higher truth” (Moore, 1996, p. 297). As this definition suggests, a dialectical position argues that the differences between paradigms are of consequence, and can be used deliberately “both within and across studies toward a dialectical discovery of enhanced understandings, of new and revisioned perspectives and meanings” (Greene & Caracelli, 1997, p.8). Consciously using a design arising from different paradigms and integrating these has the potential to achieve greater relevance and usefulness of findings within a research study. For example, quantifiable responses to survey questions may be used as a basis for in-depth exploration of one or more elements of the responses.

**Critiquing paradigmatic stances**

The purist and pragmatic stances occupy either end of a continuum. Consequent upon this positioning, critiques of each arose directly from the standpoint of the other. The purists’ stance, bounded by the assumptions of a single paradigm, with no possibility of reconciliation between paradigms (Greene & Caracelli, 1997) criticised both a pragmatic and a dialectical viewpoint, claiming integration of methods was unacceptable. Pragmatists by contrast, considered a purist approach overly rigid, given that a paradigm is normative (Patton, 2002) and socially constructed by consensus of the scientific community to which it pertains (Clark, 1998). Patton (2002) contends that such a narrow stance may introduce “paradigm-derived biases” (p. 71) that limit the researcher to predetermined decisions about
methods. On the other hand, Greene and Caracelli (1997) argue, responding only to contextual demands potentially leaves research without epistemological guidelines with which to evaluate cultural, social, and political influences that may have an impact upon an inquiry. A given paradigm can provide an epistemological framework with which to view these influences, and provide a structure for the researcher’s decision-making. While a dialectical stance does not resolve these inconsistencies, it does provide a way for the researcher to consciously make research decisions without either ignoring, or being overly rigid in regard to paradigmatic underpinnings.

The paradigmatic debate in nursing

In the nursing research literature there has mainly been a construction of the debate as one between quantitative and qualitative research methods. This focus on the technical procedural level has, to some extent, masked the underlying philosophical debate. Contrasting quantitative and qualitative methods, and implying that these are homogenous groups that belong strictly with one or other paradigm, has led to distinctions that may not be justified (Clark, 1998). Both quantitative and qualitative methods may fit with varying philosophical assumptions. An oversimplified focus on methods alone has not helped provide a clear direction for mixed method research in nursing. Thus much of the researcher’s underlying understanding of methodology in this study is derived from philosophical and research literature that is not specific to nursing.

Cognisant of the foregoing critiques, and bearing in mind the emergent nature of Internet teaching and learning in nursing and the exploratory purpose of this research, the researcher chose to approach this study from a dialectical stance at the epistemological level. Fundamental to this stance, is a view that reciprocal relationships are possible between the paradigmatic and practical levels (Greene & Caracelli, 1997) and contradictions do not necessarily mean incompatibility.

Using dialectical inquiry

Central to the argument for a dialectical inquiry, is the notion of maintaining the integrity of each paradigm and the differences between them, while finding productive common ground. Greene and Caracelli (1997) argued that:

Contrasts, conflicts and tensions between different methods and their findings are an expected, even welcome dimension of mixed-method inquiry, for it is in the tension that the boundaries of what is known are most generatively challenged and stretched. The analytic space created by the tension, however, must offer the possibility of co-

Greene and Caracelli (1997) suggest that one way to reach integration and synthesis of knowledge claims of the competing paradigms, is by paying attention to those characteristics of interpretivism and post-positivism that are different, but not necessarily contradictory, claiming these characteristics are part of a continuum. Examples of these characteristics are: “particularity and generality… integrative synthesis and componential analysis… micro and macro perspectives” (Greene & Caracelli, 1997, p.13). Attending to these characteristics in a dialectical inquiry strengthens knowledge claims. In a mixed-method study, meaning and understanding arise from particular contexts and participants’ experiences. Some understandings may also be general and found in other contexts, and particular factors may be isolated, while the whole remains integrated.

The intent of taking a dialectical stance in this study was to generate new and fuller understandings of teaching and learning in an Internet environment into which nursing education is moving. This was approached firstly through a survey analysing the context, and ways the Internet was used in nursing education, and then through exploration of the particular experiences and perceptions of both academics and learners in Internet environments. Such an approach renders the study both mixed-method and multilevel. The following chapter addresses the design and process of this mixed-method inquiry.

Applying the conceptual framework to the study of teaching and learning nursing in Internet environments

In terms of the research process, explicating this conceptual framework adds to the auditability of the study though allowing the reader to see how learning was conceptualised by the researcher, and furthermore makes explicit some assumptions that underpin the research. From this basis an argument is advanced for the credibility of the interpretations made by the researcher. The integration of the theoretical perspectives discussed in this chapter is further elaborated in the explanation of the research approach (chapter four).

Summary

This chapter has presented the conceptual frameworks that underpin this study. Firstly, the constructivist epistemology and its underlying interpretive ontology have been outlined. Building upon this foundation, a description and analysis of the two main schools of constructivist thought have culminated in a dialectical framing of the salient aspects from both these theories to guide this study. The resultant conceptualisation, predicated on the
assumption that epistemology has both social and individual facets, provides one aspect of the framework underlying this research. The relevance of cognitive flexibility theory to nursing was then demonstrated to provide a further concept in the framework, one that is particularly relevant to the domain of nursing. In this section, concepts of learning were specifically related to the requirements of a clinical discipline. The combination of these conceptualisations has provided a way of viewing teaching and learning nursing in Internet environments. Finally the epistemological foundation and paradigmatic underpinnings of this study, locating this research within a dialectical approach to mixed-method research, have been discussed. The inclusion of a discussion of methodological assumptions in this particular chapter strengthens the conceptualisation of the research, and provides a basis upon which to demonstrate the way in which the researcher constructed understandings through the research design. The next chapter discusses the design of the research.
CHAPTER FOUR

CONSTRUCTING UNDERSTANDINGS

INTRODUCTION

This chapter provides a discussion of the research approach underpinning this study and the processes of data collection and analysis. An overview of the research design is provided. Following this overview the chapter is divided into two sections. The first section focuses on the design of the study, and its relationship to the conceptual framework described in chapter three. Specific details of the methods used are found in the second section of the chapter. This section describes the processes for accessing study participants, the data collection processes, data analysis, ethical considerations and the means used to address these.

During the conduct of this study there arose data gathering issues that were not taken into account in the initial design of the project. As these challenges emerged, the methods had to be re-considered and re-constructed. These issues and the ways in which they shaped the study are examined to provide, not only a clearer view of the processes of the research approach, but to also offer a form of data themselves that may be important in understanding the evolution of online learning in nursing education.

Overview of the study

This study sought to:

- Examine the ways Internet technology is being integrated into learning environments in nursing education in Australia
- Explore academics’ experiences and perceptions of teaching and learning in Internet environments.
- Explore students’ experiences and perceptions of learning in Internet environments.

The study was designed as a mixed-method study conducted in two phases. This design was chosen because of the need for multiple sources of data to contribute to a more comprehensive exploration of the emerging field of online education. Phase one consisted of a survey by questionnaire of coordinators of 22 Internet-based or Internet-supported courses in 10 universities across Australia. Data from the questionnaires were nominal and
descriptive and were analysed accordingly with frequencies only. Phase two consisted of in-depth individual interviews with two different groups of participants. Eleven students, and sixteen academics participated. Both groups were drawn from a variety of Internet-based and Internet-supported courses at various academic levels in an assortment of geographical locations. These interviews were designed to elicit information about students’ and academics’ experiences and perceptions of teaching and learning in an Internet environment. The interview data were analysed interpretively. Ethical approval for this study was gained from the Griffith University Human Research Ethics Committee, and from various other university ethics committees or research officers as appropriate. The ethical considerations will be explained below.

**RELATIONSHIP OF DIALECTICAL MIXED-METHOD RESEARCH TO CONSTRUCTIVISM**

A researcher, in making design decisions, must remain consistent, not only with the philosophical underpinnings but also with both the research problem under investigation and the conceptual framework underpinning the study. With this end in mind, a mixed-method design was chosen for this study. From a constructivist theoretical perspective, a design that is multidimensional in terms of data sources, and data collection methods, and accounts for the context, will allow for exploration and description of the interplay between the complex social, institutional, personal, and technological contexts, that influence the construction of learning in an Internet environment.

As described in the previous chapter, the debate surrounding constructivism has included discussion of both individual, and social ways of knowing – the radical constructivist, and the social constructionist views. The conclusion reached, that established the conceptual framework for the current study, was one of recognising both individual and social elements in learning. The debate surrounding constructivist mixed-method research is not unlike the constructivist learning theory discussion, in that the interpretive and post-positivist views place different emphasis on the individual, and the collective, in social research. In taking a dialectic stance in this study, different paradigms were valued as having the potential to inform the research. In the same way, a dialectical integration of radical constructivism and social constructionism in learning accepts that these views can be understood as different facets of the same experience in constructing an understanding of learning.

The research methodology in this study addresses an area where the context and the phenomenon are interwoven, and in which the context of the Internet environment is integral to a description of Internet teaching and learning in nursing education. Thus, using a
diversity of methods to explore the research problem offers opportunities for constructing fuller understandings of learning in Internet-based nursing courses by the construction of understandings that “unfold through a ‘dialectic’ of iteration, analysis, critique, reiteration, reanalysis and so on, that leads to a joint (among inquirer and respondents) construction of … findings or outcomes” (Schwandt, 1994, p. 128).

**Locating the study in a mixed-methodology - Triangulation**

Different purposes may underlie mixed method research in the social sciences. When mixing methods in research, the term triangulation is frequently used to describe the purposes of the researcher in making decisions about design and methods. Triangulation can encompass the seemingly contrasting purposes of both confirmation and completeness of research findings (Begley, 1996; Coyle & Williams, 2000; Shih, 1998). Confirmation seeks to balance strengths and weaknesses of different approaches to test for consistency in the findings from different sources or approaches (Patton, 2002; Shih, 1998). In contrast, completeness aims to add depth and breadth to understanding (Coyle & Williams, 2000; Shih, 1998). The latter purpose of triangulation, means the researcher is intending to “reveal the varied dimensions of the given nursing phenomenon being studied” (Shih, 1998, p.633). Data gained are not expected to verify or confirm previously gained data, but are expected to contribute additional information and increase the completeness of the data (Begley, 1996; Greene & Caracelli, 1997). These two purposes are not necessarily mutually exclusive, and elements of both may exist in a single study. For these purposes, the methods are distinct from each other within the data collection and early analysis. Integration is established at the level of conclusions. To achieve these purposes, five types of triangulation have been identified in the literature (Begley, 1996). The first four, identified by Denzin, are data, investigator, theoretical, and method triangulation (Denzin, 1989) with the fifth being analysis triangulation (Kimchi, Polivka & Stevenson, 1991). Janesick (1998) describes a sixth type, interdisciplinary triangulation.

In this study, the major purpose of triangulation was completeness. When this study was designed, Internet teaching and learning was in its infancy in Australia, as in many other places, and exploratory research that could begin to construct an understanding of the phenomenon was most needed, hence the need existed for completeness in the research purpose. Although not the primary purpose, there were also elements of confirmation arising from the multiple methods and multiple sources of data in the study that should not be discounted, being compatible with, and adding to, the design.
Using Begley (1996) and Janesick’s (1998) categories of triangulation, this study utilised data, method and interdisciplinary triangulation to contribute to the purpose of completeness in this research. The first type, data triangulation, uses multiple data sources to enhance the richness of findings, and can assist the researcher to ascertain if any degree of consistency exists in the findings from various sources (Patton, 2002). Data in this study were elicited from multiple sources. Thus the design aggregated information from course coordinators about the structure and process of Internet courses, their perceptions of coordinating these courses, and both students’ and academics’ experiences and perceptions of Internet-based and Internet-supported nursing courses. Tashakkori and Teddlie (1998) further discriminated between sources of data by introducing a distinction based on levels within the phenomenon, organisation or system being investigated, from which the data are gathered. The phases in this study were designed to gather data from individuals at different levels within Internet learning environments, including administrative, academic and student levels, to further enhance the completeness of the findings.

Method triangulation is the use of two or more methods. This may involve across-methods triangulation (which generally means that both qualitative and quantitative methods are used) or within-methods triangulation (which combines more than one similar method) (Begley, 1996). In this study survey methods were combined with in-depth interviews in across-method triangulation, providing particular advantages to this research. Quantitative data are regarded as useful for providing structural information (Coyle & Williams, 2000). In this research the survey provided information from the course coordinators about the structure of the courses and their information and communication technology, and the ways in which Internet environments were being used in nursing education. Qualitative data allows for in-depth exploration of process (Patton, 2002), in this case the students’ and academics’ experiences and perceptions of teaching and learning in Internet environments gained from in-depth interviews. The survey data provided a context for understanding this information. The quantitative data also facilitated the process of determining participants for the qualitative phases of this research.

Interdisciplinary triangulation is the use of multiple disciplines to inform understandings of both the method and the substance of the research (Janesick, 1998). This study is located in the borders between the disciplines of nursing, education, and information and communication technology. Consequently, interdisciplinary triangulation has contributed to this study in two ways. Educational theories of constructivism have provided
a theoretical framework, and understandings from all three disciplines constantly challenged the researcher’s interpretations of data and thus supported the rigour of the analysis.

Integrating paradigms through dialectical inquiry in this study is consistent with using mixed methods for the purpose of completeness. In each layer of the design in this study, the paradigmatic, the methodological and the design, the main intention is to explore and gain richer understandings of teaching and learning in Internet environments in Australian schools of nursing. Internet-based and Internet-supported learning in nursing lacks a comprehensively researched body of knowledge, neither have any particular methods been extensively tested. In this situation revealing both convergent and divergent findings is useful both theoretically and methodologically. Convergent findings permit a fuller interpretation and construction of understandings of learning nursing in this context, while divergent findings and inconsistencies highlight opportunities for deeper insights, and indicate where further analysis may be productive (Brewer & Hunter, 1989; Patton, 2002).

RESEARCH DESIGN

Initial design and re-design of the study

In the initial design for this study, there were two purposes to the phases of the research. First, completeness wherein “qualitative and quantitative methods are used to measure overlapping, but also different facets of a phenomenon, yielding an enriched, elaborated understanding of that phenomenon” (Greene et al, 1989, p. 258). Second, there was a “developmental” purpose (Greene et al, 1989, p. 258) in which results of one phase are used to develop another aspect of the investigation. The relative lack of research on the subject of Internet learning environments in nursing education made a search for both a rich understanding and a broad focus desirable. To achieve these purposes three phases were initially proposed. Firstly a survey of course coordinators to establish the content, structure, and processes of Internet-based and Internet-supported courses offered in Australian schools of nursing. The second phase planned was in-depth interviews with a group of nursing students. The findings of the student interviews were to provide the basis for developing a survey instrument that would be administered to a larger group of students. Thus the final results were intended to provide information regarding students’ learning nursing in Internet environments that would, to some extent, be generalizable. Access to students was to be gained through the course coordinators distributing information and an invitation to participate in the study. However, for many possible reasons, the low response rate from course coordinators who could assist with providing the researcher with access to the student
population precluded gaining sufficient numbers of students for the survey. This situation called for the researcher to re-evaluate the research design and demonstrated the need for the design to remain flexible and open to the constraints of the phenomenon itself. It became apparent that the stage of development of Internet teaching and learning in nursing in Australia called for an approach that was more exploratory, consistent with its emergent status.

Changing the study design in response to a lack of Internet-based courses and uncertain access to students ultimately proved to be a most productive decision. Contact with academics while trying to access students alerted the researcher to the importance of recording the academics’ experiences and perceptions at this stage of the development of online learning, as the academics are an integral part of the learning environment. They and the students construct the learning environment between them. Thus in order to contribute to a complete picture of learning nursing in Internet environments, the revised research plan replaced the proposed survey of students with in-depth interviews with academics who taught in Internet environments.

Although the students’ interviews had been commenced prior to the academics’, there was considerable overlap of the time during which each set of interviews were conducted. Whilst neither set of interviews specifically guided the other, the concurrency of gathering the data allowed a dialectical exploration within these interviews of how students and academics construct the learning environment together.

**Maintaining trustworthiness in a mixed method study**

The legitimacy of knowledge claims in interpretive research is dependent on the researcher demonstrating the trustworthiness of the study to the reader (Koch, 1996). Patton (2002) has described the criteria for trustworthiness in a constructivist research as credibility, transferability, dependability, and confirmability. Credibility is dependent upon the researcher following rigorous standards of data collection, analysis and reporting (Patton, 2002). This includes searching for alternative explanations and presenting an account that is coherent and unified, but also shows both contradictions and congruent findings (Plager, 1994), enabling readers to make decisions about the plausibility of the account (Patton, 2002). To meet the transferability criterion, the account must also be sufficiently comprehensive to allow the reader to determine the applicability of the construction to other contexts. The criterion of dependability assesses the degree which the researcher has followed a coherent, systematic and auditable process in conducting the research. When these criteria have been adequately met, the researcher can argue confirmability of the
findings, which is the interpretive paradigm’s equivalent to reliability in positivist studies. Although presented discretely here, these criteria overlap within the process of the investigation, they are therefore discussed at relevant points throughout the explication of the methods.

Patton (2002) recommends keeping both methods and results within their contexts. Doing so constitutes part of the audit trail suggested for qualitative research. Within this study, chapters one to four provide an audit trail that describes the context, and discusses the reasons for decisions made in progressing this study.

**Positioning the researcher**

It is well recognised in interpretive-based research, that the assumptions held by the researcher, and their prior experiences and background with both research and the problem area under investigation influence the decisions made and processes of the investigation. Positioned within the “hermeneutic circle” of understanding (Polkinghorne, 1983, p. 226), researchers cannot act otherwise than interpretively. Thus it is important they be self-reflective about their understanding and attentive to the interaction of this with the individual and social constructions of participants in the research (Schwandt, 1994). Explicitly locating the researcher is, therefore, particularly important in a constructivist and dialectical approach where the researcher is ‘constructing understandings’ through the design and methodology as much as through the interpretation of findings. Opening the researcher’s position to scrutiny and laying a decision trail assists the reader to judge the trustworthiness of the research.

As the researcher, I came to the project from a background of fifteen years in nursing education. During the course of the investigation, I was concurrently a coordinator of a project that developed Internet-supported flexible learning opportunities for an undergraduate nursing degree programme. Within this project I worked closely with academic staff and others in the web development team in one university. Thus I had some first-hand experience of developing Internet-supported courses. However, while my familiarity with certain aspects of Internet learning environments allowed a deep engagement with the data, all attempts were made in analysing the findings to remain vigilant about my pre-conceived expectations. Immersion in teaching and learning nursing over a prolonged period of time enabled me to question the Internet teaching and learning phenomenon in a way that a lack of understanding of nurse education would preclude, and to remain open to challenging my own interpretations of data and construction of understandings, increasing the credibility of the data. By remaining mindful of my own
position in the hermeneutic circle, and reflecting on my assumptions, every effort was made to remain very attentive to participants’ understandings, particularly those of the academics, and care was taken to not fall back on an assumed shared understanding in data collection or analysis.

**Sampling - Survey phase**

Sampling in the survey phase of the investigation was non-probability. With Internet learning environments being, not only emergent area in nursing, but rapidly evolving and changing, gaining a representative sample was problematic. All university schools of nursing were invited to participate. However, due to the emergent state of Internet teaching and learning in Australia at the time, there was little publicly available information about courses, and thus a complete sampling frame could not be obtained. The researcher had to rely, in most instances, on the Dean or head of the school deciding if they had courses that met the inclusion criteria and then responding to the researcher. Non-probability techniques are deemed to be appropriate where “sampling frames are unavailable or the population is widely dispersed” and where research is interested “in a tentative… exploratory look at patterns” (de Vaus, 1995, p.77). Thus the data source became a convenience sample, in which all those who responded were included. The inability to exactly determine the population from which the sample arose was exacerbated by the differences in the procedures preferred by Heads of Schools for inviting course coordinators to participate. Some disseminated information to coordinators themselves, and others indicated that the researcher could contact coordinators to invite participation. The inconsistencies in the sampling of course coordinators left the sample open to potential bias. Because there was no way of knowing who had received an invitation to participate in every instance, non-response variables were unable to be determined. Non-response to questionnaires creates two problems, reduced sample size and bias (de Vaus, 1995). There was a low response rate (n=22) in this phase of the study and, thus, considerable risk of bias as it could not be determined whether the sample was representative. This is a limitation of the sample and results should be treated with caution. There is no claim made that these results are generalizable, rather they provide a context within which to view the findings of the interviews. Given the exploratory nature of this study, however, the data that were obtained through the survey provided a snapshot of courses available at the time, and the information gained about these courses does contribute to building a foundational body of knowledge about the ways the Internet is being used in nursing education in Australia.
Sampling - Interview phase

The sample from the survey phase also provided direction for accessing participants for the academic and student interviews by providing information about the variety of courses offered. The next step was to select participants who could provide “information-rich cases in depth and detail to understand and illuminate…” the phenomenon under investigation (Patton, 2002, p.563). Thus, the initial design included a strategy for purposive maximum variation sampling (Patton, 2002) to determine the participants in the interview phases of the study. The participants sought were those who had experienced Internet-based or Internet-supported learning or teaching in nursing education. This was expected to lead to important insights (Babbie, 2001) and an appreciation of the differences, similarities, and variations in Internet teaching and learning that increase understanding of the patterns found. Care was taken to avoid unwarranted extrapolation of results by examining the findings from each phase in relation to the researcher’s assumptions. Given that the focus of this study is on teaching and learning in an Internet environment, the variations sought were of the environments, not directly of the academics and students. The particular variations sought were type of Internet structure of the course, academic level of the courses, nursing content of the courses and geographical location. These variations were chosen based on the evolving state of Internet courses and the exploratory aims of the study, but also reflected some of the concerns expressed in the nursing literature (such as related to nursing content and Internet learning). With a technology that is purported to individualise learning to a degree that has not previously been experienced in the modern public education system, it was useful to employ a methodology that may reveal insights into how individuals as well as groups experience learning with this technology.

The number of participants in interpretive research varies. The key requirement is that participants can provide rich and varied data (Patton, 2002). In this study, sufficient numbers were required to provide the variations in the data that were sought. For both the students and academic interviews the plan was to include 15 -20 participants, as this number was likely to generate sufficient data, and allowed for gaining participants from different settings. Sixteen academics participated, but only eleven students volunteered for the study.

Although maximum variation sampling was the intended procedure, the way in which gaining of participants actually proceeded was in fact convenience sampling. This was not deemed to prejudice the study, however, as the final participant groups demonstrated variation on the required features. Students were invited to participate from all courses in which the course coordinator would allow the researcher access. Cumulatively these courses
encompassed the variations sought. The eleven students who participated were from four universities in three states. The students did, however, bring experiences of a larger number of courses as several had undertaken multiple courses that demonstrated variations in the required features. All these students who expressed interest in participating were interviewed.

Similarly, all 16 academics who agreed to participate in the study were included. Academics were spread across eight universities in five states. As with the students, they brought experience of courses that varied on the chosen criteria. Although the variations were not equally represented in either the students or academics groups, these participants were able to provide the data required to address the research questions. The triangulation of the multiple sources and multiple levels of the data argues for the credibility of this study in contributing understanding of teaching and learning in an Internet environment.

No detailed personal demographic data (for example, age) about the students and academics that participated in the interviews were gathered. This decision was made on the grounds that teaching and learning are complex activities influenced by a myriad of factors and individual motivations. Isolating such a factor as an individual’s age for reporting was unlikely to contribute any substantial understanding to this particular research. In support of the audit criteria of transferability, however, the following information describes the ranges of some general characteristics of the participants and their courses. The student participants were consistent with nursing’s typical student cohort, in that the majority of them were female, some were mature-age students, and many (both the mature and the younger participants) had occupational and family responsibilities in addition to their study commitments. Some had previous experience in clinical settings (either as enrolled nurses or nursing assistants), while others were school leavers or had experienced a previous career in a different field. First, second, and third year undergraduate students, and coursework postgraduate students were represented in the sample. The courses in which students had participated included both Internet-based and Internet-supported offerings and covered a wide range of content, both theoretical and practical. The majority of students were full-time students.

Academics were all experienced nurse educators; but many described themselves as novices in teaching using the Internet, although there were some with extensive Internet teaching experience. A small minority had previous experience as students in Internet-based courses. The academic participants taught across a range of content areas and academic levels.
Both students and academics had varying degrees of expertise in computer and Internet use. Students’ knowledge and skill levels ranged from those who had previously worked in the information technology industry to some who had never used a computer until they enrolled in their nursing programme. All the academics had at least basic word processing skills, but varying degrees of Internet skills prior to beginning the development and teaching of Internet-based or Internet-supported courses.

**Preliminary approval from Heads of School**

Thirty university schools of nursing were approached through an email (Appendix 1) to the Head of School to gain approval to invite the school’s participation in the research. In those cases where required by individual university policies, a full research proposal was submitted to the university ethics committee or appropriate research officer. Approval was gained for the researcher to approach the course coordinators and students prior to any approach being made to academics or students. A follow-up email was sent to those Heads of School who did not respond in the first instance. In the event of continuing non-response, no further contact was made with the school. When it became necessary to alter the research design, as described above, a second email (Appendix 2) was sent to all Heads of School to inform them of the change in procedure and negotiate approval to invite academics participation in individual interviews. Following this approval, contact was made with academics in whichever way accorded with the particular Head of School’s preference.

**Phase One - Surveying Course Coordinators**

The survey questionnaire (Appendix 3) was developed with the specific aim of mapping the uses of the Internet in nursing education in Australia and establishing the structures of the Internet environments used. The questionnaire was developed to address three areas of interest: the content and structure of the course, how students are expected to learn to use computers and the Internet in this course and the support provided to do so, and the specific features of an Internet learning environment. Based on the literature, issues surrounding students’ entry levels of computer and Internet skills, the acquisition of these skills, and supports (or lack thereof) for online learning were identified. Thus these specific areas were included in this questionnaire. As one purpose of this survey was to explore how the Internet is being used in nursing education, the remainder of the questions addressed this need. Sections for additional comments and demographic questions were also included.

The questionnaire was pilot tested by three academics who were subsequently excluded from the research. These academics were matched, as far as practicable, to the
expected final sample, having experience of teaching in an Internet learning environment in formal courses within schools of nursing. Given the small population of academics teaching Internet courses at the time in nursing education, it was not reasonable to obtain a large number of participants for pilot testing of the questionnaire, particularly as these academics would then be excluded from the study. The academics undertaking the pilot testing completed the questionnaire, timing the completion, and providing feedback to the researcher about: content, sufficiency of alternative responses, sequencing and flow, language clarity, ambiguity, and clarity of instructions. By having the academics actually complete the questionnaire the researcher was able to evaluate the clarity of instructions, possible alternative interpretations of questions, and non-responses. Following the feedback from the pilot test, redundant questions were removed, and the layout of the questionnaire was altered to allow for multiple responses to a stem question to be considered as individual questions to increase to allow finer distinctions in the data.

Following approval from the Head of School, and ethics committee where appropriate, contact was made with course coordinators. This occurred in a variety of ways according to the directions of each Head of School who informed the researcher of the preferred procedure. In some cases the researcher sent all information to the Head of School for distribution to the appropriate course coordinators. Other Heads of School allowed the researcher to make direct contact with course coordinators. This was achieved in some instances by the Head of School providing email contacts for academics who coordinated Internet-based or supported courses, and in others by the researcher using publicly available information on university web sites to locate email addresses for academics in the school of nursing. In the latter situation, all academics in the school were emailed the information, as there was no indication of who coordinated Internet courses. The information sent to course coordinators consisted of an information sheet (Appendix 4), consent form (Appendix 5) and the questionnaire (Appendix 3).

Participation was voluntary and indicated by return of the questionnaire and consent form. Although written consent is not necessarily required for a postal questionnaire, it was gained in this study as the academics had to give permission and contact details to be re-contacted by the researcher about accessing students for the next phase of the study. As the usual anonymity that is possible with a questionnaire was thus compromised, confidentiality arrangements were made. These included removing any identifying data from the responses, for example, course names, and replacing these with a generic content category in the
results, aggregating data and gaining only minimal demographic data, such as limiting location information to the State in which the university was situated.

Although the respondents in this phase of the research were the course coordinators, the subject of the questionnaire was the course itself. Coordinators were asked to complete a questionnaire for each course that met the inclusion criteria of being Internet-based or Internet-supported as defined in the information sheet, or for any other variation of course structure that included Internet use. Responses were obtained for 22 courses from 19 course coordinators in 10 schools of nursing. Data from the questionnaires were entered into the SPSS®\(^2\) (version 10) computer programme for statistical analysis. Descriptive statistics such as frequencies were reported on.

**PHASE TWO - INTERVIEWING STUDENTS AND ACADEMICS**

**Procedures for accessing student participants**

Invitations to participate in the research were circulated to students undertaking courses that varied along the following dimensions: type of Internet structure of the course, academic level of the courses, nursing content, and geographical location. The survey of course coordinators (phase one of the study) guided identification of student groups who were potential participants.

Inclusion criteria for the participants in student interviews required that the students were 18 years or older, spoke English (although not necessarily as a first language), had participated in an Internet-based or Internet-supported course prior to or at the time of interview, and were undertaking a course that was part of a formal nursing programme. Students in research-based Masters and PhD programmes were excluded, as were students other than pre-registration nursing students or registered nurses.

Included in the information initially sent to the course coordinators were information and consent forms asking for their assistance with distributing notices to recruit students into phase two of this study. Those course coordinators, who had agreed to assist with recruiting students, were re-contacted by the researcher after completion of the survey. The course coordinators with access to a group of students who met the inclusion criteria, were provided with notices (either printed or electronic depending on their preference) about the research (Appendix 6) and asked to advertise the study in whichever of the following ways were available to them:

\(^2\) SPSS® is the Statistical Package for the Social Sciences.
• Place notices on notice boards normally accessed by students in their school of nursing
• Place an electronic version of the notice on any electronic notice board used by the course coordinator to communicate with students
• Distribute the notice by email, if this is how the coordinator normally communicated with students in the course (a plain text notice was provided for this purpose to minimise download time).
• For those students who had classroom time included in their course, the course coordinator could make the notice available to students in a class (visually or verbally) if the coordinator wished.
• In three instances the course coordinator chose to have the researcher visit the classroom and inform students about the research project.

The above procedures were designed to give students in Internet-based courses and Internet-supported courses, (that is students located both on and off-campus) equal opportunities to access the invitation to participate in the research. Regardless of the medium through which the students received the notice, they were asked to communicate directly with the researcher in regard to participation, or any other aspect of the research. The course coordinators’ involvement with student recruiting ended after giving assistance with dissemination of the information about the research.

Upon a student making contact with the researcher he or she was sent a package including an information sheet (Appendix 7) and a consent form (Appendix 8) either by postal mail or by email depending on the preference of the participant. The researcher then telephoned these potential participants to explain the research, answer questions, and arrange a convenient time and location for the interview if the student was interested in participating.

**Procedures for accessing academic participants**

Following the revised approval from the Head of School (gained after the study was re-designed, and explained in the earlier section on preliminary approval from the head of school) for the researcher to invite academics who taught in Internet courses to participate in an individual interview, the researcher made contact with the academics in one of two ways. In some instances the Head of School chose to circulate the revised information to academic staff. In this case interested academics contacted the researcher by phone or email. Where the Head of School approved the researcher contacting the academic staff directly, an email with attached information sheet (Appendix 9), and consent form (Appendix 10) were sent to
all academics with an email address listed on the school web site. Interested academics then contacted the researcher by phone or email. The researcher then telephoned these potential participants to explain the research, answer questions, and arrange a convenient time and location for the interview if the academic chose to participate.

Data collection procedures - Students and academics

The researcher travelled to the location chosen by the participant for the interview. The various interview locations included participants’ offices, private rooms in university departments (such as seminar rooms), meeting rooms in locations such as university libraries or hotels, or participants’ homes. All these locations enabled the interview to be conducted confidentially, in privacy and with sufficient quietness for audio-taping to take place. One interview took place over the telephone at the participant’s request, subsequent to a brief face-to-face meeting. Due to the dispersed locations of the participants only a single opportunity for in-depth interviewing with each participant was available to the researcher, although all participants agreed that the researcher could re-contact them by telephone if clarification or follow-up of their account was needed at a later date. The researcher asked participants (prior to their consenting to participate) for approximately an hour and a half of their time for the interview. Actual interview times varied between an hour for the shortest and about two and a half hours for the longest. This longer time was the participant’s choice.

Upon the researcher meeting each participant, there was time for discussion, further explanation, and an opportunity to withdraw if the participant wished. The two points where the researcher explicitly asked the participants if they consented to being part of this research were on initial agreement over the phone after reading the information sheet and having an opportunity to have questions answered, and just prior to the interview when the consent form was signed. However, consent is a dynamic process rather than a static event, and this was kept in mind during the interviews, with the researcher remaining alert to the ways in which consent needs to evolve with participants during interviews. Each participant was required to sign a consent form. The researcher kept the consent form, with the participant being offered a copy.

Following written consent being recorded, the researcher conducted the interview. All interviews were audio-taped and then transcribed ad verbatim by the researcher. Participants were offered a copy of the transcribed interview. Not all participants chose to have this, but those that did were asked by the researcher to note on the transcription any information they did not want used in the study, and any inaccuracies they noted. When a copy of the transcript was requested, upon completion of the interview the researcher
explained to the participants the need for the interviews to be transcribed ad verbatim. This prepared them for the effect that transcription has on the dynamic process of spoken communication in which it is reduced to a static visual record, an effect that can sometimes be uncomfortable for participants who are not familiar with this. Only one participant asked for information to be removed from one section of an interview transcript where they felt the institution was perhaps potentially identifiable. Following return of these transcripts to the researcher, vetoed information was marked prior to the researcher using the information in data analysis. The researcher complied with any requests from participants to receive and keep a copy of their own transcript.

The interview approach - Students and academics

The purpose of the interviews was to understand the experiences and perceptions of the students and academics in Internet-based/supported courses, and the meanings they constructed about teaching and learning in an Internet environment. The interview approach was designed and structured around a general interview guide (Patton, 2002) that provided a framework of topics to be explored with each participant, while allowing for inclusion of individual experiences and perspectives. The advantages of using this approach included ensuring comprehensive collection of data by maintaining a basic outline of topics for the interview, while allowing the freedom to explore and probe the experience of the individual in a way that is responsive to that person and allows their particular story to emerge (Patton, 2002). It also made the most efficient use of the participant’s time, particularly in this single opportunity that the researcher had to meet with each participant. This approach to interviewing is in keeping with both the dialectical basis of the methods adopted, and the constructivist framework underpinning this study.

The field of Internet learning in Australian nursing education explored in this study was an area that had relatively little previous research. An important consideration was to maintain the opportunity to explore individual experiences and perspectives, and be open to unanticipated information, from which important discoveries about this emergent field may arise. The interview began with the researcher asking the students and academics to describe the structure of the course/s they intended to discuss. This gave the participants time to become accustomed to the researcher before speaking of more personal experiences. This approach was seen as appropriate, because the researcher was a stranger to all the students, and the majority of the academics. The email and phone contact were frequently the only previous points of contact. The researcher then led the participants to speak about their experiences and perceptions by asking them to describe what stood out for them about what
it was like to (learn/teach) in an (Internet-based/Internet-supported) course. This question was intended to engage the student or academic in conversation about what was significant and meaningful to them about learning and teaching in an Internet-based or Internet-supported environment. With some participants, no introductory question was needed as they progressed immediately from the course information to talking about their experiences. In these instances the researcher followed the participant’s lead. Subsequent questions depended on the responses of the participants; some were intended to either clarify the narrative, or gain access to the actual experiences and practices, or draw out the details and complexities of participants’ understandings (For example, prompts in the nature of “could you give me an example of that” or “could you tell me more about that” were used). Others were follow-up questions or comments, or introduced areas of inquiry from the interview guide (Appendices 11 & 12). Areas of questioning in the interview guide were developed from the conceptual frameworks underpinning this study, and an understanding of the Internet learning literature. Questions were aimed at eliciting information about the experiences, behaviours, knowledge, feelings and opinions of the participants. The order in which the researcher approached topics was flexible, adjusted according to the progression of the interview with each individual. In many instances the participants covered many of the areas that were the focus of the interview guide spontaneously. The interview ended when the salient topics from the interview guide were addressed and the participant indicated they had nothing further to say.

The advantage of combining the interview guide with the open question chosen to commence the interview (subsequent to the demographic questions about the course) was that the strengths of both an informal and interview guide approach were exploited, through combining responsiveness to individual and situational difference, with systematic and comprehensive questioning in a defined period of time (Patton, 2002). Combining these two approaches, however, also combines the limitations, which are in part, similar. While overcoming the constraint of an informal approach’s lack of systematic questioning through use of the interview guide, the disadvantage remains that the interviewer’s “flexibility in sequencing and wording questions can result in substantially different responses from different perspectives, thus reducing the comparability of responses” (Patton, 2002, p.349). Whilst remaining aware of this limitation in interviewing this way, it is argued that gaining the different responses was more important to the purposes of this research than providing directly comparable data derived from more standardised questioning. More importantly for the exploratory nature of researching Internet education in nursing, the combined approach
to interviewing chosen, increased the contextuality and comprehensiveness of the data obtained and contributed to the credibility and dependability of the study.

**Interview data analysis**

In qualitative data analysis, researchers “mould... interviews into findings” by “reducing the volume of raw information, sifting trivia from significance, identifying significant patterns, and constructing a framework for communicating the essence of what the data reveal” (Patton, 2002, p.432). To this end, the following procedure was followed.

The researcher transcribed the audiotapes ad verbatim into an electronic format. This was the first stage of the data analysis, and had the advantage of the researcher listening repeatedly to tapes during the transcription process, in addition to reading the final transcripts. In this way, the researcher was sensitised to the nuances of meaning conveyed on the audiotapes that are important in constructing understandings. When written transcripts constitute the final data for analysis, it is important that the researcher has familiarity with the audiotapes as well as the transcriptions. This process of listening and transcription, and noting the substance of changes that were made to the transcripts at the participants’ request are described here because establishing the extent to which meaning is constructed at all stages of the research process is important to trustworthiness in constructivist research.

The transcribed interviews from the students and academics constituted the data from the second and third phases of the study. The NUD*IST® (version 5) computer software was used to assist in tracking data. Extensive written notation on the transcripts and additional note taking during analysis of each transcript, and across transcripts, allowed the researcher to maintain a record of thoughts about the data. Coherence of the interpretation in data analysis may be judged by the sense made of contradictions, as well as the unifying aspects of accounts. In interpreting texts and constructing meaning “rival projects can emerge side by side until it becomes clearer what the unity of meaning is” (Gadamer, 1994, p.267). The note taking described above was invaluable in capturing, and archiving for ongoing consideration, the aspects of participants’ accounts that did not appear to fit with the interpretation at the time, and the researcher’s tangential thoughts that may later have had relevance. Reflection on the conceptual frameworks outlined in chapter three of this dissertation, also guided the analysis, but did not in any way restrict the interpretation of the data to any predefined categories. The researcher used the constructivist conceptual framework as a way of attending to themes related to: teaching and learning, the ways teaching and learning interacted with each other and the Internet environment, how the Internet teaching and learning environment was constructed by academics and students.
together, and the constructions of teaching and learning specific to nursing. In this way, through iteration and reiteration in the analysis, the themes reported in the findings chapters emerged. The reading, writing and thinking involved, and the written record thus produced, allowed for interpretations to be visited and revisited in the light of later findings in the data, and for the researcher to challenge the interpretations and check that they were warranted. There is no uncontested truth in constructivist research, but nor is total relativism permissible. The researcher must show that the interpretation is warranted, given the data available. For this reason, extensive amounts of data are included in the findings chapters to support the thematic understandings constructed by the researcher. These excerpts from the data allow readers to evaluate the ideas constructed in this study, judge them against the criteria of plausibility, and decide on applicability of the findings to their own situation (Patton, 2002).

**ETHICAL CONSIDERATIONS**

Following approval of the project by the Griffith University Human Ethics Committee, and the Heads of the Schools of Nursing, the course coordinators who had agreed to participate in student recruitment were re-contacted according to the procedure outline above and asked to distribute invitations to participate to students. Using this procedure ensured the researcher had no direct contact with potential student participants (apart from the instances of giving a talk about the research to whole classes in a few instances) until they contacted her for further information regarding the study, or to express an interest in participation. Thus potential student participants were not influenced by the researcher in making their initial decision to contact her. As the course coordinators had only to distribute the notices advertising the research and all students contacted the researcher directly, the identities of those who expressed an interest were unknown to the course coordinators. Students were all notified, prior to interviews, of the researcher’s background and employment status, and reassured that their course coordinators or other academic staff would not know of their contributions. This helped overcome any issues regarding the potential of adverse findings to affect the progress of any particular student in a course.

Academics, whether advised of the research by the Head of School or the researcher, also replied directly to the researcher enabling their participation to be kept confidential between them and the researcher. Academics were all advised that their Head of School knew of the research and had approved the participation of students and academics in the school if they chose to participate. They were also advised that Heads of School would not
be informed of where individual participants came from, nor were any results for individual schools made available.

When making arrangements to visit participants in other centres, the researcher specifically took confidentiality into account and discussed with participants the best location to maintain confidentiality and privacy for the interview. As all participants chose where they wanted to be interviewed, the surroundings were such that they felt that confidentiality could be maintained to their satisfaction.

The information sheets explicitly detailed how confidentiality would be maintained once the data was collected. Alphanumeric codes were used to protect the participants’ identities. These were inserted by the researcher during the transcription process, as were replacement letters (such as X or Y) for names of people, departments and places. Thus no written record of these details existed, and no one but the researcher heard the tapes. The research supervisors saw some ad verbatim transcripts (with codes already inserted) and participants were told prior to interview that this might be the case. As participants knew in advance the identity of the supervisors, they could make decisions about participation accordingly.

The research design called for participants to be drawn from at least three universities situated in different states. Besides contributing to the variation required in this study, this was intended to assist in protecting the identities of the students, academics, the universities, and any third parties such as support staff. Where there are few innovative courses in the early stages of development, especially those with highly visible media such as the Internet, particular care is needed for the protection of the research participants and their institutions. Any details that might identify a university, student, academic, or any other third party were removed, or at times reported in general categories, (as in the case of course content) in any published, or publicly presented materials. These details included, but were not limited to, such information as: specific course or course names, course content, specific locations, or gender (where this may have lead to identification). This was particularly relevant where quotes from participants have been included in the research report.

Details for contacting the research supervisors were included in the information sheet in case the participant had any concerns or queries regarding the research they wished to discuss with the supervisors rather than the researcher. Contact details were also included for the university ethics officer. The information sheets (Appendices 7 & 9) and the consent forms (Appendices 8 & 10) outlined the rights of the research participants.
DESIGN CONSTRAINTS

Patton (2002) contends that qualitative research is highly context-dependent and design decisions carry the potential to affect results. Limitations can arise in relation to situations, time periods and selection of participants. Patton (2002) stresses however, that rather than merely letting the assumption that ‘bias’ exists continue, the researcher can clearly delineate the purpose and limitation of the sample, and through exercising care about “extrapolating… the findings to other situations, other time periods, and other people” (Patton, 2002, p.563) can overcome such potential distortions. Applicability, rather than generalisability, is appropriate to constructed understandings. Temporal limitations relevant to this study include the emergent nature of the environment under investigation. At the time of this research Internet teaching and learning were very recent developments, and even over the course of the study, participants’ experiences were changing. Selectivity limitations in this study arise from the convenience sampling. However, the variety of experiences that students and academics described provide an understanding of the Internet learning environments without any attempt being made to generalise from these findings.

There is a methodological difficulty in relying solely on individuals’ reports of interactional practices and their impacts on learning. However, this study offers the opportunity to identify areas of collaborative interaction that would benefit from more specific research leading to a deeper understanding of the learning consequences of various interactional practices. Conversational analysis models specifically directed towards evaluating the social process of knowledge construction online (such as that developed by Gunawardena, Lowe & Anderson, 1997) might provide a useful starting point for such analyses.

SUMMARY

In this chapter, the appropriateness of the underlying paradigm to the research, and the consistency of this approach with the dialectical construction of the conceptual frameworks in chapter three have been explained. The research design was described with particular attention paid to the triangulation of methods that structure this study. The initial design and redesign of the study were included to provide contextual insights into this particular field of research and its pattern of emergence within the Australian context. Ethical considerations, and the actions taken to protect the participants were discussed. Finally, the conduct of this study was outlined through descriptions of the methods employed in each phase of this study. Measures for establishing the trustworthiness of the
study have been discussed throughout this chapter as they related to specific processes of the research. The next chapter presents the findings from the course coordinators’ survey and the academics’ interviews.
CHAPTER FIVE

BEHIND THE SCREENS - ACADEMICS’ CONSTRUCTIONS OF TEACHING AND LEARNING ON THE INTERNET

INTRODUCTION

Chapter five presents academics’ accounts of teaching and learning in Internet environments. This chapter contains two major sections: findings from the survey questionnaire completed by course coordinators, and the academics’ interview data. Consistent with this study’s dialectical approach to mixed methodology, the findings of both the survey and the interviews with academics are reported in this chapter. Although each type of data is presented discretely, the survey nonetheless provides a context within which the interview findings are located. This strengthens the capacity of the data to present not only the convergent findings but also the differences, providing a ground for constructing new knowledge.

The survey was intended to map the context of Internet-based and Internet-supported teaching and learning through examining the extent and the ways in which the Internet was used in teaching nursing in Australia, and to identify appropriate participants for the later stages of this study. With a very low response rate (n=22) to the questionnaire, there is no attempt to generalise from this data. However, these findings contribute to building a beginning understanding and picture of the context of teaching and learning on the Internet. A more in-depth understanding is provided through the findings from the academics’ interviews, presented in the latter part of this chapter.

THE SURVEY DATA

Analysis of the survey data yielded information on how the Internet was used in schools of nursing, presented here in three broad categories according to the survey design. The first category related to the Internet structure and content of courses. The second section provides information about teaching and supporting students’ technical skills with computers and the Internet. Thirdly, specific features of Internet environments used were reported. In
addition, information gained from an ‘other comments’ section of the questionnaire is reported thematically at the end of the survey results.

**Demographic Information**

Initially, 30 university schools of nursing in Australia were invited, through the Dean or Head of School, to participate in the survey of course coordinators. Of the initial 30 schools approached, 7 (23.3%) declined participation in this study. The grounds for declining participation varied. In some universities no courses matched the research criteria, in others, the academics were only just preparing to offer these courses and therefore staff were not ready to participate, while in some more established courses staff had already participated in several surveys and did not wish to participate again. Approval for participation was gained from 18 (60.0%) of the schools of nursing approached. Five (16.7%) schools did not respond to either the initial approach or a second invitation to participate sent at a later date. Following approval, course coordinators were invited to participate in the survey of courses. Responses detailing information about 22 courses were received from 10 Schools of nursing. In the following data, numbers relate to the individual courses (n=22) not the course coordinators or the schools. The demographic data indicated that university schools of nursing which offer some form of teaching and learning in an Internet environment are spread across Australia. The numbers of responses by state of origin are presented in Table 5.1.

**Table 5.1: State or territory of origin of courses surveyed**

<table>
<thead>
<tr>
<th>State</th>
<th>Number of courses n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New South Wales</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>Queensland</td>
<td>5 (22.7)</td>
</tr>
<tr>
<td>South Australia</td>
<td>4 (18.2)</td>
</tr>
<tr>
<td>Tasmania &amp; Territories</td>
<td>2 (9.1)</td>
</tr>
<tr>
<td>Victoria</td>
<td>6 (27.3)</td>
</tr>
<tr>
<td>Western Australia</td>
<td>4 (18.2)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>22 (100.0)</strong></td>
</tr>
</tbody>
</table>

*Tasmania and the Territories are described together in this table for reasons of confidentiality.*
STRUCTURE AND CONTENT OF THE COURSES

Degree of Internet technology used in courses

Definitions of Internet-based and Internet-supported courses (as described in chapter one, p.15) were provided with the questionnaire (see Appendix 3). Using these definitions, six courses (27.3%) were reported as Internet-based courses. Thirteen courses (59.1%) were Internet-supported. Course coordinators classified the remaining four courses as ‘other’. The structure of these courses was such that they did not clearly fit the definitions provided for Internet-based or Internet-supported courses. The descriptions of what constituted ‘other’ elicited from the comments section accompanying the ‘other’ option identified two major variations. In one variation courses included a mixture of Internet support and other technologies including CD-Rom, or printed course materials. In these two cases there was no classroom contact with the students. In the second variation, the course coordinators classified as ‘other’ a course that was delivered in two modes, that is, both in the classroom and as an Internet-based course. In this course, students were able to choose which mode they enrolled for, regardless of whether they were on-campus or off-campus students. Of the 22 courses, seven (31.8%) were offered only on a single campus while the remaining 15 (68.2%) were multi-campus offerings.

Programmes within which internet-based/supported courses were offered

There was a fairly even distribution of the use of Internet technologies between undergraduate and postgraduate program levels with 19 (52.8%) undergraduate courses and 17 (47.2%) postgraduate courses reported as Internet-based or Internet-supported. Table 5.2 identifies the number of courses in an Internet environment offered at each programme level.
Table 5.2: Academic level at which Internet-based/supported course offered.

<table>
<thead>
<tr>
<th>Level offered</th>
<th>Frequency of Internet courses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
</tr>
<tr>
<td>Pre-registration undergraduate degree</td>
<td>12 (33.3)</td>
</tr>
<tr>
<td>Post-registration undergraduate degree</td>
<td>6 (16.7)</td>
</tr>
<tr>
<td>Post-graduate certificate</td>
<td>4 (11.1)</td>
</tr>
<tr>
<td>Post-graduate diploma</td>
<td>7 (19.4)</td>
</tr>
<tr>
<td>Masters degree</td>
<td>5 (13.9)</td>
</tr>
<tr>
<td>Miscellaneous stand-alone course a</td>
<td>1 (2.8)</td>
</tr>
<tr>
<td>Other b</td>
<td>1 (2.8)</td>
</tr>
<tr>
<td>Total</td>
<td>36 (100)</td>
</tr>
</tbody>
</table>

Note. Because some courses may be offered at more than one level, n=36

a The ‘miscellaneous’ course was a requirement for one program but was also an elective course in a variety of other programs.
b The choice of ‘other’ referred to an undergraduate course delivered to both the nursing students and students in another faculty.

Internet technologies were utilised in both full- and part- time programmes. The number of responses (38) was in excess of the 22 courses identified indicating that many of the full-time courses were also available part time. Only one course (postgraduate) was reported as being only available part-time and not simultaneously offered in a full-time program. Table 5.3 identifies the number of courses available in full-time or part-time nursing programmes.

Table 5.3: Programme in which Internet-based/supported course situated.

<table>
<thead>
<tr>
<th>Programme</th>
<th>Frequency of Internet courses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
</tr>
<tr>
<td>Full time programme</td>
<td>21 (55.3)</td>
</tr>
<tr>
<td>Part time programme</td>
<td>14 (36.8)</td>
</tr>
<tr>
<td>A stand-alone course a</td>
<td>2 (5.3)</td>
</tr>
<tr>
<td>Other b</td>
<td>1 (2.6)</td>
</tr>
<tr>
<td>Total</td>
<td>38 (100)</td>
</tr>
</tbody>
</table>

Note. Because some courses may be offered in more than one programme, n=38

a Both the ‘stand-alone’ courses were at the postgraduate level.
b The course described as ‘other’ was part of a programme in another faculty for which full- or part-time status was not identified.
Modes of delivery of Internet-based/supported courses

There were various modes of delivery in which courses were made available to students. The questions examining the ways in which the course was made available further discriminated between the earlier categories of Internet-based and Internet-supported courses to determine whether these courses were offered on-campus or off-campus. Some courses were offered in more than one mode. Table 5.4 identifies the numbers of courses offered on and off campus, in either Internet-based or Internet-supported modes.

Table 5.4: Delivery mode in which course is made available

<table>
<thead>
<tr>
<th>Delivery Mode</th>
<th>Frequency n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet-based on-campus</td>
<td>3 (10.7)</td>
</tr>
<tr>
<td>(Students may be on campus, but can choose Internet-based delivery)</td>
<td></td>
</tr>
<tr>
<td>Internet-based off-campus</td>
<td>10 (35.7)</td>
</tr>
<tr>
<td>(Distance students who do not come on campus at all)</td>
<td></td>
</tr>
<tr>
<td>Internet-supported on-campus</td>
<td>12 (42.8)</td>
</tr>
<tr>
<td>(Combination of classroom and Internet delivery)</td>
<td></td>
</tr>
<tr>
<td>Internet-supported off-campus</td>
<td>2 (7.2)</td>
</tr>
<tr>
<td>(Distance students who also come for a residential component)</td>
<td></td>
</tr>
<tr>
<td>Other a</td>
<td>1 (3.6)</td>
</tr>
<tr>
<td>Total</td>
<td>28 (100)</td>
</tr>
</tbody>
</table>

* The ‘other’ mode of delivery was an off-campus course supported by Internet and teleconferencing.

Internet-based courses were more frequently used with postgraduate students. Ten courses (35.7%) offered in Internet-based mode were in postgraduate programmes (7 off-campus and 3 on-campus) compared with three (10.7%) Internet-based undergraduate programmes (3 off-campus). In the Internet-supported courses, the reverse was reported. Ten courses (35.7%) were offered in undergraduate programmes (9 on-campus and 1 off-campus), while only four (14.3) postgraduate courses were offered in this way (3 on-campus and 1 off-campus).

Content offered via courses in an Internet environment

Course coordinators provided the title of the course and a description of the content. A wide range of courses was reported. To maintain confidentiality of the individual courses,
they were classified under generic titles that broadly describe the nature of the content. Table 5.5 identifies the content according to academic level at which it was offered.

<table>
<thead>
<tr>
<th>Course content</th>
<th>Postgraduate courses</th>
<th>Undergraduate courses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Bioscience</td>
<td>0 (0)</td>
<td>3 (13.6)</td>
</tr>
<tr>
<td>Assessment</td>
<td>0 (0)</td>
<td>4 (18.2)</td>
</tr>
<tr>
<td>Acute Nursing</td>
<td>3 (13.6)</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>Community nursing</td>
<td>0 (0)</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>Research</td>
<td>2 (9.1)</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>Management</td>
<td>4 (18.2)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Professional issues</td>
<td>0 (0)</td>
<td>3 (13.6)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9 (40.9)</strong></td>
<td><strong>13 (59.1)</strong></td>
</tr>
</tbody>
</table>

Reasons for offering courses in an Internet environment

The reasons underlying the decisions to offer courses in an Internet-based or an Internet-supported environment were elicited through an open-ended question. Grouping similar findings together indicated that these decisions were based on a combination of one or more of the following: increasing equity of access to university programmes and courses for local, remote, and overseas students; increasing flexibility of access to clinical areas; increasing students’ access to information; increasing support for students; overcoming some difficulties of paper-based distance delivery; enhancing students’ technology skills (including appropriateness of using the technology for nursing informatics courses) and university directives. One comment from a course coordinator is noteworthy in that it highlights the difficulty of classifying courses in this rapidly changing environment and demonstrates the rationale for using Internet learning with certain student groups.

Do keep in mind that many external and overseas research students are taught with extensive reliance on the Internet – e-mail, attachments, online resources, library search and electronic journal resources etc. etc. In other words, a ‘subject’ may not be officially listed as having an ‘Internet component’, but may be the principal
method of teaching and supervising the students. This is why the academic staff with a big overseas student load spend hours sending and receiving e-mail. (Course Coordinator 1)

**Student enrolment numbers**

The numbers of students enrolled in the courses over the two semesters prior to the survey showed a major variation. The numbers ranged from a minimum of 8 to a maximum of 200 per semester. The smaller numbers tended to be found in the postgraduate courses where 28 students was the maximum reported. All the larger class numbers were found in undergraduate courses.

**Learning to use Computers and the Internet**

The second section of the questionnaire pertained to students’ technical skill acquisition: the computer and Internet skills they were expected to acquire, and the requisite support offered to students by the school of nursing and university structures and processes.

The findings showed that a high proportion of academics had an expectation that students would have general computer skills prior to entering the course. This number decreased in relation to Internet applications, with only a little over half of the academics expecting the students to already be skilled, and decreased yet again in relation to the more specific skills of using online library resources. Where there was less expectation that students would already have the skills required, such as the library skills, there was an increased number of ways for students to gain the skills, such as general courses taught at the university level rather than the course level. Table 5.6 details the expectations for students learning technical computer and Internet skills.
Table 5.6: Expectations of how students learn technical skills required for Internet courses.

<table>
<thead>
<tr>
<th>Type of Technical Skill</th>
<th>Expected to have skills already</th>
<th>Skills taught in this course</th>
<th>Skills taught in a prior required course</th>
<th>Skills taught elsewhere in the program</th>
<th>Skills taught generally by university</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Skills</td>
<td>n (%) 18 (81.8)</td>
<td>n (%) 3 (13.6)</td>
<td>n (%) 2 (9.1)</td>
<td>n (%) 1 (4.5)</td>
<td>n (%) 3 (13.6)</td>
<td>n (%) 0 (0)</td>
</tr>
<tr>
<td>Internet application</td>
<td>n (%) 13 (59.1)</td>
<td>n (%) 4 (18.2)</td>
<td>n (%) 2 (9.1)</td>
<td>n (%) 2 (9.1)</td>
<td>n (%) 5 (22.7)</td>
<td>n (%) 3 (13.6)a</td>
</tr>
<tr>
<td>Internet-based Library</td>
<td>n (%) 4 (18.2)</td>
<td>n (%) 8 (36.4)</td>
<td>n (%) 1 (4.5)</td>
<td>n (%) 5 (22.7)</td>
<td>n (%) 12 (54.5)</td>
<td>n (%) 2 (9.1)b</td>
</tr>
<tr>
<td>resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. As more than one response was possible for each skill, n > 22. Percentages for each frequency calculated from the 22 courses.

a Other in these cases refers to assistance given by academics on an individual basis or in tutorials, or from students peers.
b Other in these cases refers to assistance gained from academics on an individual basis or in tutorials or from students peers.

Specific Internet applications students expected to be able to use

Students were expected to be able to use various communication and information applications for effective participation in the courses. Academics outlined their expectations for student communication skills as follows: Email skills were expected in 86.3% (19/22) of the courses. Discussion forums were required in 54.5% (12/22) of courses; use of a bulletin board and chat rooms in 4.5% (1/22) of courses.

Academics expected students to be capable of gaining information via the Internet by accessing a portal (a platform for delivery of online learning resources\(^3\)) in 18.2% (4/22) of courses. Skills with using a browser were expected in 40.9% (9/22) of courses. However, this latter figure may be misleading to an extent. Other skills listed for courses that did not specify browser skill (such as searching the web) would be based upon using a browser. Skill in searching the web for information was expected in 22.7% (5/22) of courses, and in using online databases in 40.9% (9/22) of courses.

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\(^3\) For instance BlackBoard™ and WebCT™ are examples of commercially available platforms. Portals developed in-house by a university are also possible.
Support offered to students using computers and Internet applications

In response to questions about support available to students, academic course coordinators identified several sources. In only one course was there no support, and this course had a particular level of computer and Internet skills identified as an entry requirement to the course. Most courses offered more than one means of support. Of the seven coordinators that only identified one option for support, six reported that this support was from the academic staff, (it was not known, however, whether this was in multiple modes such as telephone, face-to-face or online). The remaining course offered online support only. Of the six courses where the academic staff provided support, four were Internet-supported on-campus courses, and two were Internet-based off-campus courses. In over half of all courses, coordinators identified academic staff as providing support to students for using computers and Internet applications. Table 5.7 details the means of support available to students.

Table 5.7: Support offered to students using computers and Internet applications

<table>
<thead>
<tr>
<th></th>
<th>No support</th>
<th>Online support</th>
<th>Telephone support</th>
<th>Telephone &amp; Face-to-face support</th>
<th>Support from teaching staff</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Skills</td>
<td>1 (4.5)</td>
<td>10 (45.5)</td>
<td>12 (54.5)</td>
<td>4 (18.2)</td>
<td>11 (50.0)</td>
<td>4 (18.2)^a</td>
</tr>
<tr>
<td>Internet applications</td>
<td>1 (4.5)</td>
<td>8 (36.4)</td>
<td>9 (40.9)</td>
<td>6 (27.3)</td>
<td>13 (59.1)</td>
<td>4 (18.2)^b</td>
</tr>
<tr>
<td>Internet-based Library resources</td>
<td>0 (0)</td>
<td>9 (40.9)</td>
<td>10 (45.5)</td>
<td>9 (40.9)</td>
<td>12 (54.5)</td>
<td>1 (4.5)^c</td>
</tr>
</tbody>
</table>

Note. As more than one response was possible for each skill, n > 22. Percentages for each frequency calculated from the 22 courses.
^a Other in these cases refers to support given by students peers, designated IT support staff, designated Learning Assistance staff.
^b Other in these cases refers to support gained from library staff, designated IT support staff, designated Learning Assistance staff.
^c Other in these cases refers to support gained from designated IT support staff, designated Learning Assistance staff.
Information obtained from course coordinators about the duration of support to students revealed nineteen courses offered ongoing support. One course offered only initial or ‘start up’ support. One coordinator responded ‘don’t know’ about initial and ongoing support. Data in response to the duration of support were missing in one case.

FEATURES OF INTERNET LEARNING ENVIRONMENTS

The third section of the questionnaire explored the specific features offered in the Internet learning environments surveyed. Table 5.8 identifies the features offered in courses, and the source of the feature. Some courses used specific features, but these were offered on a university-wide basis to students, rather than just within an individual course. For example, student email facilities are commonly provided at a university level rather than a course level. The courses with highly evolved Internet environments, including such features as synchronous chat rooms and online teaching, were all at a postgraduate level. Of the fifteen courses providing asynchronous discussion boards, six (40%) were postgraduate courses and nine (60%) were undergraduate courses. Online assessment was available in eight courses, of which five (62.5%) were postgraduate and three (37.5%) undergraduate. The ubiquitous Internet features in both undergraduate and postgraduate courses were email (available in 90.9% of courses), course outlines on the Internet (available in 95.5% of courses), hypertext links to other websites (available in 90.9% of courses), and remote access to library facilities such as catalogues, databases and electronic journals (available in 95.5% of courses).

Features that course coordinators specifically viewed as ‘interactive’ were reported separately. Identified in 12 courses, these features included: tutorial discussion boards (4), live chat rooms (2), bulletin boards (1), quizzes (4), viewing interactive sites on the web (for example, a web site with practice drug calculations) (2), crosswords (1), audio and video files (2), interactive diagrams (1), online availability of assignment marks (1).
Table 5.8: Features of an Internet learning environment offered

<table>
<thead>
<tr>
<th>Features of the Internet learning Environment</th>
<th>Not available in this course(^a)</th>
<th>Specifically offered in this course</th>
<th>Offered by the university</th>
<th>Offered by the course &amp; the university</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td></td>
<td>2 (9.1)</td>
<td>8 (36.4)</td>
<td>12 (54.5)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Chat sessions (synchronous)</td>
<td>16 (72.7)</td>
<td>6 (27.3)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Online teaching sessions (synchronous)</td>
<td>19 (86.4)</td>
<td>3 (13.6)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Email listserv</td>
<td>15 (68.2)</td>
<td>3 (13.6)</td>
<td>3 (13.6)</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>Bulletin board</td>
<td>12 (54.5)</td>
<td>9 (40.9)</td>
<td>1 (4.5)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Discussion forum</td>
<td>7 (31.8)</td>
<td>14 (63.6)</td>
<td>0 (0)</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>Course outlines on the Internet</td>
<td>1 (4.5)</td>
<td>13 (59.1)</td>
<td>5 (22.7)</td>
<td>3 (13.6)</td>
</tr>
<tr>
<td>Course content on the Internet</td>
<td>3 (13.6)</td>
<td>15 (68.2)</td>
<td>3 (13.6)</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>Online Assessment</td>
<td>14 (63.6)</td>
<td>8 (36.4)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Online textbook</td>
<td>19 (86.4)</td>
<td>3 (13.6)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Hypertext links to other web sites</td>
<td>2 (9.1)</td>
<td>17 (77.3)</td>
<td>2 (9.1)</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>Links to audio or video course materials</td>
<td>11 (50)</td>
<td>10 (45.5)</td>
<td>1 (4.5)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Frequently asked questions (FAQs)</td>
<td>10 (45.5)</td>
<td>9 (40.9)</td>
<td>1 (4.5)</td>
<td>2 (9.1)</td>
</tr>
<tr>
<td>Remote library catalogue access</td>
<td>1 (4.5)</td>
<td>6 (27.3)</td>
<td>13 (59.1)</td>
<td>2 (9.1)</td>
</tr>
<tr>
<td>Remote library database access</td>
<td>1 (4.5)</td>
<td>6 (27.3)</td>
<td>14 (63.6)</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>Electronic journals</td>
<td>1 (4.5)</td>
<td>6 (27.3)</td>
<td>14 (63.6)</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>Other(^b)</td>
<td>21 (95.5)</td>
<td>1 (4.5)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

\(^a\)This column indicates features that are not available/not used in this course even though they might potentially be available in a commercial platform used for the course delivery.

\(^b\)The ‘other’ referred to in this case is an online assignment drop-box.
**ADDITIONAL COMMENTS**

Comments added by academics generated further information about Internet-based or Internet-supported learning environments. The most frequently mentioned areas were resources, access, and concerns about teaching clinical elements online. Several coordinators noted that increased resources were required for development and teaching of Internet courses. These resources included academic time, support for academics and students, acquisition of technical skills by academics and students, and increased financial outlay to develop and teach Internet courses.

Access issues that course coordinators identified included end-user issues, where students’ computers were inadequate compared with course technical requirements, and students’ lack of technical skills or reluctance to use computers and the Internet that resulted in equity issues. Other coordinators saw access as being opened up to students by the flexible nature of Internet learning environments.

Concerns were expressed by several academics about the suitability of the Internet for teaching clinical courses and clinical skills. While enthusiastic about the potential of the Internet for teaching theory, some saw face-to-face contact as necessary for clinical teaching. All comments were subsequently brought up during the interviews with academics and are explored more fully in those findings.

**SUMMARY OF QUESTIONNAIRE FINDINGS**

The results obtained from the questionnaire are not generalizable beyond this study, but rather provide a context for the interview data. The findings demonstrate the evolving process of integrating Internet teaching into Australian nursing education and the emergent nature of the structures and teaching practices involved. Within these findings a picture emerged of Internet technology being adopted for teaching, albeit in a very uneven manner, in university schools of nursing geographically spread across Australia. The reasons for embracing Internet technology had an almost exclusive focus on the benefits to learners, with the only other reason given being a general university directive. The degree to which technology was integrated in courses was variable, ranging from minimal provision of online information to highly evolved courses with complete dependence on both information and communication aspects of Internet technology. Internet-based courses were more common in postgraduate courses than undergraduate ones. It was significant that what constituted an Internet course was extremely variable. Many different aspects of Internet technology were used. In addition, the rapidly increasing assimilation of Internet technology in to many
aspects of university course management creates some ambiguity for academics in determining at what point a course becomes an Internet course. A range of content areas was represented in the courses. Generally students were expected to have some computer skills, but this expectation decreased for more specialised Internet skills. Commensurate with this, support was provided from multiple sources to assist with learning to use the technology.

The additional comments provided by the academics showed both positive attitudes towards Internet technology in nursing education, and anxiety about certain aspects of this technology. Although not the main purpose of using multiple methods in this research, that the substance of these comments was also brought up during the interviews with academics provides a degree of confirmability of the findings within this study. The remainder of this chapter presents the findings from the academics’ interviews.

THE INTERVIEW FINDINGS

Analysis of the data from the academics’ interviews indicated that both Internet-based and Internet-supported educational contexts altered academic and teaching practices. Internet technologies separated academics from students and this had a marked effect on how academics constructed their academic life, and built teaching and learning relationships with students. Dislocated from the face-to-face teaching-learning world with which they were familiar, academics relocated teaching and learning and began shaping a new pedagogy for learning nursing in an Internet environment. The findings in this section are organised in a sequence that follows the experiences of the academics as they learned and taught in Internet environments. This progression does not signal the relative importance of each theme, as academics found differing aspects more rewarding or more challenging depending on their individual situations. Taken together however, the overall importance of academics shifting from a teaching to a learning focus as they devised ways of communicating with learners is revealed. The following descriptions explore the emergent understandings of online teaching and learning reported by academics through the themes of Moving online, Learning to teach on the Internet, Another time, another place... Dislocating teaching, and Relocating teaching.

MOVING ONLINE

Findings from the academics’ interviews indicated a complex interaction between institutional and individual motivations for moving courses into the online environment. Most academics reported they were developing online teaching in accordance with either a university vision that supported a move online, or a university directive that required them to
develop their course online. However, the degree to which they were part of that decision-making process, and whether they could choose to put their courses online, varied enormously. Some academics had themselves suggested this course of action, whilst others developed online courses because it had been mandated from elsewhere within the organisational structure.

The decision-making process in some institutions involved academics as well as administrators, with joint decisions being made and consideration given to “trade offs” (T5) and balancing factors.

This university has… a lot of people who are interested more in the pedagogical values of teaching and seeing where they actually fit in an online learning environment. So we don’t necessarily go through the process of putting things online just because we should be putting things online. There has to be a sound reason why we would do it. And that can still be influenced by other factors, such as how big the market is, can we reach more people, or can we reach enough people to run a course if we do it online as opposed to if we tried to run it locally if it is quite a niche area. (T5).

In some universities, academics were the prime instigators of moving a course online. These academics had actively sought out ways of moving courses online in the university to meet identified student needs.

[The university] don’t require it to be online. It's my initiative… I chose this, and I guess the main reason for choosing this, was… I was looking at it as an acceptable way that I could structure the course to be able to cater to [the students] needs as well as their nursing culture and their learning culture. (T3).

Some academics recognised a growing need for students to be able to leave the university’s location for practice experiences, and still access their courses at the university.

We actually had the luxury of choosing to make it an Internet-based subject… They have always traditionally had on-campus work… so their [clinical placements] could only be so far away because their concurrent subjects caused them to always come back to the campus. We wanted the students to have a… broader range of [clinical placements] they could actually go to… so basically how can we best meet our objective of getting students out in [clinical placements] and… what would be the easiest, simplest, most efficient way of getting the material to them. (T1).

Location-independence for students is a well-recognised benefit of Internet learning environments. A contrasting finding in the academics’ information revealed another
advantage - the potential for facilitating location-dependence of the academic. Some academics needed to bring university and large hospital clinical expertise to distant locations. In this situation, it was essential that the academic was located centrally, and able to reach out to students and enable them to overcome the developing “gap” (T16) between nurses with and without access to tertiary level specialisation. Internet-based courses allowed a complex relationship between location independence and dependence for both students and academics, and this was a compelling reason for establishing courses in an Internet environment.

Apart from a small contingent of local students who are choosing to do this style of course, which is flexible off-campus learning, obviously geographical isolation isn’t the only factor that a nurse would need to have that sort of flexibility for in their learning, but… what is really important, the nurses want me to bring to them the up-to-date clinical metro level of practice that they need… So we have clear ideas about what they want and what I can provide and so my best situation is to always be located in a tertiary level city hospital in touch with cutting edge nursing practice, because that is what they want from me. (T16).

Other academics had not been part of decision-making about moving courses into the Internet environment, but were following university or school dictates. They found themselves implementing decisions made at other levels of the university. While some academics who were given directives thought that moving online was a good idea, many had little understanding of what it would actually mean in practice.

We [the school of nursing]…have gone online. Our whole programme is online…. The directive came from the greater university and with directives came some guidelines…. So this was imposed upon us, but now it’s been imposed we are running with it…. We had no option in the beginning…. A few of us thought this might be good; it might be interesting. But we had no idea of the enormity of it. (T6).

While reasons for putting courses online may have differed initially, a consistent finding from academics was that Internet technology in their courses changed their teaching and academic life markedly, and in ways they had not predicted before they began moving online.
LEARNING TO TEACH ON THE INTERNET

Academics as novices

Despite being experienced classroom teachers, academics noted that preparing courses and teaching on the Internet was very different to face-to-face teaching and many of them felt like a novice. There was however, little recognition of the need for academics to learn how to teach online.

In teaching we have refined it over many years and most of us who have come into teaching have done postgraduate degrees in education. But there has been no degree preparation or anything for online learning. So the first thing I am noticing is that it is a different field. And people don’t identify that it is a different field, people just say it is a progression, it's nothing different. But it’s totally different; there is a major difference. (T6).

Many academics haven’t used this before, so we are not only looking at novice students perhaps, but we are looking at novice academics. (T4).

Academics stressed that they needed guidance as they sought to understand the parameters and complexities of an online pedagogy for nursing, and discern what was required to teach effectively in this environment. Many were learning how to teach online by experience without a clearly defined pedagogy to guide them. Further reinforcing this sense of needing a clearer understanding of teaching in this medium, is the wide variety of structures and processes that constitute an Internet-based or Internet-supported course, and how these variations are integrated with other parts of courses or programmes.

If [Internet technology] is going to hold a place of value, you've got to be able to say… what is it that makes it intrinsically different from saying to the student ‘go and buy a textbook’ because we tell them to do that anyway. So what is the value of it? And you have to sit and wonder with a web-assisted subject, when I am teaching them in a classroom and they have bought their textbook, what does the web do? What position does it play? So if we want to continue along this track, we as academics and clinicians have to really define what is the value of a web, and why is it being developed? (T2).

A few academics had undertaken basic training courses, but given the variations in Internet courses; once a basic level of proficiency was achieved they needed individualised tuition to meet specific needs for teaching their course.
Certainly there are training courses, and they are OK. But I perhaps need more now that I have reached a certain point in the management of my website. (T15).

The majority of academics, however, reported they had learned about Internet teaching by “osmosis” and trial and error.

It's a bit like osmosis, the whole process, you learn it by osmosis. Just pick it up, learn it, make a mistake, try and work out how you could do it better. (T2).

Now when I say that there’s no one here, if I really asked around in other departments I am sure there are very skilled people who would gladly give me 20 minutes... But to me that shouldn’t be the case that individually people have to seek out somebody who is ahead of them to help them. There should be an infrastructure in place where we look at what our specific needs are and how we can get those needs met. (T10).

Academics became an important source of information for each other as they shared their experiences of learning to teach online. Those who had been among the first in their schools to teach using Internet technology were often a source of both guidance and encouragement for other academics.

Our course has been the first… taught online, and that’s been seen as the trailblazer… in terms of getting staff involved in teaching. That’s spilled over into [other courses] and people often feed off each other. You know… how would you approach this, or would you use live chat for doing this, or what’s the better way to format your notes in a more conversational style to support online… learning. (T5).

Academics found writing their online courses unlike other academic writing they had previously encountered. The skills to provide academically sound and challenging information in a personal way that engaged the students in learning took some experience to learn.

I made the mistake that all online learning people had done, I thought I could just convert it to html and pop it up and it would be fine. It’s not true, it’s not true at all. (T16).

You need it to be interactive so they feel that they’re with you, learning and trying to experience it in the interactive. That’s quite difficult to do when you are not in the classroom talking to them.... So when I've been developing the subjects... I put the first draft in and it was static, it was like a textbook. And then I started to learn over this year, to make it valuable you've got to remove that static distant
mode and weave it together with communication and that personal side that I'd give in a classroom, and weave it with the theory. (T2).

Writing online courses in nursing requires not only content knowledge, but also educational design expertise and technical knowledge appropriate to the medium. Whilst academics had the content knowledge, some initially lacked other necessary expertise. There was a marked variation between universities in terms of how much technical and development support academics received for writing and building course web sites. Some were expected to do this work in isolation, for others there was support within multidisciplinary development teams that provided guidance about technical requirements and design. Even when academics had a technical support team in which they worked, there was still much trial and error in finding out what would work for nursing in the online environment.

When you're looking at a clinical subject, the diversity of what nursing does in the hospital is so broad, or in the community, to sift it down to a period of time that will fit within so many frames on a computer, takes quite a bit of... knowledge, and experience working with these people that actually know the computer can't do it. And that's what was never told to us... and in not doing that, you waste a lot of time learning it... but we are actually getting more into the 'that's the way this has got to be put, like this, that will work, that does not'.... And that's just experience. (T2).

When teaching online, academics also needed a certain level of technical expertise to enable them to assist students during course delivery.

You need to have some level of understanding... just basically knowing what are the likely trouble spot areas and how do you deal with those...Making sure that students have set their preferences correctly and checking passwords and testing... So there needs to be some basic level of IT knowledge there. (T5).

With the rapid adoption of Internet technology in nursing education, increasing numbers of academics are developing courses. While enthusiastic about developing them, most start out with little idea of the best practices. Few of the participants reported undertaking any formal courses about teaching online. Some developed courses, perhaps knowing what they wanted to achieve, but often confronted by a lack of understanding of the opportunities and constraints within the technology itself. It was only by undertaking the processes of developing websites and teaching courses that the most valuable ways of
teaching on the Internet began to emerge for them. What several academics wanted was more guidance.

I don't think its staff-friendly when you don't have support to tell you how to do it. That's what I found frustrating... there was little to no input as to how to go about it.... I didn't know what to do. And nobody else seemed to know what to do... I wish there was... courses about actually learning what is valuable, how to develop... worthwhile courses. What do you need? What are the requirements of a web subject that is highly regarded? What are the requirements of how do you go about it? ... that this is a better way to go about it... These are the things that you should consider. I need them [the administration] to say... we’re sending you on this course to learn how to develop a web subject. (T2).

Invisible academics, visible teaching

In the face-to-face context the academic is very visible but their teaching is a transitory event confined to a classroom. A lecture, tutorial or practice class is located within the specifics of time, place and group. In contrast, with Internet teaching academics are invisible, but aspects of their teaching, captured in written form on a course website, are highly visible and able to be judged, in a way that classroom teaching is not.

When you go and put it [course materials and learning activities] in a public arena, you’ve got to be right... it is public now, and anyone can access it. So if its rubbish, it's going to come straight back to you or to the school. So when I write things I think, ‘ anyone could read this, I'm not just chatting to a student in the classroom.’ (T2).

Another academic highlighted this reason as why some academics were reluctant to embark on Internet teaching in this early stage of its development in nursing. When academics were exposed in this way while still learning to teach online, with few established guidelines and little guidance, this way created anxiety for some.

You are exposed to the marketplace. You are really putting your self on the line... we need to demonstrate a good quality course that is relevant to what the students need, so there’s a lot of development that still needs to happen in terms of online education particularly in demonstrating quality of teaching. And I think that is probably one of the reasons why a lot of teachers at the moment are reluctant to go into online teaching as well. You know, how transparent is it that they are providing good teaching? They’re the sorts of issues that create barriers for people going into it, and I guess a wider acceptance of it. (T5).
One academic related particular discipline-specific concerns with this public exposure. In nursing, academics are faced with the challenge of teaching in a practice discipline. They must not only develop course web sites, but must be able to match this with content that is clinically current and developed to an appropriate academic level. While learning about Internet development, the results of academics’ endeavours are highly visible and with a degree of permanence, for a semester at least, not just one class.

If they want people to teach clinical subjects and to write… web based products then you'd better have someone who knows what they are doing, or is credible, because… when you put anything that is less than solid or credible, you just lose credibility, because they can see it straight away. (T2).

Academics were concerned with the quality of teaching they gave online. However, the very public and largely visual nature of websites has made the understanding of what is ‘good’ teaching increasingly contentious, and raised issues about standards of teaching practice. Some academics’ perceived an increased vulnerability to judgements based only on the visual, rather than the educational, quality of their websites. While acknowledging the potential of the Internet for visual imagery that can enhance learning, some academics considered that eye-catching graphical presentation alone does not necessarily equate to quality teaching that leads to critical thinking skills in nurses.

[Internet material] really causes even greater strains amongst the student-teacher relationship…. you have the problem where the diversity of teaching is challenged because students become ingrained with so-called ‘good’ teaching standards…. So there are comparisons, unfavourable comparisons are made between one lecturer and another…. Now some students are able to discriminate what's so called good quality and what isn’t. But is it accurate? I mean do the students… look at the glossy stuff and say ‘no I don’t want that, I’ll discard that, I just want the black and white version. No bells and whistles’. (T14).

Others however, were enthusiastic about what online learning had done to teaching practice standards. By making teaching more visible, not only to students but also to colleagues, some academics reported peer pressure raised the standards of teaching to the benefit of students.

Whereas the older method of teaching was much more an oral tradition… with online learning… everything is written down… the peer pressure is enormous…. You have got to have everything… so that the students are getting quite magnificent presentations… So from the online learning and all of the technology things that we learn and
we integrate into practice, links and pictures and animations… all that visual learning is just as important as the oral or the written… I think it has raised our teaching practice way up, higher than ever I have known. (T16).

Another academic expressed a feeling of concern that when their teaching is so publicly available to be read and judged by a wider audience, their work needed adequate protection from the possibility of interference from others.

You tend to think about it a bit more… about what you put out into computers and email. This is going to be held up as an example of what you are doing in your academic career. So I am always very careful. One of the reasons I have gone to using the acrobat stuff and pdf format is to put things up there that can’t be changed. So if you put your lecture notes into pdf format and put the [university] logo on the top and then password protect it also, the only thing that can be done is to print it. (T13).

That sense of Internet materials being a visible reflection of teachers’ skills and the culmination of substantial amounts of preparation and teaching time raises issues of ownership and formalised collaboration with others in this highly visible medium. At an individual level, online teaching has changed the relationship of academics to their course content and decreased the flexibility of that relationship.

It has decreased mobility of people to move across, and in and out [of courses] with… flexibility that we might have had in the past… ‘maybe you can work with me on this, this semester and somebody else will do it next semester’….. [online preparation takes hundreds of hours] consequently people align themselves… And I fear, and anticipate that what this does is, it entrenches people in a particular… content area, where because you give and contribute to online materials and know that particular course well…. That body of people that will move in and out are becoming attached… for example, it is twice as hard for somebody to come in, say I left tomorrow, to have ownership of all that I have set up for this course. (T10).

However, increased visibility of some aspects of teaching in Internet environments was part of a complex paradox, in which other aspects of teaching were rendered less visible as academics found themselves dislocated from the familiar structure and process of their academic lives.

ANOTHER TIME, ANOTHER PLACE… DISLOCATING TEACHING

The dislocation, experienced by both academics and students in this study, from previously understood teaching and learning environments encompassed three salient
aspects: time, place and person. For clarity these aspects are described separately in this
dissertation. However, the process was more fluid, and the distinctions were less clear than
this artificial separation suggests, with the boundaries often being blurred, particularly
between time and place. When viewed as an integrated and fluid experience, these
dislocations constituted a fundamental deconstruction within the Internet environment of
established notions of time, place and person.

The dislocation of time and place permeated the many layers of an academic’s life.
The predominant effect was on teaching (both the preparation and delivery), but also flowed
on into other aspects of an academic’s role, such as research, scholarship and management.
The challenges facing academics, who taught on the Internet either totally or in part of their
courses, were substantial. Becoming more experienced with online courses had little impact;
the dislocation was inherent in the Internet technologies rather than the level of the
academics’ teaching knowledge and skills. The various facets of dislocation are described in
the sub themes that constitute the theme of Another time, another place... Dislocating
teaching.

Dislocating preparation and teaching time from the university timetable

Nearly everyone found the time required for course preparation and delivery
inconsistent with the traditional university structure designed for the provision of face-to-
face teaching. Courses often required major development for Internet delivery, whether they
were new or had been previously taught in the classroom. Teaching on the Internet is
relatively new, lacks established guidelines for course development, and thus demands a
considerable amount of time. The extra time requirement was rarely recognized within a
university’s method of teaching allocation and in many cases, academics were expected to
absorb development time into their usual on-campus course preparation time. This created a
perception among academics that this time was invisible to the system, and all described an
enormous increase in their workloads. In only a few instances were any of the participants in
this study given any allowance of time for preparation of courses for the Internet or website
development.

This year alone I've done [four courses] that have to be up and ready
by June as well as my normal teaching load. And that is all hidden
teaching time…. To get each [course] up... I think it would be
hundreds of hours personally. That's not accounted for anywhere in
your teaching load. (T2).
When we started I kept track of my hours and it took me sixty hours to do a certain component of the stuff... And so I think it is one thing for the academic administration like the Head of School to say ‘yes I know it's workload and it takes time,’ but for somebody to actually say’ if we take you off line for two weeks full time we will have one third of what it is we need up there’. So it's one thing to say ‘yes we know it's a huge amount of work’ but it's another to say ‘to put this up on the web… that’s going to take you four weeks full time, and so for those four weeks full time we are not going to expect you to do anything else’. (T7).

There were some academics for whom funding was set aside to buy out their time from other teaching commitments. They found however, that the workload demands of nursing courses, combined with the scarcity of nurse academics able to step into this role, meant that few academics could access this time relief.

We haven’t let go of enough of our teaching to get time relief. So, we needed to buy more people in to help us…. What was happening was we were finding that it was all very well to have the funding to buy in help with our teaching and marking and so on, but we couldn’t find anyone… there weren’t any. Nurses are just like gold. (T8).

The time for the developmental phase of course web sites was usually short, sometimes only one semester. With all online material generally required to be completed and available to students by the beginning of the teaching semester, this lacked the flexibility of face-to-face preparation time.

When you are developing the material, it's more difficult in one sense in that you have to have it all done before semester starts. With face-to-face lectures you can... do your lecture the night before. That [preparation of online material] can be extremely time-consuming for academics who already have a full teaching load. (T4).

Even though the technology is purported to be more efficient and quicker, academics reported that preparing Internet-based material was in fact slower than preparation for face-to-face classes. According to participants there were two reasons for this. Firstly, it took more time for the complex development required for material that was being learned rather than taught, and that needed to be understood when the students were separated from the teacher. Secondly, there were particular challenges with the Internet, where certain time-consuming activities had no equivalent in other pedagogies. For example, current, relevant journal articles are found by academics for students’ use in face-to-face courses, but there is no burden of cross-checking to see if the resource still exists just before the start of semester, nor are resources likely to vanish during the teaching semester. However, in the Internet
environment repeated checking is necessary because links may be broken, or an entire site can disappear overnight.

You need [to] make sure that every website you're telling a student to go to, still exists, otherwise it's a waste of space and a waste of their time to try and load up and get on to it. So that’s another hidden factor. It takes a long time to sort through websites. It really takes ages to log on and then get them loaded up... it's another thing that we do that’s not accounted for at any time...If you're referring students to this web site... then you'd better keep checking it, because they come and go like the wind. (T2).

Another obstacle, arising from the unique features of the digital environment that markedly increased preparation time for academics was copyright regulations. The issue of expensive and restrictive site licences that universities purchase from publishing companies is challenging the rules and principles by which information use in university teaching and learning have previously been governed. With recent changes to digital copyright legislation both internationally and in Australia, organising ‘fair use’ of materials for students has become complex and time-consuming. Academics were generally the people within the system who bore the brunt of having to organise course materials and attend to compliance with copyright requirements that are becoming increasingly restrictive.

Copyright is a big problem. And now they have introduced a system with the copyright association, where, if an article is used by one lecturer and a copy is put into the library it stops another lecturer from using it…. It's a nightmare. (T14).

Dislocation from familiar preparation timeframes was exacerbated by the fact that for many academics, preparation was no longer solely within their control. There was a forced reliance on other members of a multidisciplinary team such as technicians, programmers, and web builders, and a need to comply with the timeframes of these other sections of the university.

I didn’t have enough support to achieve what I wanted to achieve. For instance, some video streaming I wanted to do, I asked to have it ready for March commencement, and they turned round in May and said ‘Yes, we can give it to you now’. So that sort of institutional support was way behind the timeframe. (T1).

I can’t imagine how many hours I've spent until one o'clock in the morning trying to finish off stuff on time lines. Because it is all very well saying ‘Well, I'll put it off and leave it’, [but] the tech team must have the information. They have got tight timelines. (T2).
Nor do the members of this technical team generally, have a knowledge of nursing to expedite the process of the development work, causing further time demands on the academics to ensure the clinical accuracy of the materials developed.

They have no in-depth knowledge or even any pre-knowledge of what you are talking about, you have to explain it in the simplest terms and then they do a draft, and then they do another draft, and it’s a lot of time wasted… not wasted, but if I was working with someone that had a nursing background, coupled with the technology that they need to do it, then you would have a very powerful resource person. (T2).

There was little evidence that new university timeframes and structures were devised to cope with the delivery of Internet courses. Course teaching hours were calculated on previous understandings of face-to-face contact hours and failed to acknowledge that there were differences in teaching and learning, and greater time demands in an Internet environment.

It literally takes hours and hours and hours. And… the subjects are all set up based on a thirty-six hour contact period… So your contact hours are assumed to be three contact hours with six hours of marking behind. Which is based on a face-to-face lecture formula. The reality would be that that is probably achievable for the weeks in this [course] where the students do group activities, but for the weeks where they do an individual activity, I might have forty pages of marking. And that would be for six weeks. I would do six weeks of forty pages of marking plus I will do a three thousand word essay for each of the students at the end, plus around about another three thousand word [assignment], by the time they have done it all. (T5).

Not only does teaching an online class take more time collectively, but without the moderating influence of students simultaneously sharing the academic’s attention within a prescribed time, in an asynchronous class each response to individual students can take more time. In a context that lacked the usual controls on apportioning teaching time, academics had to learn new ways of limiting time inputs.

In an online environment there are no timetables and so… unless you are very regimented with how you conduct yourself online, you might find you are spending some fifteen or twenty minutes just with one response and you can’t really do that if you have got 30 students online. And you wouldn’t normally do that in a face-to-face encounter because otherwise the rest of the students… would be getting rather unhappy that you were focusing so much of your effort on one particular student. (T9).
This issue of time permeated into the administration level of schools, where there are serious implications for funding and workload allocation, but adequate ways of dealing with these challenges have yet to be found.

What I am noticing now is, you know you have this arbitrary 12 credit points, 39 hours subject and that’s basically what the university gives funding for to a department for a student, for 39 hours. But that 39 hours has become hundreds of hours. (T10).

While some academics noted that the problem of inadequate time for preparation, teaching, and course management was just not acknowledged, some reported that the suggestions made to deal with it were within the old framework of face-to-face teaching. Few academics reported the existing system changing to accommodate the new technology and consequent teaching practices. The pressure was to try and fit the new course to the established allocation system.

When I said to them it took me thirty minutes… to return the assignments… my academic masters said, ‘Oh well, you will just have to stop doing that, that’s crazy. Can’t you think of a better way, a more time efficient way of doing it?’ I said ‘well no, that’s what you have to do if you have assignments that are done electronically. You have got to take them off the email, how else are you going to do it?’ (T9).

We did… look at how much time online, how much time in discussion groups, how much time in answering emails related to your course etc… the range was… between 250 and 700, with the mean being about 350-400 hours that were spent… for a 39-hour subject … that magic number of 39 no longer has an equivalent value. And the pressure on us is to get all your online stuff down. You know, reduce it so it fits 39. When in fact what we should be looking at is, this is a whole new technology of teaching and we should be looking at the major structures that are dictating how funds are allocated based on teaching hours, because this new technology no longer fits the formula by which we have been allocated funds based on an hours subject. (T10).

Given this “counter reaction to… cut down everything” (T10), this academic went on to say that “what I am seeing is that rather than people valuing the online material as something that is rich, it's becoming a back up for class.” (T10). Thus the rigidity of the face-to-face formula for time allocation in a course negated the educational benefits the academics were discovering the Internet could add to their courses.

The separation of academics and students, and the isolation of students from each other in the Internet environment influenced students’ expectation of time, and of the
teaching and learning relationship with the academic. Academics found that students were less able to see the cumulative effects of their interactions with the academic in the absence of the physical presence of their peers.

I think by and large most of them would think ‘OK, it's just me here at the end of my email or at the end of the newsgroup or here at the end of the online tutorial’ and they can’t often see the other students there. Well they see their contributions, but once again they are scattered over a period of time, and so they have an unreal expectation. (T9).

Academics were also trying to balance the extra demands of Internet courses with the traditional demands of university life. They were more than just teachers; they were involved in the life of the university community through committees and administrative responsibilities, as well as having commitments to research and scholarship. Preparing courses for the Internet often impinged on, and detracted from, these other academic roles, and the increased workload necessitated by a technology-rich teaching and learning environment created conflicts about the lack of recognition of the time involved in teaching in the Internet and the possible impoverishment of the academics’ own scholarly lives, and the scholarly life of the university.

When you think about [increased time to prepare a course website] when we have performance appraisal, yes, you have put something up on the web and that is part of your teaching responsibility. But if for those four weeks you haven’t done one third of your job which is research, then you have to say well if I’m going to do one month full-on teaching then I will have to have one month full-on research to make up for it…. Which… isn’t something that necessarily gets done. (T7).

Every minute of our time is clocked on. And that is not being recognised. That affects something like taking on a new technology like the web…. most people will have an ordinary working life of 60 to 70 hours a week. Now that didn’t happen in the university environment years ago. You had thinking time. You could sit at your desk and think. You could go to have morning tea with the other professors and… think, and talk and argue. That was what going to university was about, and… there were PhD students and Masters students who were listening and who were taking part. That was scholarship. It doesn’t happen any more. (T14).

In order to be able to accommodate the time demands of online courses, some academics found that their life crossed over the temporal and spatial boundaries of university life. In this situation the divergence and dislocation of university time from online time was clearly highlighted. In some instances this was a positive experience, even though it required
reorganisation of academic life and workload, because it was supported by the university and acceptable to the academic.

Time is a... critical factor, and that’s why I don't mind students [from an online course] spreading out their interactions with me into after hours as well, because it actually gives me more time to deal with each individual student. But also gives me more time to do other things that as an academic you have got to do. If I know I’ve got a student ringing me up at seven o'clock... that's OK because at three o'clock I can do something else and I'm not going to be interrupted by them.... So I can actually have more solid free time to do your scholarship or your research or whatever the case might be, without being as interrupted during the day. (T1).

The Internet is flexible learning delivery, and... part of that... is having academic staff that are prepared to be flexible about it as well.... This university is good in that it allows me to set my own hours. So if I spend four hours a week online [facilitating tutorials in the evening], every fortnight I will have a day at home, doing my own study to gain back those hours. (T5).

Flexible crossing of spatial and time boundaries worked less well for those who described an accumulation of extra work that arose from having both Internet courses and on-campus classes. In these cases, the structure of the university timetable was inconsistent with the demands of online teaching.

The expectation is by and large, because of the timetabling that you are... here for most of the day almost every day... It would be different if all your students were online. You would probably be able to work things around that, but if you have got a mixture of online students and on-campus students at postgraduate level and then having to deal with undergraduates as well it makes it really awkward. Because all your undergraduates want your attention during the day and the postgraduate students want your attention at night. (T9).

Besides a change in the mix of student demands, there was a shift in the control of communication from academics to students in the Internet environment. The academics felt that the students in Internet-based classes deserved flexibility and responsiveness, but around-the-clock access through email was a major change from the traditional allocation of consultation hours or individual appointments, and was a management challenge.

[When] students went online and they could email and work with the lecturers 24 hours a day, they could send emails with requests...if you have an undergraduate group it is an enormous amount of information to process, so lecturers were complaining that they weren’t open 24 hours although the students knowing that they had electronic contact
assumed that they would. [Online] there is no real control on contact. (T16).

I think that is one of the risks. Some of the students think that you are there all the time. The moment they post a message on a discussion thread, that it will get responded to. That the moment they send an email, that there will be a response. That if they ring the phone, you will pick it up. (T5).

Some difficulties arose when academics crossed and re-crossed the traditional borders of academic and personal life to accommodate Internet-based communication, and found this inconsistent with the existing structures, resources, and regulations of the university.

I wanted… university-supported access from home and they wouldn't give it to me. So, therefore, I had to…say, I'm actually not going to email students from home, because that is my cost, and its work's cost... I would love to be able to hop on the computer… whenever suited me, so I can… speed up the response rate for [the students]. But I have to say to them, if you email me at home… after hours, you'll have to wait till the next day when I get to work… So [the university] didn't have that concept that my teaching has expanded. They wanted me to keep my teaching within Monday to Friday, nine to five. (T1).

Popular assumptions that the Internet is an effective means of managing large classes merely because of a dislocation from physical resources such as classrooms, proved to be false from the academics’ viewpoint. The time cost escalated in Internet courses, and academics had to find ways to integrate the demands.

I snatch bits and pieces all over the place. So I'm at the computer at home and if an email comes in at half past eleven at night and if a student has a problem… I tend to answer it straight away rather than being more disciplined and saying I won’t answer it until Monday morning… Now the reason I do answer them straight away is that I deal with … nearly four hundred different students, if I leave them all to Monday morning at nine o'clock. I will spend so many hours trying to get through all the emails. (T2).

A further myth in the academics’ estimation was that reduced staff could manage increased numbers in an Internet environment. Again the time factor made this unrealistic.

The other misconception is… online we don’t need so many tutors… or we don’t need any other lecturers to come in and help…. In actual fact you probably reduce it to a point where you need one person for every online tutorial. If you have got thirty students in an online tutorial… [and] 6 or 7 tutorials across the whole semester and that’s a
fair bit of work for just one person and 30 students. If you went up to 60 it would be really onerous I think. But to deal with 150 or 170 students is just mind-blowing. (T9).

Distinct differences emerged between the demands of large and small classes, and the demands of providing information as compared to communication. While not underestimating the time required for development of information, the time required to manage online communication processes was also significant. Large student numbers forced academics to use adaptive management strategies and compromises in what they could provide for students to successfully manage the workload generated by the processes of online communication.

When I set up a discussion group it's usually for the students. I will audit it, look at a percentage of the entries, but… I’ve got discussion groups at the moment with 800 messages, I’m not going to read all that. I haven’t got time. So when you set something like that up, you have got to have a purpose, and you have got to be able to evaluate it, and if you don’t have the time to evaluate it, or the time to use it to it's full benefit, then you don’t use it. (T14).

A relationship between student numbers, information and communication emerged showing that when student numbers increased markedly, academics had to fall back on providing information-based Internet courses rather than communication intensive ones.

[Academics] said ‘you know, this is great, we are going to do it for our postgrad students, but, we are really not going to do it for our undergraduate students, or we are just going to have readings and lectures and that sort of stuff.’ Content-focused rather than process-focused because they all said we just can’t manage it. Some of them had… 250 to 300 students. (T9).

**Dislocating teaching from the classroom: Invisible teaching**

The previous section described the substantial number of, often hidden, hours spent in preparation of course web sites and managing courses. The finished web sites, those places where Internet courses are visible, rarely testified to the workload involved in their preparation. The actual teaching of an Internet-based course was invisible to an even greater extent. The Internet environment radically altered accepted notions of time and place. Classrooms, and the activities they accommodated, were a visible part of university life; in the Internet environment students and academics were less visible to each other. In addition, the activities of teaching were also hidden from other academics and administrators in the university.
Internet course offerings were uneven within individual schools, with variability in the proportion of online information and communication. In courses where modes of teaching were highly evolved in the Internet environment, teaching practices were particularly dislocated from their familiar place in the university. As a consequence some academics faced a lack of recognition of their teaching commitments from colleagues.

It does raise an issue of being seen to be teaching…. I think teaching online might be seen as second-class teaching in a lot of ways, in that it's not actually that visible. Last semester when I was teaching… [Internet-based] students, I gave three tutorials on a Monday during the day for the students… And quite often other people would come and see you at your computer and start talking to you. And there is not a lot of recognition that you are actually there for teaching, because the physical environment is not a lecture theatre and there aren’t students seated in front of you. It's not that visible… So I think that is one of the challenges of teaching on the Internet… How do they know I’m not just sitting there playing minesweeper. (T5).

In many nursing courses, teaching and learning on the Internet were relatively new, and accepted structures and processes had yet to be understood and disseminated widely. In this early stage of development there was often no tradition of Internet teaching and learning, no institutional memory of the effective ways of teaching and learning, or of providing support to both students and academics. Thus students were often unprepared for the experience of online teaching and learning, and had mixed reactions to the invisibility of academics. The challenge for academics was to bridge the gap between teaching as the students saw it in face-to-face classes, and the invisibility of online teaching.

There were a couple of students who would say, ‘we’re paying a lot of money, where’s our teacher’ type attitude. Despite that they had more access to me than they had ever had to any lecturer before in the whole history of their course. It was interesting that they saw the fact that they weren’t meeting with me once a week, for two hours a week as being [poor access]… they saw [one classroom meeting] as good access. Whereas being able to contact me seven days a week, virtually any hour of the day or night they wanted to, they didn't understand that as being access. They saw that as me being aloof and distant from them… And that’s why I have one day every week, 10-2, set hours to contact me if they wanted to, so there was some tangible hours there for them. (T1).

Dislocating classes from the university: Invisible teaching spaces

Not only were academics’ online preparation and teaching less visible in the university, the teaching space itself had no visible presence. However, teaching did exist in a
space, albeit an electronic one that was invisible. To academics teaching on the Internet, this invisibility raised concerns about university recognition and resource allocation. Institutions were themselves challenged by the demands Internet technology placed upon the traditional organisational structures.

It is an important issue, that it is actually seen as a physical environment…it parallels some of the IT issues we have had here, where we have had server changes and things moving… We talk about physical teaching spaces here in the university, we have a timetable that shows who has got them and when. But when it came to updating IT resources… there was an email from IT saying you can’t get online on these nights because we are doing IT work… The inability to schedule work in non-teaching periods is the equivalent of locking teachers out of lecture theatres… so its a matter, and it goes beyond academic areas, to develop awareness that these are actually teaching spaces. (T5).

Most frustrating was, that difficulties with invisible teaching spaces were often not an isolated incident, but a recurring problem for many academics. One academic described being repeatedly denied access to the teaching space.

I am the only subject coordinator, have only ever been the only subject coordinator, and at the beginning of the [course] yet again for the sixth time in a row I have no access to the [discussion] forums. So then I get access to the forums, and I don’t have management rights. So then I add on my [markers] to have access to the forum and somebody takes them off. And then we have got problems university-wide with the forums and forums aren’t available. It just goes on and on and on… The infrastructure is what I find stressful. (T3).

Not only did the Internet bring its own set of previously unencountered technology-specific problems, but the blending of the old systems with the technology also created difficulties. An academic identified how severing their control of resources, such as they had in face-to-face teaching, removed a previous ability to problem-solve with students. Thus the direct relationship of academic to student was again dislocated, with intermediaries controlling the required resources.

I think it is imperative, with this sort of medium, we need to have the [technical] support now… with face-to-face if a student said ‘I couldn’t access the readings in the library’ as an academic you could probably say ‘come and see me after the lecture and I will give you my copy of that’… So immediately we are problem-solving as we go to try and reduce the frustration with the students and to move them along. Their time is precious. We don’t want them being frustrated with limited access to the materials. So we need to provide with the
web, similar support… We need to feel that we have the support of those [technical] people within the university who do have that ability to problem solve for the students immediately. Not next week, but today. Now. (T4).

Several academics reported universities had difficulty providing computing facilities commensurate with enrolment numbers, a problem that was more apparent in Internet-supported courses where the students are more likely to be on-campus. Increasingly, Internet-based courses were available to on-campus as well as off-campus students, as location-independence became only one of the reasons for nursing students wanting flexibility in their learning, a situation that may intensify the challenge to technical resources.

We don’t have the computer facilities for students… they can come here, but we have got 23 computers, that hardly services 300 students that are in one year. The support services are not here for students, even when they call from home… I think IT work very hard but… I don’t think that the infrastructure is set up to accommodate, support, and help the number of students that we have. (T10).

Dislocation from the university was further emphasised when the provision of teaching space was not entirely in the university’s control. When the teaching space is digital and made up of a series of connections, this raises issues of who is responsible for provision and maintenance of the teaching and learning environment. The university, the student, or an independent Internet service provider (ISP) variously supplied parts of the teaching space, that is, the computer, Internet connections and server.

And lots of times there are IT crashes, and they can’t get online, and that seems to be an infrastructure problem a lot of the time. I know a lot of the times it’s the student’s problem because they haven’t changed the password or they have and they forget it, or whatever, but I think there needs to be a more user-friendly, 24 hour service for students, because they don’t work online between nine and five. When they need help is after hours. (T10).

The infrastructure problems faced by academics and students studying off-campus were amplified for offshore students as the number of connection points that made up the teaching space increased.

You have lots of problems teaching overseas, because the systems go down in that country as well. Some students complain that there is only a few hours a week they can actually get through because some aspect of our system is down, or some aspect of their system, their telecom system, or the ISP or whatever…. Depending… on where you
are, as to how good a system you have got… they all interact and that is where you have problems. (T14).

With students providing part of the teaching and learning space, the difficulties for the academics were twofold. When there were infrastructure problems and inadequate technical support for students, this was an interruption to the teaching and learning space. Consequently, academics spent considerable amounts of time trying to deal with the problems of this shared and invisible teaching space. Secondly, when things went wrong the academic was often the student’s first point of contact, and they ended up responsible for the other parts of the system over which they had no control.

I am the first port of call, I am the… course coordinator. Mine is the name that they see, mine is the contact details that they have. They know me because in all subjects they have got to email me for extensions… They know that I’m the person to do with this course… I am tired of apologising for other people’s mistakes. (T3).

For the first couple of years, the infrastructure wasn’t there for [students] to be able to do it successfully. So things would crash all the time, or students couldn’t get access or… really every sort of problem in the book would happen. And for every problem, every student would phone me, versus say phoning the appropriate IT person. So the first couple of years I got bombarded with phone calls. And it didn’t matter how many times I told the students this is the appropriate channels for that, they would still phone me as a first point of contact… (T7).

The demands of supporting Internet courses went beyond each individual course, to the need for a change in university systems to ensure reliable services for teaching and learning online. With students no longer bound by geographical location to a local university, the consequences of failing to meet students’ expectations in the borderless, increasingly competitive, environment of the Internet are far-reaching.

[Academics] need to be supported by the university. There needs to be some good accountability mechanisms in there that say ‘it needs to be better next semester, but what are we going to do if it's not.’ Not that we’re looking to put a head on the platter, but we want to make sure that people are accountable for trying to improve the systems. And you can’t necessarily go about blaming people for these problems… it's really a systems issue, that we need to build systems that staff and students can use quite well and they need to be reliable…. Reliability is a key issue in… online learning…. If students are continually frustrated with not being able to get into environments… they won’t tolerate it too long… And certainly as that census cut-off date comes round, people are making decisions about how reliable they are
finding it. So those first couple of weeks are quite critical in terms of getting students comfortable with the environment, but also with being able to keep students. And make them feel as though they are getting value for money by participating in the course online. (T5).

**Dislocating students from the university: Invisible students**

Not only were classrooms and teaching dislocated from the university, but in a physical and visible sense, students in Internet-based courses were also dislocated from the university and academics. This separation of students and academics was a central event and accounted for significant changes in the teaching-learning relationship. One academic who taught both on-campus and Internet-based classes described how with invisible students it took time to automatically have a “consciousness that they are out there” (T12). New to Internet teaching, this academic reported that the demands of visible day-to-day work could assume a priority just by virtue of having a physical place.

You need to get into a routine of it. Because you know when you have a class on campus, and it's on Thursdays, you see the students every Thursday… so you have got that… scheduled time with them. Whereas with the online… It just took me a while to weave it through my week… It's about a sort of a consciousness about doing it, because it's not timetabled. (T12).

This lack of a particular time to be with students, and the invisibility of students, reduced the academics knowledge of, and ability to monitor the effects or effectiveness of their teaching online. Teaching is a fluid activity where academics were accustomed to responding to students needs in any given class. The ‘silent’ students who were also invisible students presented the academic with challenges in understanding the situation, and determining the appropriate action to take when these silent students were encountered.

A downside… was, where you sent messages out and it would be many days before something came back and you… just didn’t know what was going on…. sometimes I would think ‘maybe there is a problem with the technology, that they haven’t got my message.’ Or then you’d think ‘maybe they’re not interested in what I have provided, and it's not meeting their needs.’ You don’t know because you are not getting that feedback and you can’t see their face… And the emails just seemed to go off into wherever it goes…. So that was disconcerting… How long do you wait, exactly…I did find that problematic. (T12).

An inability to know students well on the Internet was a central concern for academics. Those involved in Internet-based courses described this concern most clearly,
showing how the invisibility of students in an Internet class contributed to dislocating the academic and the students from the accustomed teaching learning relationship, and the students from each other.

I found it difficult in terms of setting up relationships with the students, one to one. But also trying to encourage the students to set up relationships within the group. Now in a face-to-face class that is just a given, those relationships are built... Whereas I found in an online situation, that was one thing that I always struggled with. (T9).

When trying to get to know students who were invisible to them, class size was a factor in academic’s perceptions of whether they could get to know students and their needs individually. The widespread assumption that Internet learning means large numbers of students can be accommodated because physical resources are not required, proved to be incorrect in many of the academics’ accounts. They repeatedly said, in relation to several different aspects of course management and teaching, that some of the things they did with smaller classes, or wanted to do, they could not do with large numbers of students.

I have got 130 students so I can’t get to know them all... I guess the students who are ongoing... but the new students - no. That first subject - no, there is just too much, but once they start getting into their second and their third and their fourth subject... there are names that I am familiar with. (T3).

Where academics did have small classes they did get to know students better, but recognised that such small numbers, although desirable in an online course, were not always feasible in many nursing courses.

The online chat groups that we have for the hour-long period, at the most contain six students. So I guess the approach that we take, can’t necessarily be adopted in other formats where a course... may have a hundred students in it. It... would become quite problematic as an organisation, to be able to supply one lecturer to six students. (T5).

Academic accounts of the dissonance between a belief in Internet learning as a means of meeting students’ needs for access and flexibility in higher education, and their own need to know students, highlighted the concern some academics felt at the dilution of, what was to them, an integral part of the teaching relationship.

Philosophically I had this commitment to online teaching... and to using IT in a smart sort of way, and yet I always felt closer to the students that I had on campus... it was an internal conflict about what I was doing and how I was feeling. But I came to realise that...
instead of just being a conflict, that it was actually a symptom of something that was, not necessarily wrong, but a weakness of online learning, from the facilitator’s perspective…. that might just have to be lived with. (T9).

Getting to know students had very specific pedagogical purposes for academics, who used such knowledge to increase their responsiveness to students’ needs. The Internet environment lessened the depth of communication between students and academics about students’ learning, and the factors in their lives that impacted upon learning, decreasing the academics’ ability to individualise their assistance to students.

I get to know [online students] only if they will bother to communicate…. the students I have on campus I get to know them. They might come to me with their personal problems if they can't get assignments in on time, or they'll talk to me because they can't understand how to do a certain procedure…. I am getting that constant feedback about what's the problem with the teaching, what's a problem with their learning. But in a web mode, I rarely get to hear anything about how they're struggling. Usually its just ‘I need an extension’ because they don't have the same relationship with you, it's just not there. (T2)

Verbal information provided by students, was only one of the ways academics apprehended students’ needs. Academics have traditionally also relied upon the information they gathered from seeing and interacting with the students in class. The invisibility of students in an Internet environment deprived academics of important visual cues they relied upon to ascertain much about students and their needs, for both pastoral care and education. Academics clearly felt a responsibility to support students’ personal wellbeing as well as their learning, and found this difficult over the Internet.

You can never replace human contact… If a student comes to me with an issue or problem…you can actually begin to pick up when something is really wrong. I've often had students that I've pulled out of the classroom because I can tell by their demeanour in the class something is very wrong and I say ‘Are you OK?’ and we've found a few significant issues that they didn't come to me about, but I picked up… [with online learning] I have no idea what they are doing, I don't know how they are coping with it. (T2).

Similarly, academics who had previously relied on physical proximity and visual contact with students to know and understand their learning needs and progress, felt dislocated from the students. Academics gathered much information from the physical presence of students. Particularly important for nursing practice, were the embodied practical
skills that students must learn, and desired affective outcomes, such as confidence or enthusiasm, that were only perceived when academics were with students.

When I am running a practice class, even the very quiet students I will watch to see what their physical ability is, or their confidence with a procedure, or their confidence with dealing with other students if they are doing a presentation. And I can tell who's worked and who hasn't, just by watching them and getting to know them as a student group. In this electronic mode... they are almost invisible. They put their assignments in and I mark it off... but I don’t really know anything about their ability to learn or their participation level. I don't know, because there is no contact. (T2).

Communicating with students online raised issues for academics about the superficiality of the medium for responding to students’ learning needs. Although a useful medium for delivering information to students, a prime weakness of the Internet was its inability to transmit the intricacies and nuances of communication between teachers and learners. Their separation from each other, and the ensuing invisibility, hid the cues that academics were attuned to as teachers and adept at reading, and obscured the subtleties of the art of teaching wherein the academics created a place for learning. In this challenging situation, the academics found it more difficult to help the student to construct their individual learning online.

Sometimes when students want something explained to them, it's very difficult to type out a response that is able to capture the nuances and capture what it is that the students actually know and to build on that in trying to explain something... usually a student’s question will be something very specific. But in fact if you tease out what the question is it is something bigger and... you have to understand where they are coming from and the foundation upon which they have that question.... But they also usually have something that you can try and relate it to something else, and... if I tried to type out an answer to a student’s question... you would lose that ability to tailor it to what that student knew and didn’t know and where they were coming from. (T7).

Not only was communicating with students online more challenging in helping them construct learning, but as the acts of speaking and listening were replaced by reading and writing, increased time was required. Academics needed “acknowledgement of that fact” (T9). The invisible, asynchronous environment made simple conversations time consuming, and complex communications not only time consuming, but also more susceptible to misunderstandings that were not recognised immediately, because academics could no longer see when a student had a “really quizzical look on their face” (T9).
How many times have you been buttonholed in the corridor…. All they wanted was just a quick snippet of information, you give it to them and that’s fine…. That same snippet of information takes you a lot longer online…. And then you have got students who have got quite complex questions…. And so [in person]… even with its convolution, its probably only taken a minute or two…. And yet that convolution online can actually be stretched over a couple of days…. emails go back and forwards… until the penny drops. (T9).

Being dislocated from the usual university structures and finding themselves in a space where preparation and teaching time were hidden, teaching and teaching spaces were invisible, and they could no longer ‘read’ students’ needs and respond to them in accustomed ways, was a challenge to academics. In response, many academics began to find ways to reshape their teaching practices and build new meanings for teaching and learning in the Internet environment.

RELOCATING TEACHING AND LEARNING

Academics described the critical importance of relocating and developing new understandings of time, place and relationship in the online environment. The following sub themes describe the ways in which teaching and learning were relocated.

Shifting from teaching to learning

Academics both shaped, and were shaped by, teaching on the Internet as they developed and taught courses. For some, having themselves previously been online students contributed to their understanding of the Internet environment. Some academics found their experiences with learning to teach online, as they grappled with the challenges of dislocation, led them to find opportunities and possibilities inherent in the technology.

Several academics identified an important step in teaching on the Internet was shifting their focus from their teaching activities to the students’ learning. The shift occurred in varying ways: through different materials and ways of using materials, through different understanding of time and its uses, or through different processes of interacting with students.

[Teaching on the Internet] has made me more resourceful. It has perhaps made me explore with greater discrimination, because I am looking for things that I can share with students rather than I can use personally for my classes, that I deliver. So I am always looking for things now that are useful for students rather than necessarily useful for me in the dissemination of my material. (T10).
Some academics reconstructed their teaching practices by specifically using the dislocation of time inherent in the Internet environment to relocate their teaching online in ways that provided new learning opportunities. One described how reconstructing time in terms of learning time rather than teaching time opened up possibilities for facilitating students’ learning.

Face-to-face teaching is constraining because I've only got so… little time, so little ways of getting the message across to them… so therefore it’s a lot more structured to make sure you do everything you want to do in the timeframe you have got. Whereas, because the Internet says to me there are no time constraints, I don't have to speak to a student within a 15-minute time constraint or a one-hour time constraint. The students have a lot more time to try and get the message out of the material. I can say to them, ‘look you are free to explore whatever you want to explore.’ (T1).

When Internet-based classes were structured for learning, there was a shift in the control of the process of interaction. While shifting control of learning to students had positive benefits in the online environment, academics needed to retain the responsibility for facilitating learning. As they sought to provide flexibility to different student groups to support their learning needs, it was clear why knowing the students was such an important issue for teachers online.

I see my role more as a facilitator [rather] than… having all the answers for them…. The other thing is recognising that there needs to be flexibility from a teaching point of view…. That not all the groups are the same…. so you need to maintain a certain degree of flexibility in the way that you approach it, but the outcomes that you want to achieve are the same… And that’s a skill that is hard to learn at the start when you are online. Because… you have got control in a lecture… you can give material in a way that you think works. You get some feedback from students at the end to see how it goes. In a tutorial there is a little bit more flexibility. But again you are there… you’ve got a lot more control. Whereas if you want to be… more open, with the live chats particularly, you need to have the ability and the trust in yourself that you can actually bring it back [to the learning outcome]. (T5).

While shifting to a learning focus was a desirable educational goal, academics noted that students were not always ready to either manage the technology, or the resultant responsibility of a more independent learning process. Academics identified that they needed to be mindful of this and plan courses accordingly to support students.
The other thing that I think is very important is the need for a structured, or a scaffolded, constructivist approach…. If we are dealing with adult learners they should be free to explore and to test areas that they are actually interested in, areas that are relevant to their learning and to their learning style. But what I’ve found is that if you take a purely constructivist approach with adult learners they tend to get rather anxious, and anxious learners don’t learn. So I’ve found that just… in the early stages it’s often handy to give the learners some structure. And then after that, after they are comfortable with it all, you can actually deconstruct that scaffold and let them go and they’re OK. (T9).

Preparing students for online learning

Academics reported that often students were ill-prepared for Internet learning. The very mixed cohorts that enter nursing mean that some students often did not have a strong background in technical skills with computers and the Internet.

Everybody talks these days about school kids having so much experience with the… Internet, and that’s true, but many of our students haven’t necessarily done their education in that kind of way. And in nursing we do have a lot of people such as enrolled nurses returning, and nurses who have been registered for several years returning who may or may not have computer skills. (T7).

However, knowing that students needed this kind of technical preparation, did not help resolve the debates over where the responsibility for this lay. Often these discussions centred on monetary and human resource issues. Academics, as the people in the system closest to the students, generally undertook to ensure that students were adequately prepared, either providing the service within their courses, or directing students towards help to develop the skills required.

There are two arguments going on concurrently in the school. One, we need to teach this because they don’t know it. Two we can’t teach it, we don’t get paid to teach it; we don’t have the money for it…. So is it a part of our curriculum or is it not a part of our curriculum? And that’s always a tension. But in the final analysis you have to do some of it or otherwise you can’t succeed from the very beginning… we just can’t afford not to teach it, we have to teach it. We have to do that remedial work. And we progress better and succeed better as teachers if we do that. (T14).

Given the nature of student cohorts in many nursing courses, it was important for academics to know students’ needs and prepare them, particularly in Internet-based courses,
for the technical requirements of the course. To ignore this need was, in the long run, detrimental to the nursing content of the course.

The focus of… nursing skills learning was actually a second priority to learning computer skills with this particular group of mature-aged nurses who had little to no exposure or experience with computers…. most of them had basic to nil computer skills and in their environment the closest thing they had to technical and computer learning support was their 10 year old children. [At the university] there is IT support, all of our computers are the latest and greatest, we are on broadband, quick delivery of information. So we were on a completely different planet to my group of students. (T16).

As universities increasingly made use of the technology to streamline their own administrative processes and procedures, they sometimes contributed to increased technical challenges to students. A lack of preparation for coping with technology’s infiltration into course administration, as well as delivery, impacted on students as they entered courses. One academic felt the need to guide the students through the administrative process as well as the course material. However, as with teaching online classes, numbers were a crucial factor in the ability of academics to facilitate students navigating the administration process.

I have also had to act as a conduit in this administration system. They feel quite ostracised and isolated in the processes of enrolment and student services. So I have openly told them to call me first, tell me the problem. I go and find the name and the direct extension of the person they need to speak to in regards to that problem. Email them back and navigate them through the system, because…when the university takes flak so do I, and so does my course, because I am wrapped up in the same wrapping paper. Personally I think that to sail them gently through the administration of the university is just as important…. [With] postgraduates it’s Ok because you have got 23 students, if it was 600 I would be working under different systems. (T16).

In programmes where there was a wider choice of elective courses (for example, postgraduate programmes) or students could chose their preferred mode of delivery (such as when courses were offered in both on-campus and Internet-based modes simultaneously), although preparation was needed, there was a motivation on the students’ part to overcome any barriers and challenges.

Because of the nature of online education… You tend to attract students who are motivated, who are willing to take on the challenge of learning online, who are typically resourceful…. They tend to be people who are interested in change, self-development, networking… so I think it appeals to different people for different reasons. And I
think the least priority they give, is to their technical ability to be able to use a computer and the Internet. I would say that last year maybe 80% of students who came online had never used the Internet before. (T5).

The impact on both students and academics when Internet courses were introduced to students who had little or no preparation for learning in this way, combined with no clear personal motivation for learning online, was somewhat different. While some students embraced the new way of learning, several academics reported students who lacked preparation found learning on the Internet a very stressful experience. Academics needed to spend considerable time on supporting these unprepared students through their early experiences.

When my current group of students first started their course, there was no idea that they were going to have to do this… Some… said ‘No, hang on, two years ago you didn't tell me I was going to do this, so this is a worry to me’. Next year’s group are going to have had twelve months preparation and the year group after that, from the start of the course it always was going to be that way… I think in that sense you won't have such extreme reactions to it. (T1).

The first thing… is the amount of support that the students need when things go onto the web… I think now I see less of that because the students I currently get now have been on the web for a couple of years. So they themselves have gained skills and they’ve also gained skills of where to go and who to talk to if there are computer problems. (T7).

Students acquired skills over time through repeated exposure to Internet courses during their programmes. Similarly, over time, academics became more experienced at knowing what kind of preparation was helpful to students for online learning. Ensuring students had the resources they needed and adequate time to ready themselves technically prior to the beginning of a course, proved to be helpful.

We try and… get the course materials out to students at least two weeks before the start of semester, including all their password, logon codes and things like that, so that they have the ability to get online… and test to make sure all their systems are fine … There’s a real barrier with them getting started and feeling comfortable with the technology… (T5).

However, teaching on the Internet involved ongoing technical demands. It was not sufficient to ensure that students were prepared for the technology in advance of the course,
constant attention to both the technology and the students’ ability to cope with it, were a feature of courses that were successful.

The environment lends itself quite well to be able to say that ‘I can’t participate because of a technical difficulty’. The aim of contacting students in week one and two is to get over those sorts of things. To ring a student on their mobile… and say OK if you can get into the chat room, I’ll meet you in there now, tell me what’s happening on your screen, let’s walk through it…. And that’s not a way of not trusting students, but it’s a way of making sure that students can get online…. At around week 6, I’ll call students again just to see how they are going and to touch base with them, and to see who perhaps is still feeling a little bit overwhelmed. (T5).

General preparation directed at whole groups of students was certainly useful in the academics’ estimation. This readied students for learning by ensuring they could access the technical environment in which learning would take place. However, for the students to actually learn in Internet environments, they often required guidance. To provide this in Internet-based courses where they had no contact in person with students, academics needed to find ways of knowing students on an individual basis, from which they could then respond to particular needs.

Knowing students and their needs

For many of the students and academics, the online world was unfamiliar territory. The online world can feel an unsafe place to be. Academics, particularly those who had themselves experienced online learning as a student, were very committed to creating safe environments for learning online.

A really key factor in terms of the success of Internet learning is- to be able to create an environment that is both academically challenging for students and safe. Feeling… a sense of community, that they feel they can say anything and that their colleagues will give a balanced response…. And I think that’s hard to actually achieve online. One of the ways that we do that is… I tell the students that it's important that I am able to create a safe chatroom for people to feel free to be able to discuss their ideas…. And giving people guidelines as to actually how to use the chatrooms a little bit more effectively. (T5).

Overcoming the problems of the academic’s invisibility was important in creating a safe environment, and building a relationship with students. Academics saw that when “the human-ness of normal pedagogy or institutional teaching is gone” it was the “odd occasion of human-ness that is important” (T16). Thus, academics placed great importance on
prioritising communication with online students in an effort to build student confidence in
the academic and the course. To this end, they created systems that simulated a ‘place’ for
online students and enabled them to be able to both contact academics, and gain timely
responses from them.

You need to be available to your students just as you would if they
were physically located on campus and wanted to knock on your door
and speak with you…. You can do that by saying I will preserve this
time… to take student [calls]…. One of the other features is… a
timetable showing all my commitments for the semester…. You have
to make the system a little bit transparent so that they can see some of
the things that you can see from your end…. know that on these days
you are not going to be able to talk to them…. Making yourself
available by giving a mobile number for chats… just lets students
know… that if they ring the phone they will actually get me. (T5)

I don’t have a message on my phone, it diverts to [the receptionist] so
I ensure that they speak to a person…. who knows where I am and
what I am doing, who will transfer that information and take a
message to which I respond…. they don’t need another machine to
deal with…. I can ring them straight back and say sorry, I was on the
phone, how can I help you?… it’s adding humanness. (T16).

As previously discussed, for academics, knowing students was a complex
combination of knowing the personal contextual factors impacting on individuals’ learning
and their specific learning needs. That understanding revolved around both verbal and non-
verbal communication. Whilst not an issue in an Internet-supported course, in an Internet-
based environment, reliant on written communication to a greater extent, academics had to
find new ways of building the relationships that allowed them to know students.

Email, supplemented by telephone, appeared to be primary tools for academics to get
to know students personally. Rudimentary by the standards of face-to-face communication,
email nonetheless enabled academics to start building a shared history with students.
Through this, academics were able to gain insight into students’ needs and understand their
individual contexts.

The students communicate quite well in email, and if they have got a
problem in getting their work submitted on time they’ll email me and
talk to me. So I get to know some of their family and their work
situations from the emails... It's through the email... that I develop a
more personal relationship with the students and that gives me better
insight into their answers on the forum. (T3).
However, some taken-for-granted aspects of face-to-face communication no longer pertained between academics and students. When communication was written and the only cues to meaning consisted of what was ‘on the screen,’ academics were challenged to pay attention to the intricacies of communicating with the students and to find ways of providing new markers of intention and meaning.

It comes back to the way in which you communicate within the technology, just the tone of an email message for example. Then you try and put some sort of nuance into the email. But it also is about how quickly you respond… if you don’t respond fairly quickly… say within 24 hours. If you start leaving it for three days, or four days… they really start getting a bit curt with their responses… It's like building a relationship face-to-face, a lot has to do with how you conduct yourself, how you communicate with the students. (T9).

Students tended to email academics and initiate communication only when they had a specific need, such as requesting an extension for an assessment item. Academics in Internet-based courses on the other hand, spent considerable time devising ways to help them know, and gain the confidence of, the students.

It takes me a little bit of time to get to know them individually… the people I have spoken a lot with in the application process it's easier to recognise who they are. But it is certainly important to go out of your way and make sure you have contacted every person…. Creating a spreadsheet with everyone’s details and then I’ll copy and paste their picture… into it, so I’ve got a visual image of who the person is and where they are working. It's those sorts of things that make it work a little bit easier. So I feel as though I am getting their confidence and learning to know them, certainly by the week six mark, a lot better. (T5).

The ability to phone, regular email contact, and things like the discussion board… are what makes the difference…. interactivity with a human being rather than interactivity with the computer itself where the computer says well done. (T16).

**Knowing students’ learning abilities**

Academics were somewhat divided in their reports of how difficult it was to know students learning abilities and needs in the online environment. Some academics thought students could “hide” (T1) quite readily, while others thought it easier to determine students’ learning progress online. Highly evolved Internet-based courses that used communication technology (such as discussion groups or chat rooms) that increased students’ visibility, albeit through written communication, fared better with respect to academics determining
learning ability and needs, than those that were less developed. If a course relied mainly on the provision of information and lacked the more interactive forms of online communication, academics found it more difficult to ascertain the students’ progress.

It is probably a little bit harder over the Internet to make sure students are encouraged to be deep learners rather than surface learners. Students can hide... they can hide their surface learning, because you don't see it, whereas in the class you can see those who are obviously going to be surface learners because their answers are giving them away, whereas on the Internet, its harder to pick up the difference between the surface learners and the deep learners, and its harder to try and convert the surface learners to deep learning, because they can hide. (T1).

In contrast, when students had to contribute early in the course (rather than just accessing materials to read) this assisted academics in knowing the individual students, learning abilities early.

Online is... so dependent on writing skills that it comes out quite quickly. The live chats that we run are a lot more informal... but there are formal writing activities for the discussion threads and the weekly activities... (T5).

If there was a continued demand for participation, academics were able to respond individually to students, challenge them in a way that was specific to their learning, and assist them to deepen their learning.

When somebody types ‘I agree’ your immediate response is ‘Oh they are taking the easy approach’.... I could spend the night writing ‘I agree’... and not really contribute to the discussion. It's then a case of looking for patterns within your particular students. So if that’s happening a lot, you might say to that person, why do you agree? What is it about? (T5).

As academics found ways of understanding students’ learning needs in the Internet environment they became more familiar with guiding students from whom they were separated.

**Guiding students**

With Internet pedagogy only in an emergent stage, students often lacked the background knowledge to be confident in how to learn this way. One strategy that several academics used to engage beginning students with the online component of Internet-
supported courses was using some class time when they were together to model ways of using the Internet for learning.

The first couple of years… the students weren’t used to having the web. And what I did was…. in a lecture theatre that was hooked up… I could demonstrate the stuff to the students and… once they saw the opportunities in terms of getting lecture notes and doing the quizzes, because they were… formative evaluations really, they all wanted to do it. (T7).

The way in class I would go online to show them different sites gave them quite a bit of freedom to think about possibilities. (T10).

Academic modelling was not the only means of supporting students. Peers were also an important source of both learning and encouragement that academics harnessed, by sharing [with the student’s permission] learners’ work with their student peers.

They were well into sharing and discussing, and then what I would frequently do was take a model answer from a student… and paste it on the general discussion board and say ‘here is a terrific example of an innovative, creative student who’s sharing. This is the level at which I expect interaction.’ (T10).

For academics in Internet-based courses where they were dislocated from, and invisible to their students, and separated from them across time, the power of spontaneity that existed in the face-to-face classroom was lost, and academics had to compensate by preparing the learning context in a different way with an emphasis on guidance and structure that had clear learning outcomes.

It’s… asynchronous rather than synchronous... So I think you need to plan it better…. the spontaneity in the face-to-face encounter is very powerful… the lack of that means that you really have to have thought it out well ahead… in a structured way online…. as to where you want them to end up. That sounds contradictory… [but] you can respond quickly to a changing situation… in a face-to-face encounter… as opposed to the asynchronous environment that is online, where you don’t have the power of that spontaneity. (T9).

Despite feeling that the spontaneity generated when learners are physically present was lost, academics’ accounts of how they organised online communication showed that they tried to be responsive to students as a group, despite the asynchronous nature of much of the contact.

I see the online teacher as the ‘guide on the side’ rather than the ‘sage on the stage’. I think it is a matter of being present in … for example,
online tutorials and just making sure that they’re running well and that the right questions are being asked and if they are not, it's a matter of just guiding and very gently steering the discussion within… discussion groups or online tutorials. (T9).

There were several ways in which academics offered guidance to students. Self-directedness in this new learning environment was not automatic for all students. When students lacked experience and competence with group communication online, academics placed importance on providing comprehensive guidelines and a structure for contributions that enabled students to participate academically at an appropriate level, unhindered by the technicalities of participating. Their strategies had a twofold effect. They not only enabled each student to contribute effectively to group discussion, thereby increasing collaborative learning, but also instituted a structure that exploited the possibilities of the medium for archiving and information retrieval. This structure increased the usefulness of the discussion for subsequent individual student learning.

It's important that they get some guidelines about how to do [online communication]. So that’s the reason why I’m putting in some effort in looking at netiquette, and how to structure discussion thread postings. They are given as much opportunity to be able to participate at a good level at the start because they know what’s expected… So the structure is really important for them, it enables people to follow it, and when we do things like take transcripts of the chat and make them available, if you can see against my name who I am responding to, you can look up at their last message and go well OK that’s where that fits in. You could actually get a pen and start to link some of the ideas as you go along if you wanted to do it that way. (T5).

As with academics who felt unsure what long silences between student communications in an asynchronous environment indicated, academics in synchronous chatrooms, also found they lacked the cues to determine what a “long pause” (T5) meant. In response to this they needed to develop strategies to overcome the inability of both academics and students to know what a pause indicated in a discussion. Academics identified explicit and structured communication processes surmounted this challenge.

The long pause is quite a tense moment when you are teaching online. It can mean students are thinking, or it can mean the whole system has just dived and crashed on you. I think the best way to get around that is to actually be quite directive in terms of your questioning. So you might put the names of two students out of a group of four in and say [A], [B], what is [asks question]? Then you expect those people to respond… it means that two of the people know they need to be typing a response, and two of them know that they are waiting for
something to happen. So it's not four people sitting there thinking someone else will write this…. You need to be quite structured in how you tell students to run the chat. (T5).

Several academics also shared guidelines for appropriately managing relevant resources in their courses. Having identified that unfettered access to a vast array of information was potentially available to students, they sought a balance between students constructing their own learning, and academics guiding them with regard to the purposes of the course.

If you ask a student to go to another web… resource… tell them what it is you want them to do. Because some of the web sites that they'll go into… are massive sites and… if you don't give them direction, it's like giving them a 1000 page textbook and saying ‘well have a read of this’…so I've learned now [to write]… ‘when you go to this website… that’s the part I want you to look at. If you wish to go through the rest of it out of interest, that’s a great thing to do. (T2).

Because the point of greatest flexibility is with the end user, the Internet is a tool more suited to teachers engaging students with learning, rather than teaching ‘to’ them. Some academics took an approach to guiding students that used the power of hypertext to provide flexibility in student learning. By making hypertext links to material, students were able to use as little, or as much, guidance as they required according to their own learning needs.

They like it if… for instance, in your text you have got ‘ensure that you have reviewed [another topic]’ and that is underlined with the hyperlink behind it, and you just click on that and… there in front of you is the [information] have a look, and then backspace back into their learning. So having hyperlinks built in, so they might be sitting there… and think ‘Oh I had better go and look at this’ and then come back, so there is a way that they can do both at the same time. (T16).

In a learning-focused environment, it was inappropriate for guidance to stay only in the hands of the academics. Students needed to develop the skills to be able to guide their own learning. Some academics provided formative means for students to be able to assess their own progress.

The combination of weekly activities for this particular subject lets them see how they are going in terms of whether they are actually getting the ideas. (T5).
These accounts show how guiding students online, had both technical and academic purposes. The source of the guidance could arise from the academic, the student, their peers, or the technology itself. Guiding students as a group by the provision of measures such as those above, was a specific part of the way in which academics took responsibility for facilitating learning of the group in general. Academics in Internet-based courses often took this guidance to a greater depth, shaping the online community and discriminating between individuals’ needs by the way they interacted, and setting up the systems for interaction among students.

**Shaping an online learning community**

Academics in Internet-based courses found ongoing communication in the group enabled them to know students and also encouraged collaborative learning. Discussion boards were often employed by academics as a means to bring students together in their learning.

I like to encourage students more to use the discussion boards than to use private email. Because the question they have… if it's not personal, and it's about topics, then other students can benefit from reading it too. (T5).

Exchange [between different locations] of how they deal with practice issues is very important and that is starting to evolve in the discussion boards…. To realise that what they do in their environment was not the universal practice. (T16).

A community has an identity of its own. This identity, however, is derived from those that constitute the community. Promoting effective collaborative learning was an activity that academics had to fit to the particular group. It was essential that the academic knew the students and could gauge what they needed as individuals and as a group. Students’ experience and confidence with online learning, and the degree to which students were familiar with each other in the group, and the academic themselves, all influenced discussions. Academics not only used discussion for the transmission of information but, by knowing students’ individual needs, they engaged them in learning through both encouraging and challenging individuals.

I did [respond to everybody]. But the numbers weren’t large… if you had a really large class that could be difficult. But I did, because… for all of them it was their first time in studying online, so I wanted… them to feel that I was interested in what they had to say…. That I was following their thinking and… in some cases I was really excited in
seeing how they were applying this new theoretical stuff that they were looking at to their practice. And giving them positive feedback and encouragement... But at other times I was there to challenge them.... Where maybe with one particular topic they might take a fairly narrow kind of view on something. And then I would write back and say ‘well that’s very reasonable but have you considered this and this and this’.... or sometimes they’d say ‘I can’t seem to find anything on whatever’ and I’d write back and say ‘so and so has done a study on such and such and you might like to hunt that out’. (T12).

As the collaborative aspects of learning emerged, academics were sometimes able to step back from group discussions, letting students learn from each other, and promoting learner independence, while the archived nature of the discussion meant the teacher could still step back in and help students individually.

Initially when I set it up I wondered whether I should go in there weekly and participate. But then I realised that there was much more benefit from letting them go and talk to each other without me because of the hierarchical nature of my position, that I would somehow have the right answer for this question.... Now I step back. I go back in at the end of semester and review all of the entries and respond individually to each entry with comments. (T16).

They use the discussion threads quite well... after the live chat... picking each other’s brains about what is meant by a particular aspect. And so they use each other as a learning resource. They might ask me a question openly in the discussion thread as well.... what was really meant by this, I didn’t seem to quite get it? One of the other strategies I use if somebody asks a question is to ask the group.... And quite often someone within the group will actually have an idea or be in the right direction of being able to know it. (T5).

Online communication was a curious combination of a process that is dislocated from time, but also captures time, where both past and present knowledge and learning can be held and used to further student’s learning though challenging their knowledge, and through students’ own reflection on their learning. In postgraduate courses particularly, this increased the critical nature of the interactions.

Some of my... colleagues thought it would be like an email chat room, frivolous and not academic enough for university... In fact the opposite is true.... because of the peer review.... They were at an extraordinarily high level.... And there was debate... If someone put in an entry that was incorrect... they would come in and correct them, ‘I don’t agree with [X] I think this is the way to go with this patient’, and [X] would come back and say ‘actually now that I have seen everyone else’s entries I now want to take back everything I have said in the first entry and agree that...’ and so you would see this progress
in reasoning.... They just discussed it themselves until they came to a consensus...So I stood back from that and watched it all happen. And then I thought, now I have got a unique thing happening here with nurses who normally study in isolation or in smaller groups interacting in a big way with each other. They have problem-solving skills, but developing those, getting confidence to give their opinion. (T16).

Academics also found the time that discussion boards allowed them for research and reflection, helpful in preparing themselves for their interactions with learners. This kind of academic participation shows how these forums were useful in shaping a community of learners, of which the teacher was a part, rather than a ‘deliverer’ of information.

When it's online, if the students found something, some obscure something or other, you’ve got a chance to go and find it for yourself and have a read and a think (T12).

A different view was one that both accepted the possibilities of shaping and supporting a small and tightly focused community online, but raised issues about the limitations of the online community in the larger picture of scholarly community.

People have said to me ‘it should be easy to establish an academic community online’...And that is true, but there’s something about being on campus.... you can’t experience [online].... That doesn’t really have any bearing on your learning, that has a bearing on your attitude about the place.... that comes back to that whole concept of.... scholarship and [being] part of an intellectual community... So... although it's touted that online learning should be a really rich environment, its rich in some respects, but its bereft in... those attitudinal things. Whereas.... there is something about being in the place where you can actually feel that sense of... enthusiasm you get when you have got an intellectual community happening, and you have got debate going on and... exchange of ideas. It does happen online, but it is just different. (T9).

The notion of a scholarly community online is predicated, as is a face-to-face one, on the development of thinking. Certainly it is built on the thoughts produced, but also on the thinking skills of those involved in the group. Online environments markedly changed the ways in which students developed thinking skills and the opportunities for academics to guide students learning these skills.

**Writing speaking, writing thinking**

The lack of face-to-face communication has often been regarded as a weakness of the Internet. Some academics, however, recognised this was a limitation, but also saw a new
opportunity to foster different academic skills using the communication technology available.

One of the restrictions is that we can’t necessarily promote their oral skills, their speaking, their presentation skills as well as face-to-face teaching. But we can certainly hone in on their writing skills…. if academic writing and critical thought are fairly high up on your list of what you hope students will be able to demonstrate as postgraduates then I think we are geared quite well to having them be able to do that…. Online learning lends itself to being able to pick up some of those academic writing skills, the ability to form a good argument quite early. (T5).

These academics used written communication as an opportunity to focus on developing students’ thinking by providing activities where reading, writing, and thinking were an integrated learning experience.

Students get a lot of satisfaction when they can see in the feedback and in their marks that their writing skills, their ability to form an argument and their ability to construct, even basic paragraphs, and to structure their ideas, is actually improving their study technique. So they can go through the process of reading and synthesising information in a critical way, and then being able to articulate their ideas quite well in a written form. And I think that is a great strength of online writing… because they actually have to transform their ideas from thought into the written word more often in an online environment perhaps than in a face-to-face class. (T5).

When online discussion occurred repeatedly during a course, there was scope for the academic to use it flexibly for different learning purposes. Although students usually had some formal written work to complete, the opportunity to include less formal writing in courses allowed academics to encourage students to synthesise and apply knowledge to practice through reading, writing and thinking.

They are expected to demonstrate that they understand the concepts or that they can apply it to their own practice…. I say in nearly every activity keep your answers brief…. But you can see that a lot of thought has gone in to this…. I think when they do the… academic writing, they tend to want to regurgitate more from the text, whereas … a lot of the activities that I structure they can’t…. They might take key points but then they have got to put them in their own practice…. They actually have to think through the answer. (T3).

One academic perceived a difference in certain students’ contributions on the Internet where thoughts were disembodied from the person sharing them. The physical separation of
students from each other and academics, combined with the written medium encouraged
discussion and evaluation of ideas separated from judgements about the thinker.

Because they… don’t have that shame factor of saying something that
is maybe not quite right in front of a group, they can type it but they
are not saying it verbally. You know, nobody is seeing them when
they are writing this down. And… I actually find the students are
more open… than what they would be in class. (T3).

Another academic also noticed qualitative differences in written discussion.

Online it's about the quality of the writing, it's about the reasons
behind why they choose to say things and you tend to explore the
assumptions and rationales behind things a little bit more. The other
night when these students got in to this debate their ideas were coming
pretty quickly, but the other students are starting to ask their
colleagues what makes you say that? why would you see things that
way? How come you can’t see it from this perspective?… these
students… are starting to really internalise what it is to be critical, to
question ideas and they are willing to have that debate. (T5).

The academics too had to adapt to writing their thinking when they could no longer
speak to students in person. A key area, in which they transformed their teaching practices,
was feedback to students about assessment items. Academics in Internet-based courses
included not only the information about content or style that guided students’ development
of thinking and writing, but also individual information that encouraged each student.

In online learning, I give a lot more written feedback than you
probably would when marking assignments when you know you can
hand it to the person personally and say ‘You know I think this would
be good if you did this or that’…. So you have to make sure that there
is lots of information written down. And even anecdotal things that
are not necessarily part of the marking. (T16).

One found ways to not only overcome the lack of spoken communication, but used
the technology to improve the quality of their feedback. Software features allowed the
academic to make the feedback more specific to each student, using both individual
comments and those generated for group feedback. This academic noted that this use of the
technology increased both the depth of feedback and the context-bound nature of the
comments in a way that could make a link with the students thinking and writing when they
read it.

I had a commitment to students to give them as full amount of
formative feedback as I possibly could…. I found when I used to mark
assignments by hand, you know, just tick, tick, tick…. Whereas, when you do them online, you can actually set up an autotext…. within any set assignment there are certain things that all students eventually will muck up. And so you can have a set response to that. Like ‘you didn’t reference this very well, have you thought about doing this, this, and this?’ …. So you can actually set up a library of fixed responses and to put those into an assignment is just click, click… and you have put in a whole paragraph of feedback… that was contextualised. I’d highlight the text and put a comment in and they hold their mouse over the highlighted text…. And they are actually getting the feedback at the point in the essay where it's ‘Ok I can see where that fits in.’ (T9).

Relocating classroom teaching

In a complex system such as the university, changes in any one part of the system often affected other parts of the system. For courses offered simultaneously in both classroom and online environments, changes to the classroom course in some instances were stimulated by the online course, rather than the other way around. This was typically contrary to what the academic expected.

That was one of the quality things that was taken into account when I was preparing the course. I had to demonstrate how parallel the two courses would be for both groups of students, so that neither group would be disadvantaged. So in fact what I had to do was change what I was doing on-campus. Rather than having to make online fit with what I did on-campus, I changed the on campus stuff to fit the online. (T12).

Some academics in Internet-supported courses felt a similar need to change both online and classroom aspects of the course to provide an integrated learning experience.

[The online material] can force you to re-visualise your old materials all over again and the mere fact that you are augmenting traditional [on-campus class] materials means that you might have to rewrite your traditional materials…. you have to know where one stops and the other one continues on…. You don’t want to have duplication between the two of them. And so then you have got to separate them …change the way you normally think about the way you prepare materials. (T14).

This relocation of classroom teaching however, was not always straightforward. Teaching in Internet environments lacks an established history, shared between academics and students, of how they teach and learn in this new context. As academics were learning about teaching online, they were doing so with students who also lacked established understandings of learning online. This, combined with the variability of what constituted an
Internet-supported environment in any given course, revealed student behaviours that academics had not previously encountered in the classroom. The challenges this raised in relation to managing Internet-supported courses where the Internet confused the expectations of both academic and students, is described by one academic who had to find ways to manage this.

I have just taught a subject for 300 people... it has an online presence, but it also has class work. Now... the flexibility it offers students, inherent in that is a major problem for me as a lecturer... The problem for me... is that I find that there are at least three groups of students in that class..., students who are 'attenders'... 95% of the time. And they... know what is going on. Then there is a group...who come in and out of the lectures. Because they think 'Oh well it's online. If I miss something it is not a big deal’... those students they are getting the majority of information but they may be missing out on key information... Then there are... the group who think online means you don’t really have to come to class.... they are the students who really don’t know what is going on... Because they are not getting the peer interaction that classroom offers.... And I’ve found it an incredible hassle, because I was repeating so much information outside of class to those [latter] two groups. I was getting personal emails, phone calls, people at my door that were in those groups. (T10).

For some academics, in Internet-supported courses that provided information but little online communication, there was less of an effect on the classroom. To overcome the differences in student groups within the class these academics treated the face-to-face class as though they had no access to the web.

I still had the same amount of lecture time. And I mostly found the students would print the notes and some may have read them and others would not. So it probably would save them writing notes. Having said that, because not everybody would have printed them, you had to make sure that you weren’t talking so quickly or anything like that, so the students didn’t have a chance to write things down if they hadn’t printed the notes. But for the most part I don’t think [the classroom] has really changed. (T6).

**Relocating Clinical partnerships**

Another aspect of nursing education that was relocated, through the effects of Internet technologies, was the relationship between clinical practice and academia. Many academics placed great importance on bringing clinical practice to Internet courses. They specifically joined in clinical partnerships to make Internet based/supported courses as clinically relevant as possible.
One [area of the budget] was money to bring people in from the clinical area and for us to go out to clinical to make sure they were involved in the project. And…we got all the clinical people involved in this. And we got a clinical person to come in and review it all for us to make sure it was clinically OK. (T8).

Reciprocally, clinical partners wanted to be involved, realising that this is fertile ground for them also, and for the quality of teaching nursing to both the next generation of nurses and the current one.

One of the other positives that have come out of it, which we didn’t foresee was that the clinical nurses at the hospitals have also loved it. And we have had some of the Directors of Nursing approach us and want to buy the material for their grad year programme people or their return to work practice nurses. (T8).

Beyond an involvement in course preparation, some academics found closer links between the school of nursing and practice were promoted by online access into course sites from the clinical agencies. Students and clinicians were not only linked to, and supported by, the academic environment while students were on clinical placement, but clinical agencies became more closely involved in student learning.

We’ve put online access for students on clinical … If their clinical teacher said to them, ‘what were you taught about looking after someone with renal failure?’ the student would be able to say, ‘I can actually show you’ and take them right in, they could look up their clinical objectives; they could look up anything that they wanted to…. make links, look up an article, they have got the full support potentially on clinical… The students say that several of the clinical supervisors have actually asked the students to show them what is online…. So we actually seem to be talking to each other. The academic gap seems to have been cleared…. and we’ve been getting industry… involved in the online and we’ve seen the willingness of industry to participate in the ongoing curriculum development and the ongoing online processes… We have got no negative criticisms from industry in relation to the online. Support, acknowledgement that there are things that need to be got right, but nothing that says… this is bad and you shouldn’t be doing it. (T6).

**Evaluating online courses**

At this point in the development of Internet teaching, many academics found it difficult to measure how effective it was, or describe ways of determining this, particularly in Internet-supported courses. Learning is always determined by multiple influences, but the difficulty was compounded where courses were offered in mixed modes, and the influence of
the Internet on learning could not be disentangled from the contribution of face-to-face teaching. In Internet-based courses the difficulty was extricating the course content itself from the Internet effects, to evaluate them.

When you make the online stuff so much an integral component of the way you deliver the curriculum it's hard to separate that from the course. The course is an online course, so it's the course you are evaluating as much as the online way of doing it. (T13).

Academics found students reticent about giving them the kinds of feedback they needed to measure the effectiveness of the new medium and needed to use other ways of gauging effectiveness.

You don't get a lot of feedback from students…. it is very difficult to get any sense from the students as to how effective the material is…. We need to do a lot more experimentation, cause and effect in terms of whether certain types of exercise are more effective than other types of exercise…. as measured against achievement. (T14).

Some of the indicators of teaching effectiveness described were those academics used with face-to-face teaching, but still saw them as applicable to Internet teaching. The academics usually employed measures related to student learning to determine their effectiveness, such as increased enrolments as a measure of satisfaction of students, and clinical agencies that asked for courses to be delivered to their students.

The word of mouth transfer of information about the course, that is getting new students…. Its my opinion it's what you do that will win you the favours, rather than what you say you do. If you… deliver the goods…. I judge that by the increasing number of students I am getting each year. (T16).

The other source of feedback…. is our industry partners. We ask our employers what sort of nurses are they? (T13).

Objective measurements such as assessment item results, although they did not signify a clear causal relationship between online effectiveness and student learning, still had a place in how academics determined effectiveness.

How they do in the exams, how they feel about the exams is a fairly old world way of looking at it. But I think they are way of tracking. If they hadn’t been able to process the information online, I don’t think they would be performing well. (T16).
The ability to withdraw from active participation but still watch the progression of discussions and students participation was more specifically linked to Internet-based environments. It was the Internet’s capacity to capture and archive discussion that allowed academics to use this as a measure of effectiveness.

I think one of the easiest ways to know that you are being effective online is to actually withdraw… put a little bit of a distance between yourself and the students and open up topics, but not to actually lead the topics yourself and to see how the discussion develops. And I had that experience with one of my groups where… four students in the chat group… ended up getting into a debate…. Which showed a lot of maturity about the knowledge that they had in terms of the subject and they drew a lot from the materials that they had used in the previous weeks…. So these students were starting to have a discussion themselves about it, that didn’t have to necessarily be led or facilitated by myself. And I think that is a great way of being able to determine how well people are going. (T5).

When we see the students’ development over the course of each subject. When we see the things that they write in essays at the end of semesters and it works both ways, sometimes you read the things they put into computer conferences and you cringe. They just didn’t get it at all. (T13).

One benefit of online discussion was the way it lent itself to an ongoing, fluid appraisal of effectiveness that could be negotiated with students. With the increased writing and collaboration of students in online discussions, there were ongoing opportunities for the academic to adapt their teaching to the needs of different groups.

I do seek the feedback from the students about how effective it has been. At different times I have asked them how much participation they want from me in the computer conferences. Because I was concerned for a while that… I would watch what was going on and then I would throw in my comment to a computer conference, and I would stop a thread of discussion when I put my two bobs worth in. And it would either stop there or it would change. Because it was like I was the authority and I told them what the real issues were and so they didn’t have to discuss it anymore…. That hasn’t happened so much recently. In fact, probably quite the opposite, sometimes you throw something in there and the students appear to ignore it and keep carrying on with their own discussions. And OK, they didn’t really need that one. (T13).

Some academics reported that evaluation of online courses needed to also be carried out on a wider scale. While many resources and much effort had been expended on the
implementation of courses, academic participants identified there was little formal
evaluation undertaken at a programme or school level.

I think our whole concept of education is changing through the use of
technology…. there is probably not enough formal evaluation of the
technologies we use… what works, what doesn’t work. It's ad hoc…..
We’ve got a formal programme here to introduce the [web platform]…. I would have thought that they would have come up with
the evaluation framework as part of that granting system…. We are
actually trying to work through it now as to how we are going to
evaluate this stuff. I thought it was a bit late actually. (T14).

Given the enormous impact on academic life that the introduction of Internet
technology has, academics were concerned that moving courses online has yet to be
evaluated systematically.

My worry actually is that we will go to all this expense and do all this
and then somebody will do a bit of evaluation and find that it doesn’t
work and then we have wasted a lot of time and money…. These
things are taken on without evaluation. (T14).

However, it was not entirely clear from academics accounts, where the responsibility
for this should lie, whether it should be at multiple levels, and who should carry out the
evaluation. Given that academics feel they are novices at teaching in this way, some looked
for a person or group outside the school to supply expertise, be responsible for evaluation
standards and to give guidance.

Who's evaluating the web, and I don't mean the students, give them a
piece of paper and evaluate the web subject or a question about the
subject. But who in this university is auditing the standard of web
subjects?…. The university needs to have a person or a group who
actually screens these, to see that they are all coming up to a standard
that the university believes should be of their web product…. There is
no standard…. what's available to say…. these are the things you
should strive for. (T2).

**Equity and costs**

Several academics reported concerns about equity and costs in online learning. They
perceived the technology demands of Internet learning environments brought financial
demands for all students that had previously not existed. General costs of entering courses
increased with the technology demand, but specific ongoing costs also increased. Costs that
were previously borne by the university became the student’s responsibility.
Its not a cheap option but... at faculty level they often don't have to worry about that sort of thing, because often for big implementations like Web CT or Blackboard or whatever, a lot of those costs are just picked up at the university level. What they do see though is a cost shifting to the student. I know with a lot of people who put their lectures onto the web..., previously they might have been expected to print off... a book of readings. That isn't happening any more..., The student has to cop the cost of it. (T9).

One of the big issues now is the shifting of costs. We used to give them lots of things, give them handouts and so forth. Well the students don't like printing it out themselves. It costs them money. Printers cost money, printer cartridges cost money. If they do it at the university, it costs you probably more money than doing it at home. Because the usual standard charge is so many cents a page. And students are poor..., So they are not willing to spend their money on printing. So shifting costs is a very big issue. (T14).

The means of communication also increased inequity between students, where those who were already disadvantaged by geography in terms of access to learning, now had to pay more than those with easier access.

I've got students in the back of the state and other states... they are in remote zones, where it's STD calling to get on the Internet. (T2)

You can't wait on the line at a dollar a minute for an STD call to the help desk either. But I haven't seen the university bring up the 1800 number for remote off-campus student IT support. (T16).

Because the technology lay between them and the students, academics were left powerless to alter this situation. Some felt their “teaching value” (T2) was compromised where before they had felt able to provide equally for all students irrespective of financial situation.

I can teach a student in a class who is on social security and I can still give them the same teaching value as someone who drove to school in a Mercedes Benz. Because... it's an interaction between us as people. When we put it all on the web we are assuming that they can get into the learning centre if they don't have a computer, or that they've got a computer at home that has a drive that will function with the software required to make these things work, that they can afford the Internet downloading time. You see there is a social aspect to it..., It's another aspect that they don't seem to really address. (T2).
Another academic raised the point that many students are possibly unaware prior to entry into a course or programme, of the university’s technology expectation and it's consequent outlay.

I think what online raises are equity issues where… it is our expectation… now you don’t see anywhere on a nursing brochure where it says that an expectation of the course is that you have a Pentium 3 computer in order to facilitate online materials. We’d all be doing that if we were honest about what students need to come and do our programme. And none of them would when they looked at that, would they? (T10)

These data illustrate the continuing evolution of structures and practices and the resultant rewards, challenges and issues as the Internet learning environment becomes more widespread in nursing education.

**SUMMARY**

This chapter has presented the findings from the survey of academics who were course coordinators, and from the interviews with academics who taught in Internet-based or Internet-supported courses. The findings of the survey provided a snapshot of the ways in which the Internet was being integrated into nursing education in Australia. The sample obtained and the response rate of the questionnaire, in conjunction with the actual information elicited, emphasised the early stage of the dissemination of Internet technology at the time of this survey. Consistent with the emergent state of the educational technology, these data revealed diversity in the nature of Internet learning environments in nursing. These findings provided information about the structure and processes of Internet-based and Internet supported courses that serves as a context for the subsequent descriptions of the academics’ and students’ interview data. There was a consistent finding within the survey of variation in Internet courses that carried through into the interview findings.

The second section of this chapter presented academics experiences and perceptions of teaching and learning in Internet environments. These findings were described through themes and sub themes that traced the construction of teaching practices and learning environments in Internet courses. In their descriptions of the process of moving online, academics identified some of the decision-making processes that led to courses embracing Internet technology.

The theme of learning to teach on the Internet stressed the importance of recognising that even experienced academics are novices in teaching online. The paradox of visibility and invisibility in teaching and learning in Internet courses was exposed in the academics’
descriptions of both learning to teach online, and the dislocation of their teaching from the university system to which they were accustomed, and which was itself accustomed to the way academics have traditionally taught.

In describing relocating to the new world of Internet teaching and learning, the academics’ accounts encompassed an understanding of their shift in focus from teaching to learning. This final theme described how, amid the challenges and concerns of using the Internet, academics were relocating their teaching practices and developing new understandings of time, place and relationships through which they were constructing an environment that was safe, and used the Internet technology to promote both individual and collaborative learning.

This chapter has begun to construct an understanding of teaching and learning in Internet environments. The view presented was that from ‘behind the screens.’ The next chapter presents the findings from the in-depth interviews with students. The accounts from those ‘in front of the screens’ further contributes to revealing the varied dimensions of Internet teaching and learning in nursing.
CHAPTER SIX

IN FRONT OF THE SCREENS - STUDENTS’ CONSTRUCTIONS OF LEARNING ON THE INTERNET

INTRODUCTION

Chapter six identifies the themes and sub themes arising from the students’ data. Some themes are unique to learning in the online environment. Other themes described in this chapter, while recognizable from previous understandings of learning in nursing, identify the ways in which the online context alters the earlier conceptions of learning. In the data, many students drew comparisons between face-to-face learning and online learning. In these comparisons, students demonstrated how they were using their previous understandings of learning to comprehend the online learning environment. In describing what they did when learning online, their difficulties and their rewards, what was effective and what was not, students explained the ways online technology compelled them to reshape their expectations of, and approaches to, learning.

The findings presented in this chapter are organised to reflect the students’ views of the online learning environment. Different aspects of these themes were more or less important to different students in this study. The chapter is not organised in terms of the importance of various issues to the students learning, but rather, traces the progression of students’ encounters with online learning. Within each theme the sub themes are intended to capture the various nuances that emerged from the students’ experiences which, taken together, constituted the theme.

Accessing is the first theme described. This theme examines the students’ encounters with online technology that were necessary before they even began to learn nursing content within the environment. This theme encompasses several sub themes that describe the students’ experiences of various aspects involved in connecting to the online learning environment. These are: Accessing technologies; Accessing information; Accessing institutional support; and Accessing peer support.

The second section explores the theme of Dislocating learning. This theme identifies students’ experiences of being dislocated from the face-to-face learning environment with
which they were familiar. This theme is described through the following sub themes: Dislocating time and place; Altering workload; Separating learners and teachers; Talking in writing; Questioning in writing; The lost moment and Becoming exposed.

The theme of Relocating learning is described in section three. The transformation of both individual and group thinking and learning in the online environment is identified in the sub themes of Becoming part of an online learning community; Writing thinking and Individualising learning.

The final student theme, Constructing understanding is described through the sub themes Shaping understanding; Challenging understanding; Seeking guidance; Learning nursing, and Accommodating the teachers' view. Following on from the individual and social aspects of learning in the previous theme, this final theme describes how students construct their understandings in the Internet environment.

The final section of this chapter provides a summary of the findings from the students’ interviews.

ACCESSING

Accessing the online learning environment was the first step for students in learning online. Considered from the students’ point of view, they needed to successfully negotiate a series of connections to access and use the online learning environment. Accessing was an important first step to be taken each time they sat in front of their computer screen for online learning. For some students, accessing became automatic or barely noticeable. However, even when access became automatic, there remained some unpredictable threats to accessing the online environment, such as the availability of servers and access to specific sites. Tracing the progression of steps required by the student to connect to the online learning environment, the following sub themes address the complexities of accessing encountered by learners in this study.

Accessing the technology

Several students in this study talked about the problems of accessing and using computers on site in their universities. Some no longer bothered to go and use the university computers, because of the time lost waiting to access a computer.

I never use it at uni because you can’t get on a computer here… you have to wait around and try and get a computer and you might have to come in later on at night to try and get on, which isn’t always practical. (S5).
I usually did it at home...only because there is such a shortage of computers. I really think there is a need for more computers. When you consider how many students are at this university... the lines are just going back there waiting and you look and think you either come in here really early, like 7am or come in here late at night, or just don’t bother, basically. (S7).

The problem of access to computers was compounded for those students with some face-to-face classes and other classes online. A combination of these locations made it more difficult for some students to use time efficiently for learning. Few participants were involved solely in Internet-based courses. For some, their programmes were a mixture of Internet-based and Internet-supported courses, for others, all courses were Internet-supported. Computer access was, therefore, an issue, especially where there were gaps in class timetabling that they could have used for study opportunities.

Surprisingly, very few students expressed concern about having to buy their own computer to access the university via the Internet from their home. Whilst the cost of a computer is high, many students already had one, and among those who had to purchase one, some approached the matter of expenditure from a perspective of overall costs, not just the price of a computer. Some students found that they had less expenditure than they anticipated when they balanced the costs of printing, paper and an Internet connection against not having to physically attend the university.

You have to look at all sorts of things... You don’t have to keep coming in here... paying for parking. Imagine if you could only come in here and use the computers here and you had to come in on days that you don’t have to be here. It already costs you enough to come...and I can work everything else out around going to work and fitting it in, and it's definitely cost effective. (S4).

One student also suggested ways of using the ubiquity of the Internet to the students’ advantage, so they did not always have to come to the university to use computers.

If they have got to go to admin, just getting here... can take an awful long time... But...say they have gone out to do their weekend shopping and there is an Internet café there, they can pop in there and do it, and it's done. They don’t have to think ‘I have to go into the uni tomorrow.’ (S7).

As they became more experienced with learning online, some students found ways of reducing paper, ink and copying costs through using the technology more extensively. For example, students lessened these costs through the use of online data storage.
We used to have to do a lot of photocopying of journal articles and stuff like that, but now if you are not sure you need it you just download it and keep it on disc. You don’t have to actually photocopy it. I was spending something like $10 to $15 every fortnight on photocopying. Now I don’t have to spend any of that. The other thing is, a lot of the textbooks have a website that goes with them so if you can’t afford a textbook you can get online and look it up. So I think it actually costs less now. (S6).

A few students in this study could not afford to buy all of their textbooks and used the online material as a substitute. For these people access to online material represented better value.

I couldn’t afford textbooks, so the information provided...on the web, was good because it helped me get through pretty much without any other resources through the year. And I have passed, which is more than OK with me... I know you have got to have some books, but sometimes throughout a person’s degree they can’t afford too many. If you are expected to buy four books a semester at $120 dollars a book, it is an awful lot of money for anyone. (S7).

Once students have negotiated computer access and are actually in front of the screen, their next step in accessing the learning environment is through negotiating a connection via a server to the course material and other web sites. The possible interruption to server access caused apprehension in students. They viewed the technology as unpredictable, unreliable, and having the potential to shut them out of the learning environment. Some mentioned their concern with statements such as “and then the site goes crash, or the computer goes crash” (S9). Such is the magnitude of the impact of a failure in server access; this possibility remained a concern to students, even if they had not themselves had frequent experience of this happening. For example, one student who said, “I’ve been pretty lucky, but it has happened to some others” (S9) still remained particularly anxious about the possibility of server failure, assuming that it was likely to happen at any time. When the server failed (or was, for technical reasons, inaccessible to a student), access to the course website failed totally. When server failure had been experienced, none of the students reported any alternative way to access information. So whilst online information provided a backup for other learning environments within the university (such as when a student missed a class), the reverse situation of backup for online information was not apparent. One student suggested that a back up for online material might be achieved through the use of existing university mechanisms.
Someone to ring if you are having problems with actually getting the information, like if [the server] goes down, you could ring and say it has gone down and I really need my lecture from this day, do you have a photocopy… Somewhere else for the lectures to be, maybe put them in the library so you can photocopy them if you can’t get on the computer or whatever… it's a hassle going over to the library but if they put them in there, if you had set aside Thursday and the server is down, then you go ‘Ok I have to drive all the way over there’, but you can still get them. (S6).

**Accessing information**

Connecting to online learning has multiple points at which access to information may be denied to the student for technical reasons. Another source of student frustration occurred when there was overload at specific points in the system. In this situation students were unable to access specific learning materials they needed. One student cited “not being able to connect” as a “big problem” (S11), but when questioned further about this difficulty, it wasn’t a case of ‘not being able to connect’ to the server, but accessing journals online that was the main difficulty. When specific sites became overloaded, students were not able to access the information when they wanted to.

The uni has got a direct link to some journal articles and they are the ones they prefer you to use, but you can’t get on the site because there are too many people on there. (S11)

Obsolete and broken links to online information also discouraged students, as did information that was outdated. The importance of communication in the Internet environment was highlighted when the possibility of contact in-person was removed. This was clearly illustrated in relation to clinical placements. Where there were placements away from home, or placements during out-of-semester times, students sometimes had no support if they were reliant on online information and found this to contain outdated or broken links.

It's all been up on the net, the list of the people we should contact… and it's obviously just been copied from an old net page, and nobody’s checked it. A lot of the people we are supposed to contact have actually left… that made it really bad actually. We had to just email them and hope that they got our emails… you wonder about the email addresses and stuff for the lecturers, whether they are still right and whether they are still going to answer. So I phoned up, but like I said it was holidays so [the academic] wasn’t in her office, so I just had to rely on the email. (S6).

To access information, students also needed to develop information-finding and evaluation skills. For those students who were already competent, or became competent, at
finding information online, they could readily identify benefits in terms of access to
information within the university.

Journals have disappeared off the shelf if they have had a good story
in them and you can’t find it yourself at all, they all go missing. But
you go on the net and you find it and no one else can take it. It’s
always in there. So it's easy access for anything. (S5).

Being able to do it from your own home as opposed to having to drive
45 minutes to uni and then trying to access the information that you
find somebody else has got out and the photocopier is not working, it's
good from that point of view. (S10).

Similar sentiments were expressed about using the Internet for access to information.
Vast quantities of all sorts of information were readily available on the Internet for students
who were able to find appropriate information and discern its quality and relevance.

I have learned heaps doing my essays this semester, using the net.
Because it is all different points of view and things… there is just
heaps on the net you can get. (S5).

**Accessing institutional support**

Beyond the infrastructure issues and technical problems of unpredictable and
unreliable connectivity, there was also a personal element in students being unable to access
the online learning environment. Central to this was the students’ perception of their own
readiness for learning online.

Students’ levels of technical skills with computers and information technology varied
immensely on entry to nursing programmes. Many students were well prepared and had all
the skills required for navigating their way through courses or information online. However,
for some, the lack of technical preparation led them to feel lost within the Internet
environment. These students often had basic word processing skills, but felt that they were
required to be competent with a much wider range of software applications to effectively
access and use the online learning environment in their courses. For some students entering
and finding their way around the student portal (a platform for delivery of online learning
resources used in the universities the students attended⁴) was a challenge. Students became
anxious about this lack of preparation when the material they were expected to obtain for

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⁴ For instance BlackBoard™ and WebCT™ are examples of commercially available platforms.
study was now only available online from the university website replacing the paper ‘handouts’ they were previously given.

It was a whole thing of being thrown into the deep end and discovering the different programmes you had to have to be able to access the information, you know if you want pdf files you have to have Acrobat and if you want to be able to do this, you have to have something else. And I’m quite illiterate when it comes to having the latest programme on the computer so that I can hear sound or do something else. (S10)

Some students noted that their university maintained such a high level of technical specification for computer systems that their own computers and computing skills were left well behind the expected level of performance.

The university had upgraded all of their systems… so you could get onto the web and download your notes. But I had to go and chase up from the IT people things like the CD that I had to somehow load on to my computer, so that I could retrieve the programmes that I needed so that I could get on to the web. And then I had to be able to get into it [the student portal] and then know which areas to click on to get the information. (S10).

Inadequate technical skill preparation constituted a substantial barrier for students, who spent a good deal of time learning computing skills rather than nursing knowledge and skills. While both types of knowledge are important, some students spent considerable time developing computer skills and feeling they never adequately got to grips with the course content itself.

I just felt completely lost for the first four weeks and then it was a case of trying to catch up… I had wads of notes but I hadn’t had a chance to read them, because I had spent all of my time trying to download them. So it took me four weeks, I felt, before I was really able to go into the information and download it all and then have a chance to read it. And even then I was catching up for weeks because to go through the information and actually take it all in, well that’s something else again. (S10).

Some students felt they could cope with the student portal fairly well and were able to access course materials there, but found particular aspects, such as the databases, more complex and difficult to use.

The library I found is still very confusing to me. You would think after 18 months I should be able to walk in there and use it… the books yes, that’s fine, but the online databases, I still have trouble.
When I was in year one, I am pretty sure that someone went through and showed us how to access it and how to go to CINAHL and all that, but I still didn’t understand it properly. (S7).

The student quoted above just used lecture notes and the Internet for information and avoided the online databases altogether. The responses of students to their lack of technical skills varied from choosing not to use the online resources that they found difficult to finding ways to overcome their lack of skills. For those who looked for help, this was found in both formal and informal ways. All the universities in this study provided technical support of some kind. Most commonly, this was provided through telephone ‘helplines’, which the students found useful. Most of the students interviewed who had used a helpline, seemed satisfied with the formal technical helpline services.

It's not hard to get help online and also they’ve got technical support as well. The intranet people, if you are having problems you can access them and they will help. (S2).

Beyond the ‘helpline’ type phone services, there were also more formal classes offered in university computer labs or libraries for students to learn various aspects of ‘getting online’ which some students attended.

They do lots of support and programmes within the university to help you with how you search the net and all that kind of thing. I’d go to every single free thing that was on. (S1).

After attendance at formal classes of this type, however, students often needed follow-up assistance as they used their new skills and tried to gain the level of competence that was required to use the system effectively. Students typically found this in information services or libraries, where the staff proved to be helpful.

But what I did was went into overload and went to that many things, I got myself so confused… And after a couple of weeks I’d be at the desk going ‘I know you’ve told me this before, but could you please just tell me how you do this thing again, or how you do that thing again?’ and they did. (S1).

Accessing peer support

Students sometimes chose not to access formal avenues of help or use university staff for support. In some situations an informal technical support network functioned with students helping each other. When problems were navigational ones rather than hardware, server or network problems, then other students often served as the first point of contact for
assistance, and proved to be very helpful to each other. Other students were often the people who were immediately available when help was needed, working at the next computer. Using a computer is a generic skill in which all students need to be competent and it was evident that an informal network spread across all students who happened to be in a common place using the computers. Those nursing students who were learning how to use computers from other students clearly understood that there is a separation of the medium from the content. One student explains how “students support the students” (S1) across disciplines.

I have learned from people who I have sat next to [in the computer lab]. I say ‘do you mind if I just ask you, how did you do that?’ Because I saw them do something on there. And they’re only too happy if they know that information. I have never met a student who turned around and said ‘I am not going to tell you’, they say ‘Oh yeah, just click on this, and do this and do that.’ And they go through it with you and you say ‘thanks so much for that.’ And I think they have been there. They know what its like when they don’t know how to do something. And it’s sort of a flow-on thing. If I know something that somebody else doesn’t, or they ask me something, then I share it with them, because somebody shared it with me. (S1).

At times students asked other students in their class to help them get started. Those students who were computer literate appreciated how “daunting” (S5) it was for some people in their classes and were prepared to help. Interestingly, none of the students in this study described gaining peer support through online contact such as email, all the students who either gave help to, or received help from other students, organised to do so in a face-to-face situation. Students who needed help with the skills required for online learning invariably wanted assistance in person.

It was user friendly to me, but listening to feedback in some of the lectures, it wasn’t user friendly to someone who hadn’t used a computer system before. So I helped set up a couple of people’s for them. Just to explain it to them a little bit. Because to me it was user friendly, but I am computer literate and I used to train people, so you know I didn’t mind sitting down with some people, because I knew they were interested. (S4).

The net was just daunting for a lot of other people. And all the ones that knew how to use it were helping everyone else all the time. You would hear people in the class saying I can’t get this on the web, I don’t know where to find it. And we would be going ‘Oh it's in that little area’ and things like that. (S5).
DISLOCATING LEARNING

After students had navigated through the complexities of accessing the online environment and learned to find their way into and around this environment to a greater or lesser degree, it became clear that they perceived themselves to have ‘gone somewhere’. Students imbued their digital connection to course web sites with understandings of time, place, workload structures and interactions from their physical world. Making meaning in this way brought the differences between the physical and the Internet world sharply into focus for the students. The sub-themes that constitute the theme Dislocating learning identify students’ shift out of the familiar world of face-to-face learning towards the online world.

Dislocating time and place

Online learning is still relatively new in nursing, and students have not yet developed a widespread tradition that can be passed along of ‘how’ you learn online. Consequently, students relied on their previous understandings to provide guidance about management of time. What they found, however, was a shift in time in online learning environments. Implicitly or explicitly making a comparison with the time demands of courses offered face-to-face at the university with which they were familiar, they described several ways in which the time demands of online learning were dislocated from the customary time expectations of on-campus learning.

The time-independent nature of the Internet and asynchronous online learning environments is already well recognised, and the students appreciated the flexibility this offered them. When they realised that “you can do it [online learning] in your own time” (S1) this relocated their understanding of the control of time away from the university to themselves.

In the university, even though it's your own self-directed learning, it's still very structured. Your lectures are at this time… but with Internet things you can go on that 24 hours a day. (S1).

Through this dislocation from the university timetable and relocation into their own time, students were able to juggle time and fit study in with the demands of their daily lives such as work, family and home responsibilities.

Some days I would be here [the university], I would go to work after being here and then I would go home and I would study for a few hours. So I might not get on the net until maybe eleven or twelve o’clock at night… I found it so much easier, it gave me more flexibility in the times I could source the information. Which was
really good, because you know when you have got family and work and things like that, the more time you spend away, like when you are at the university and things, then it can sometimes be harder. Whereas when I do it at home, I know I am still in front of the screen, but I am easier to source for the family. (S1).

Similarly, in some instances students were able to prepare themselves in the time outside the university timetable, for learning that occurred within the usual university time structures. By having an overview of the course students felt they could be prepared and could get ahead.

If you can actually go to the web and access the thing that says this is what we are going to be doing all through the weeks until the end of the semester, you might be able to get yourself a little bit ahead, do some extra reading, concentrate on a particular thing if they are saying you really need to know [that]. (S7).

However, despite the expedience of being able to access information whenever they wanted to and organise their own timetables conveniently, students in both Internet-based and Internet-supported courses noticed that the time demands increased markedly. This escalating demand for their time came about in a variety of ways. Firstly, there was a discrepancy between the hours assigned for courses and the students’ experiences of completing the work. Students based their comparison of time on their experience of university timetables and the allocation of course hours in face-to-face courses. Using the old university measures in the new learning environment meant some students experienced the demands as unrealistic in terms of how long online learning actually took them.

There is just so much expected of us as far as the amount of learning, with online stuff as opposed to the time available to do it in. What they work it out on… you know, it should take you so many hours to read this and then so many hours to do the assignments or to do your notes in line with that. With what we have online, it's not realistic. They say OK that should only take you 3 hours a week; in actual fact it might take you 12 hours. (S9).

The increase in demands on time was further complicated for students who were not experienced in using the Internet in a time efficient manner, particularly searching efficiently and evaluating online material effectively.

To me, the time factor is a big part of it [following up links and searching for information on the web]… So if it wasn’t on there [the course website] I know I wouldn’t look, but if it was there I would always go and have a quick look to see if I need to know this… But I
don’t want to sit there searching, I don’t know what to search for, I am new to it. (S4).

Even in instances where the academics provided the information or the links to the information that the student could then follow, the sheer volume of material took some students a huge amount of time to deal with once they located it. Much time was spent not on learning, but on preparing to learn. The learning time was additional.

They seem to load twice as much actual subject material onto the site for you to download. You spend a lot of time waiting for things to download and print out. With one of the subjects last semester, there were times when there was 33 or 35 pages that I was downloading before I even start reading them. That’s just one week’s stuff. And that’s just the reading material and then you have got to go through and do assignments tied to that. There is a huge amount of time... far more than what you might have in a lecture. (S9).

An associated difficulty was that time became fragmented with the multiple demands of the online learning environment. The online world encourages multi-tasking. The way computers present information to the user, often opening separate windows for new information necessitating moving between these windows, or following trails of information where one screen replaces another meant students needed to be adept at maintaining the focus of what they were trying to learn while changing between sources of information. Furthermore, the hyperlinked organisation of the Internet with its ever-expanding network of links to information meant students had to choose the focus of their learning. These characteristics of the online learning environment contributed to a sense of disintegration in concentration, and time that was fragmented for some students. These students felt unable to undertake learning activities while dealing with the mechanics of getting information online and found the fragmented nature of time hindered their learning.

You can’t easily be doing anything else. You try, but your concentration is continually brought back to... coming back and clicking on something else and doing some more. So it's very fragmented time. (S9).

To overcome the fragmentation of time, many of the students described how they downloaded and printed off all the material first and then began learning from it. With the exception of interactive learning activities where students needed to respond on the computer, they mostly printed off and read material, instead of reading online. Separating out accessing information, from processing and learning that information, was one way they tried to overcome the fragmented nature of the time they spent on the computer.
What I usually do is I usually download it, and then I either go to the library or I sit in the lounge room with the books everywhere, and the bits of paper and the notes scribbled everywhere and I sort of write down my answers and then I sit at the computer and type them. And the reason I mostly do that is because I find it really hard if you have got books on the floor and books on the desk to find what you are looking for, and I worry about being disconnected [from the Internet] half way through. So I find it easier to get it all organised and then just sit there and type it all in. (S6).

**Altering workloads**

When courses were online the actual study demands also changed. Aside from the increase in time needed to complete online activities because of the different demands of learning in the online environment, students found the actual amount of work in their courses increased. This increased demand necessitated more time on the student’s part to complete the work. Although reported in both Internet-based and Internet-supported courses, the increase was most noticeable in the latter type of course where the time required for face-to-face classes and other activities such as labs, tutorial, or clinical placements remained the same, but there was the added requirement of completing a variety of online learning activities.

I think there are different demands, I think this way there is a lot more work, we have a lot more assignments and a lot more quizzes and a lot more prep for labs. (S6).

Whilst students often appreciated each learning activity individually and felt they assisted their learning, taken together, all the extra activities meant they found the demands on their time soared. For one student this “hindered” her learning.

With all of the subjects there is far more work with it being online. It hinders you because you get really stressed about spending so much time… on one thing and you feel overwhelmed with the amount of work. That blocks the learning if you are feeling just so stressed that ‘there is so much of this I’m not taking in even half of what I should be here.’ (S9).

Aspects of the student workload that have previously been strictly controlled by traditional university systems appeared to be very vulnerable to dislocation from the system. Assessment processes are one area in which the online environment’s dislocation from university structures had a marked effect in some courses. The changed relationship between assessment and the online environment, with a subsequent increase in demands on the
students, were highlighted particularly in courses that were totally online. Both the nature of the online environment, which caused increased time demands, and a perceived discrepancy in the assessment of online courses within the structure of universities assessment weighting systems, caused frustrations for some students. Students found the time they had to devote to online courses to meet assessment requirements was greater than in classroom courses.

The assignment that we downloaded each week off the site, they had it down as it would take us such and such an amount of time, and we were all saying ‘Hang on a minute this is taking us 5 or 6 hours to do this assignment every week’, that's not one hour that they have got and they [the academics] could see that what we were putting in to the assignment, the amount of work that obviously had to go into it, they acknowledged that. (S9).

This was particularly noticeable in online discussions where, unlike many classroom discussions, participation was often mandatory and part of the course assessment.

It seems to be a lot of work for such a small amount of percentage. You know often it's [online discussion] only worth 20%. And normally it's a weekly thing. You have to contribute to the discussion board over twelve weeks and normally you are expected to do maybe 250 words. So you know, you are looking at about 3000 words for 20% of your assessment. Whereas your assignments may be 3000-5000 words and they’re worth 40% - 60%. (S2).

Both these students also described their perception that the systems in place in the universities that regulated assessment, far from making the assessment consistent across modes of delivery, as is usually the purpose of such systems, in the case of online learning actually increased inequalities between online and classroom-based courses.

The lecturer tried to have the weightings of the marks, where so much of the end of semester mark went on these weekly assignments, she tried to have that upgraded to reflect the amount of work that we put in over the semester on those things, but the exam people knocked that back. But she [the lecturer] recognised that the amount of work was far in excess of what had been thought was necessary. (S9).

This problem was compounded when online courses had a face-to-face counterpart.

It [online discussion] seems like a lot of work and in some of the subjects that are offered online, the on-campus students had the same two assignments that we did, but we had the additional piece of assessment of the discussion board. Because I think one of the things about online learning is there has to be this online discussion, and so when a couple of the students found out that the on-campus students had one less piece of assessment than us, and yet it was the same
course, just studied through a different mode, you know there was a bit of a hoo ha about that. But nothing really happened. I think the lecturer’s hands were really tied. (S2).

**Separating learners and teachers**

The online environments described in this study, separated learners from each other and from academics in such a way as to make them invisible to each other. Even in synchronous online activities, students and academics were not in each other’s physical presence, nor did they have a visible, albeit virtual, physical presence such as that provided by teleconferences. This meant that students and academics were always physically invisible to each other, appearing only through their written communication. When students described activities they carried out in online classes, or in the online part of those courses that had both face-to-face and online components, they used the language of their everyday physical world and their understandings of that world. However, what they described was often substantially different in that the online activities and interactions always took place in the virtual reality of the online environment. Students’ physical and visual separation from each other and from academics, transformed both social and individual interaction and learning in several significant ways. One direct influence of physical separation was explained as a lack of spontaneity, as evident in the comment below.

…to rub shoulders with a lot of people [in another course of the programme] I found I learnt a lot more than in the online participation… by rubbing shoulders and getting good debate going, which often is a bit harder to do online, because I think you lose that spontaneity when you are typing. So I found that interaction, face-to-face very helpful… conversing with those people. (S2).

This student identified other people as being important to learning, particularly in sharing a physical space such as the classroom. To an extent, the spontaneity that can be generated through interaction with others is lost in the online environment. Hearing others’ enthusiasm and experiences were seen as more difficult to convey in an online discussion than in the classroom where students are confronted by each other’s visible presence. Both enthusiasm and experience were considered valuable characteristics of a learning environment.

I must say my preference would be on-campus, only because of that greater interaction, that personal interaction you get which although you can get to a measure online, I don’t think it is as effective. I don’t feel I’ve learned as much, I haven’t gained from other people’s experience as much… Just in the written form, I don’t think it conveys
as much, because somebody can be a very passionate nurse and love their job and that can’t be conveyed as much… on paper, but to see somebody who is exuding enthusiasm in their role as a nurse it inspires me. And for me that is effective. If I can come to a course and be inspired and motivated by somebody else… I find that happens more by meeting the person than talking to them online. Because nursing is a very person-orientated thing… They are people that are committed to the profession, and they are very enthusiastic. To rub shoulders with those people personally, face-to-face, it does rub off I think, that enthusiasm…. I don’t get the same buzz reading it on the computer screen. (S2).

Students’ dislocation from each other and academics was evident, not only in the loss of spontaneity, but was linked in the students’ data to a complex network of ways in which their separation influenced specific aspects of students’ interactions.

**Talking in writing**

In the invisible location of the course website, talking was, of necessity, transformed into writing. Although synchronous online communication, such as chat rooms, brought students and academics together in time, it was in a place in which they were invisible to each other. With the students in front of their screens, rather than in front of the other students and academics, and with the written word the only means available to convey their thoughts in the group, the loss of spontaneity was again apparent. Attending to the skill of typing their thoughts via the keyboard and then having to send their message to the group was enough to distract some students, causing them to occasionally lose their train of thought.

I find it [the online chat room] very good, but not as good as in a room together. I think the spontaneity [is lost]. Because you have to type something in, often you can lose the thought. (S2).

Some students felt they may be ‘left behind’ in the discussion because their typing skills were slower than other students.

Because some people are faster typists than others, by the time… I get my comment out, there may be three other comments already made in the virtual classroom. (S2).

This slowing of interactions contrasted with face-to-face interactions where students may be left out of discussion because of a reticence to speak out, but rarely because they couldn’t speak quickly enough to get their ideas out. Most people follow the conventions of social conversation and this establishes precedents for classroom conversation. Teachers in
classrooms generally attend to the dynamics of group discussions to ensure equitable participation. The same care is required in online courses, yet from the experiences of one student in a discussion forum it seemed that perhaps effective ways of doing so in an invisible world, where students were separated from each other, are still evolving. Even in (asynchronous) discussion boards where typing speed, and time, are less of an issue, one student still noted that she felt overshadowed in the discussion by the volume of others’ contributions.

Some people would contribute enormously. As in… every day if you happened to go in, they would have a comment… If you had a tutorial, and one person contributes and overshadows others, there is a way a lecturer can assist the other students. [The lecturer will] say, ‘thank you very much for that, I would really like to… just go around the class’… [The lecturer can] create a learning environment where participation is encouraged and one person doesn’t take over, whereas in this method there was no way that you could filter or stop someone commenting, because they were free to do it. But the perception when you go in as a student was… ‘Oh there’s five from that person’… I wanted to hear what other people said, but all you kept on getting were two particular students, who obviously were engaging in this medium, which was probably wonderful. But to us [the other students] it was overkill… I’d think ‘for goodness sake, I can’t be bothered with this. Let them have their chat,’ the two of them who were participating so much. You know the participation of theirs was like 90% or 95% compared to 2% [of the other students’] participation. (S3).

Another group dynamic that also occurs in face-to-face classes, but is controlled to a large extent by the individuals participating when they are in each other’s presence, is ‘splintering’ of the conversation. It appeared that there was a greater risk of students breaking into small discussion groups in an online chat room, the slower typists were left behind in one conversation unable to keep up with the quicker students who had moved on.

[Some other people in the group] have gone on to another topic. It can be split up a bit; you can have three topics going at once in the one conversation. And there is the risk of two groups forming, where one group is talking about one topic… you might have six students in the chat room talking about something and six students talking about something else because that group has moved on. Whereas in the classroom situation you wouldn’t have that happening. Everyone would be keeping up with the current topic. (S2).

The shift from talking to writing also altered one-to-one communication. Frequently, the conversations students reported were centred on trying to ask and answer learning-related questions. One useful feature of the Internet is the way in which it combines broadcasting
capabilities, the ability to reach many people at once with the ability to communicate one-to-one. Whilst online courses and course web sites were written for groups, online communication also reached, and allowed interaction, with individuals. Students described how some aspects of the online environment allowed for more individual communication than occurred in some courses delivered face-to-face. Email gave each student a direct and individual line of communication to academics. When communicating individually with the academic through email, some students found the academics more attentive because they were not distracted by the visible presence of other students demanding their attention. These students perceived that this personalised contact through email encouraged the academics to align themselves with the needs of the particular student they were writing to, and not the needs of the class as a whole.

I feel like you get more [individual attention]. Because when they are writing to you, they are writing to you. They are not distracted, whereas [in the classroom] they have got six people sticking up their hand and going ‘over here’, ‘over here’... and [the academic says] ‘you need to do this’ and then rushes off to go and talk to someone else. But if they are writing you an email, they actually sit down and write you an email... They actually have to sit down and concentrate on what you are doing rather than ‘I have got a class full of twenty students and I have got two hours and I need to answer all the questions they have got.’ (S6).

Similarly, when a student had consultation time with an academic, the student may be distracted by the competing demands of other students, a situation that was also overcome by email in this student’s opinion.

[In face-to-face courses] if you didn’t feel like you got enough feedback in class... you would have to go and find [the academic] in their office and make an appointment time, and sit down with them and talk about it, and I think it is just much easier to email because you don’t... have people knocking on the office door going ‘are you nearly finished? I need to talk to this person too’. (S6).

Email and some online activities potentially have an immediacy that some students liked. These students felt they received more immediate feedback from online activities and faster responses from academics, than if they had to wait for class time to ask their questions.

[The student is] not waiting around for something to get marked or waiting till next week so you can talk to a lecturer about something and things like that. It’s really good. (S5).
Learning and communicating online is still new enough in the educational setting for students to need clear guidelines about communication conventions. Lacking the cues that students obtain from the visible presence of the teacher, establishing a framework to guide their expectations about online communication from the very beginning of a course helped students determine what was acceptable behaviour in the online environment.

I would like them to answer the emails. They don’t have to answer it in five seconds, but [one academic] wrote ‘I check my email every day so I am going to try and answer them within twenty four hours,’ and that is really helpful Because you know you will have an answer the next day and you know that if you don’t have an answer the next day then you can ring her and you know that you are not nagging. (S6).

Students experienced the effects of dislocation on individual communication both positively and negatively. Although using email had the potential to focus the academic’s and student’s attention on each other as reported above, for some students, writing was a difficult way of talking to the academic.

**Questioning in writing**

Writing was not always an easy medium for students who wished to question academics. One of the problems for students was that when they were trying to ask questions or sort out misunderstandings using the written form, they often could not clearly communicate what it was they wanted to know, or the academic misinterpreted what the student wanted to know. Some students identified a large potential for each to miss the other’s point. When students were trying to communicate difficulties or things they didn’t understand, they were most aware of their separation from the academic. In this separation, they lost the visible cues that accompany verbal communication and assist the expression of thought. One student identified that the difficulties that arose from the lack of a visible presence were on their part when they tried to communicate their meanings in written words…

Sometimes my questioning is really bad and they have got no idea what I am talking about, so at least if we are face-to-face I can just try and explain myself. But if we are on email, there is not that same personal contact to be able to try and understand what the person is saying. And putting things into words sometimes isn’t very easy… to actually write them so they will understand them. (S11).

…and on the part of the academic communicating with them.
[The academic’s response indicates] they have taken it this way but you actually meant it this way. So then you have got to send another one [email] back … when I am with them I think I understand and get more information… Because they can probably see the confused look on my face, and they know I can’t understand so they go in more depth, whereas you’ll get this email and think ‘well I’ve got no idea what they are saying.’ (S11).

Speaking and listening were such taken-for-granted skills replete with nuances of meaning, that speaking seemed quicker and easier to students than writing and reading. The actual physical act of communicating by writing increased the time commitment required of students. Whether this was emails to academics or communications to a discussion group, it all took more time.

You get sick of writing, of typing it all the time. It takes too long. It takes me two minutes to say it and ten minutes to type it… And it doesn’t come out how you want to say things. You have got to think how would I say that. But if you said it, and you had the expressions and everything else to go with it, it makes a difference. (S4).

**The lost moment**

There where times when a shift to written communication and the dislocation of time, overlap in the online environment to the point where some students felt disengaged from their learning. One of the outcomes of students and academics being invisible to each other and misunderstanding their written communications was the loss of the optimal time for engagement with the student’s learning. Students described several different ways in which the learning moment was lost in the online environment. Not only did the effectiveness of students’ written interaction with academics influence how students were able to engage with their own learning, but also the asynchronous nature of email communication played a role. When asking questions, students had a sense of urgency – they needed to have the answer ‘now’ or they perceived that the moment was lost. When the student wanted to ask a question or needed help with learning and the academic was not there to give it, the wait was difficult.

Especially when you are on a roll. You really need to know this because it has got to go in now. And you want to keep going but you have to put the brakes on a bit and wait. Sometimes I just go on to a different part of the assignment and come back to that bit later. But sometimes… well actually quite often, I find it really hard to get started again on that bit that I was on a roll on, because everything has gone out of my head. (S11).
It's all distanced so much and it's moving so fast. You’ve moved on and if you managed to find the answers…well and good, but if you haven’t it's just gone anyway, the moment is gone… you have moved on to the next bit of your study with that course… The extra activities to go with [classes] are fine, but when it's completely online, there is just nowhere to go with any questions about it or… you can’t dig further and say ‘Oh but I don’t fully understand that’ or ‘can we look at this particular aspect of something a little bit more,’ there is just nowhere to go with that at all. (S9).

**Becoming exposed**

Not only did students describe the ways in which they experienced invisibility in the online environment, paradoxically they also described ways in which there was increased visibility to which they were unaccustomed.

In the online environment, students experienced an abrupt reversal of the everyday physical world wherein people are visible and their thoughts generally are invisible. Online, thoughts are visible, but physical presence is not. Students experienced some anxiety at the public exposure of their writing, and consequently their thinking, to others who normally would not see their work unless invited to do so by the student. One student found this way of communicating more than just unfamiliar, describing it as intimidating that her thoughts were publicly exposed. In addition, once students had exposed their thinking there was a permanent record of these thoughts for others to view and comment upon, also in a public way. Anxiety about the exposure of thoughts and ideas was particularly evident when the topic is one that would reveal social attitudes, or in ‘grey areas’ where there was no specific right or wrong answer.

I find it very intimidating and threatening and I don’t like it at all. But I guess that’s just the way that they are going with it. I don’t know… it seems too permanent to me… actually having to voice an opinion in front of X amount of people… I’m not really looking forward to it… It's a case of you say how you feel about it and somebody else will either disagree with you or agree with you. I’d prefer to just write an assignment and just give it to the lecturer and they will make their comments and give it back to me. (S10).

Students also expressed anxiety when they felt there was not the time to refine their writing and they were, in effect, thinking out loud in writing.

I’m not in the habit of talking something like that out that publicly, putting my thoughts very, very openly… I can … put my thoughts on paper, that’s not a problem. But actually discussing them… having input with a larger discussion… thinking out loud. It is thinking out
loud. On paper you can go over things and over things until you have
got things right before you… until you have got things to a point
where you are happy with it before you submit something I
suppose…With the contributions and comments you don’t have the
opportunity to toss it around and get it right before you put it in. (S9).

One postgraduate student pointed out how anxiety over the public exposure of their
work actually became a barrier to communication within the group. In a group that had
previously related positively and discussed enthusiastically, in the classroom setting,
physical separation from each other in the Internet environment contributed to a change in
the approach of some students to sharing their thinking in the visible and permanent forum
of the discussion board.

We all found it problematic [the discussion board]. You’d spend half
an hour and you’d do two sentences. Because we worried too much…
about the way we constructed the sentence, or the concept behind it -
is this trivial? You know… I would absolutely have had no problem
[in the classroom]. We had a very good rapport. This group, there
were only about twelve in the class, so it was a very small, and face-
to-face incredibly interactive. But this barrier… and it was ours [the
students] we put it there, nobody else did… but it was interesting that
a number of us felt this same barrier. So we said to each other… you
know we took two hours to do our two hundred words. Which was
meant to be… the lecturer said ‘off the top of your head.’ They
weren’t meant to be essays that were marked or critiqued… well not
in an academic sense, but we couldn’t help but do it… My memory of
it was only the fact that I hated doing it, everyone else seemed so
articulate and to have such worthy comments… and it was a totally
negative experience, totally negative. (S3).

These students’ experiences suggest that some students view discussion in two
circumscribed, opposing ways: as verbal, spontaneous, and publicly shared with peers when
they are in each others presence and physically visible to each other; or as written, formally
structured (with time for preparation and refinement of work) and for private submission to
an academic when students are separated and invisible to each other. Internet learning
environments were challenging these previously accepted perceptions.

The accounts of how the dislocating effects of shifting from speaking to writing
impacted on communication, and the effects of the dislocation of time, place and the
structure of students’ workloads in the online learning environment provides only part of the
story of students’ learning online in schools of nursing. The other major theme described in
this chapter is Relocating learning.
RELOCATING LEARNING

The theme of relocating learning reports the students’ experiences in the environment of online learning. The way in which students learn in an Internet environment has no clear precedents in distance education, and certain aspects are so markedly changed from the classroom environment that there appears to be a new way of building learning communities online. In distance education there has commonly been little contact between students and no real expectation of group work. In the classroom, the mediating effects of being in a room with other people influence a group in a way that does not occur online. In the Internet environment, students were part of an identified group with expectations of interaction (albeit to varying extents). The distinguishing feature of these online groups, however, was the separation of learners and teachers. In online classes, students and academics lacked the visual cues that underlie much face-to-face communication and this circumstance had a major impact on the development of both the online group and the individual student’s learning. Several sub-themes emerged from the experiences of students in online courses that reveal the understandings of students as they relocated their learning into the online environment. These include: Becoming part of an online learning community; Writing thinking; and Individualising learning.

Becoming part of an online learning community

The majority of students in this study were participants in programmes and courses that were Internet-supported, rather than Internet-based. Perhaps for this reason, a clear indication of how they got to know each other when they undertook an Internet-based course never emerged from these students’ stories. Students mostly knew each other from face-to-face courses they had undertaken previously, and thus entered the online class already knowing the other students and, in most cases, the academic. In one instance, however, the students did not already know the academic facilitating the course, and this student’s account of their reactions showed the emphasis students put on knowing the person with whom they communicated on the web. Essential to this description of knowing the academic is meeting him or her face-to-face, and seeing the academic within their physical surroundings.

I would have liked to have [had an opportunity to meet the academic]… If she is available this day over at the uni if you just want to go and meet her and see where her office is and stuff like that. If we had had the same one [academic] we had last year, all of us knew her and she knew all of us, and we knew where her office was, and her phone number… so if the uni hadn’t changed staff it would have been fine, I really like the web and I just think maybe it would have been
nice just to meet her before we started talking to her over the web and stuff… You would know who she was… and know her room and just felt a bit more comfortable trying to find someone to sort it [problems] out. (S6).

Even when peers may already know each other, their separation from each other still had some effect on how they knew one another as students. Peers are an important source of support and learning for some students, but online courses that removed students from the university and separated them from their peers had the effect of hiding when a student is identifiably a student. They become, in effect, invisible to other students. Of less importance in courses that have organised communication online, in courses where there is little organised peer-to-peer interaction, this invisibility influenced when peers assumed they could contact each other as students. One student in an online course described how she was reticent to contact other students when they all studied at home.

When you are at home you don’t know whether the other students… you might want to contact, whether they are working, whether they are having family time, whether they are online trying to wade through something themselves. You don’t know where they are at. Whereas at the uni, they are right there next to you, they are doing exactly the same thing that you’re doing, so you know it's OK to impinge on five minutes of their time at the uni, but you don’t like to do that too much when they are at home. (S9).

While the students’ stories were not clear about how they came to know each other online, they did describe ways in which they felt they became part of a learning community in online courses. However, the relationship they described, of peer learning and students supporting each other, was complex. Student-to-student email had a positive supportive function, and was a means to overcome the barriers of invisibility in the online environment, and the students’ separation from each other during clinical placements and holidays.

I have [emailed other students] a few times so far, mostly in the first week, and went ‘Oh the person I am supposed to be contacting doesn’t work here any more, did you find the same things?’ And a lot of them went ‘yes we did too’. That was really helpful, because I went ‘Oh, that is happening to everybody, it is OK.’ And I find it’s a good way to catch up with people over the holidays, send a group email and say how was your Christmas and all that sort of stuff. (S6).

Communication for social support had to be in what the students considered its proper place. When students found their designated learning time turned into social time, this was very disruptive, and did little to help establish or maintain a learning community.
It was awful. And we all then said ‘well we're not coming to the synchronous ones [chat rooms] because it wasn’t a serious learning and teaching session. It was ‘Hi, how are you, did you have a good week’. There wasn’t serious learning going on. And your time is valuable as a student, and you’ve still got your assignments to do. I’m not going to go there and participate… well participate is a bit of a misnomer…and be there. So it just dissolved, it just didn’t happen. Maybe if more people had been there, maybe it would have evolved into a good teaching and learning environment, but that, for us, didn’t happen. (S3).

The more successful approaches to building a community seemed to have a very clear purpose that it was a learning community rather than a social one. Using online forums to share student work was one way of contributing to community building, as students felt they were all helping each other.

I think it works pretty well, because [the academic] gives us good feedback and puts other people’s information up on the web. If you say it's ok, after we have all done it… [the academic] puts your assignment up on the web and says, this person found this is in this book, so look in this book on page [number] if you feel like you haven’t got enough out of it… So I guess we all sort of help each other that way. (S6).

The academic is not always a direct mediator of student learning as described in the previous instance. As in a classroom, a major part of group learning in an online environment occurs through peers sharing their thinking and learning. In the online world, however, where students are separated from and invisible to each other, thinking perforce becomes a written activity rather than a spoken one that students share with each other, something students noted was very different from talking together face-to-face.

**Writing thinking**

Students frequently described discussions, and the ways in which online discussion is markedly different to classroom discussion. Speaking firstly of the obvious changes to participation in synchronous discussion online, one student related how writing created a pause between thinking and communicating, and described the ways in which this pause is used to consider their thinking and writing more fully. In contrast to speaking thoughts, which “just pop out of your mouth” (S2) the student engaged in a process of editing.

When I'm typing I probably consider it more than when I'm speaking, because sometimes things just pop out of your mouth. But at least when you are typing, before you hit the submit button you can quickly
read it and say ‘hang on, I'd better tone that down a bit’, or ‘I'd better clarify what I'm saying here.’ So the discussion may be altered a bit in that people are considering more, because when you are typing it doesn't come up [on the discussion board] until you submit it. (S2)

The student went on to relate the influence of capturing thinking in words on how an individual’s thinking was constructed within the group’s thinking and writing. In some instances, during the pause, the student changed the response as the discussion grew, developing thoughts from others contributions. However, a different response was sometimes provoked in a student, one where the student merely typed in agreement with points of view already expressed by others.

...Often too, somebody else will say what you have just typed in. By the time you have hit that submit button, someone else has typed it, and you think well there's no point in saying that now, what am I going to say now. And so you'll find yourself saying ‘I agree’. So you are just hitting your delete button and starting again ... so there's that lost a bit too. Or often what you are about to say is said better by somebody else. And you think well there is no point in me saying that, whereas in a tutorial room, I would probably blurt it out first, you know, and the other person would join in and I guess the content of the conversation would not be the same. The views put forward [online] probably would be, but [online] they would be more considered... it does make you think. (S2).

**Individualising learning**

Equally as important as the group experiences in building a community of learners, were the individual aspects of learning. Actively engaging in learning, rather than passively receiving information, made a difference to students’ understanding. Having the opportunity to actively construct their understanding was important to students. When students made the mental shift from being taught to being learners, they found the online environment fitted well with this focus, through the degree of control over information and the process of learning that can be exercised by the student. Not all students made this shift to greater control of their own learning easily, but for those that did there were benefits.

I found it better than coming to class... because for me to learn, I need to do something again and again. On the web it asks you all the questions behind it... and if I can go home and do stuff on the web it keeps me more involved. I don’t mind sitting there and reading it on the screen, because I know there is going to be something to test me or something at the end of it. On the Internet... I know that when I click here I am going to get a question or something. (S4).
I want to learn all the aspects of the whole thing. I want to know why that’s the answer and everything. And on the net… there were always questions for each chapter that we had to answer… And they also had lots of links to other sites… and that just made me study in a different way. It was like use everything you can… if there are pictures and questionnaires and case studies, to get your brain thinking along different ways. (S8).

In Internet-supported courses, most group work was part of the face-to-face element of the course, with the online activities in the main contributing to individual learning. In these courses, the online technology relocated students into a world that was captured in time for them to participate in learning when they needed. Students described three ways they used the online environment to construct their learning: preparation, reinforcement, and filling in the gaps. Firstly, students in courses that were supported by online material described how they used this to construct a foundation on which to build further learning in the classroom. Not all the students needed this, but most described using online information in this way. Online learning allowed students to individualise their preparation, and thus they learned more effectively in the classroom as their preparation enabled them to make links between their pre-existing understandings and the new information.

When you come to class, and they bring it up for the first time in that class or the first time in that subject, and you have already seen that on the web… that is an added bonus because you can put some input in, because you actually know what they are talking about and you can actually learn more off what they are saying because … it pre-warns you in some way. (S4).

You could see what was coming up and that way you are aware of what is being said up there and you can think ‘Ok I can relate that to that and that.’ (S7).

Using online material for preparation also changed the classroom environment for some students. When students had constructed a basic understanding on which to build further knowledge before attending the lectures, this change in their approach to learning in face-to-face classes, made changes in the teacher’s approach necessary. Students did not favour an overload of online information that had no clear focus, and was not integrated with other elements of the course. Nor did students find it helpful to have the same information they had accessed online replicated in lectures. When this was the case, some students elected to not attend lectures.

I found lots less people went to the lectures because all the notes are up on the web, so they would just get the notes and read them at home.
and not actually go to the lectures, it sort of made the lectures a bit redundant. I always try and go to the lectures in case they say something a bit different … but it was pretty much virtually what we could get off the web for most of it… I think if they are going to put the lecture notes up on the web then they need to change the ways they go through the lectures because when they just stood there and read from the notes, everyone was going to sleep or leaving. (S6).

If the students prepared themselves by using online materials before they attended lectures, this needed to be recognised in face-to-face classes, and the process of teaching and learning adapted to this.

Some of them put just a summary up on the web and then expand on it more in the lecture and give people time to ask questions about stuff they didn’t understand which I found was good. (S6).

In addition to using online material for preparation, some students found the online material useful to reinforce their learning. The information may have been similar to that presented in the classroom or gleaned from textbooks, but the different way of gaining and thinking about the information reinforced and “cemented” (S1) learning.

I got [a learning activity] printed out and then kept going back over it and over it, and trying to connect things… You think ‘Oh yes Ok, that happens because of that, I should have known that’. Or I didn’t quite get that in the lecture, but now that I have gone back over it I can see that, so I keep going back over it. (S7).

Thirdly, online activities also, in part, filled in the gaps of what was missed in face-to-face classes. Students did, from time to time, miss out on some information either through non-attendance at on-campus classes, or through the difficulty students experienced in absorbing large amounts of information in one period in a face-to-face class. The online material captured information and learning activities across time, and preserved them for later for students who discovered gaps as they looked back at their own knowledge in conjunction with the online material. In this way the online material acted as both a prompt to where the gap in the students knowledge was, and also had the potential to enable the student to fill the gap.

You are looking through your notes and suddenly you think ‘Oh I don’t remember that’ and if you have missed a class, which people do, you don’t always come 100% of the time, and you are looking through those web notes and you see something and go ‘Oh I missed that’ so you go ‘Oh OK’. (S7).
Besides these broad activities of preparation, reinforcement and filling in the gaps, students described strategies they used for learning. These are described in the final student theme - *Constructing understanding*.

**Constructing understanding**

Several successful learning strategies were located around the potential of the online environment to enable the student to look forward and look back at their own learning in a way that assisted them to gain an individually constructed understanding upon which to build further knowledge. This individual epistemic development is also dependent in part upon social influences, including among others, the role of the teacher in the learning environment. The sub themes described here include *Shaping understanding; Challenging understanding; Seeking guidance; Learning nursing; Accommodating the teachers view.*

**Shaping understanding**

When presented with quantities of new information, the students found the archiving of information in the online environment enabled them to prepare notes before lectures. Looking forward in this way helped them to grasp, understand, and learn information more readily in classroom lectures.

If I had to write notes [in the lecture], I could write better notes because I understood what they were going on about. Because you can only have a lecture once and then it's over. So if I can understand what they … are talking about it makes it a lot easier for me. (S4).

Students were able to undertake this preparation in a way that was consistent with their own learning needs. Using the online material, students personalised their own learning through the use of strategies that worked best for them, and enabled learning in the classroom from the teachers’ information to build upon this basis. In essence they were ‘looking back’ at their own knowledge and used the online material to ‘look forward’ and prepare themselves for the classroom lecture.

Notes that a lecturer will write, they will be writing from having information, you know their knowledge base will be totally different to mine, and so their notes can be briefer but they won’t be meaningful to me because I won’t have their knowledge base. So unless I have got the information beforehand and I have had the time to look at my book and read up on it, it sort of doesn’t mean a lot to me. (S10).
Because of the time and location independence of online course websites, some students were able to take control of the pace at which they learned and, by personalising the construction of learning in this way, were able to capitalise on a readiness to learn more, at a time that was right for them.

I found if I went away from it [online material], I could take it in better because I could sit down and I would be thinking about what I had learned. I wouldn’t be over-running it with something else straight away. Whereas if you just kept doing it and doing it, I am learning too much, I don’t know what part of it is more important than the other. If I am learning it bit by bit I can let it all sink in and then I can see where the two relate. You know, that’s my trouble, is getting them to all come into synch, but if you can go away and think about it… you can remember things better. And then I feel ready to learn something else. (S4).

The ability to easily look back at information was appreciated by all students. Some repeated learning activities until they felt confident that they knew the information, and used online material for revision for examinations.

I can go back over the whole semester and do anything from any of the previous weeks… You revisit and revisit, and getting towards exam time you revisit and revisit. How much more is there on there, let me have another look. Those things you can do [online]. Those things only take a moment to go into and have another look at. And so you can do that every night if you want to. (S9).

Many course web sites included testing situations and activities, such as quizzes, that were not part of formal course assessment. The online feedback obtained from these tests, gave students a means of looking back at their individual learning and hence a measure of the forward movement they needed to construct their learning effectively. Every student interviewed, to whom it was available, described the helpfulness of this kind of personal testing in the online environment. Noting that it didn’t count towards their marks, students were released from the anxiety of tests that are significant in passing or failing courses, and instead used the online tests for guidance about the effectiveness of their learning. In this situation, the automatic feedback came at the appropriate moment for each individual student’s learning.

And then there’s a quiz, it's just 10 quick questions on what you would do. So … I shut all the books and tried to do the quiz without looking at anything. I think if you can do that sort of thing, then I think you are learning effectively. She [the academic] puts up quite a few things like that. And it's instant. You click submit and it comes
back 6 out of 10, you got this one and this one and this one wrong… It
doesn’t count towards our mark. So I think that is a good thing. I think
it helps if you are actually learning something. (S6).

Students were able to use the testing situation to identify areas in which they needed
further study. In this way students constructed their learning using the foundations of their
prior knowledge, and building new information onto it they turned that information into new
knowledge.

They had a lot of quizzes on there as well. And that was really good
because you could actually do them and see where you were at as far
as what you knew, and what you needed to study, and where to go
back over your notes, or go back over the web notes, and see what you
have missed or what you have misinterpreted, that was really good.
(S7).

In contrast to undergraduate students who often used informational aspects of the
online environment in this individual way, one postgraduate student’s experience of learning
through online discussion forums showed how more experienced students used
communication in an online group to challenge their own and each other’s knowledge.

Challenging understanding

Invisibility, and the shift from the spoken to the written word were consistently
among the most noticed features of the online environment for most students. With more
experience of learning in a totally online environment than some of the other students in this
study, one postgraduate student revealed a different understanding of the nature of online
discussion. In this view, one focused on individual thinking and learning located within the
group situation, the permanent and public nature of the written discussion created a new way
of learning for students. The visibility of thinking and the archived records, that were a cause
of anxiety for the students cited previously, here assumed an entirely different meaning.
Students were able to look forward and look backwards at their own learning at the same
time, enabling a more reflective approach to thinking: a feature that is missing in the face-to-
face classroom where discussion is ever forward-looking and forward-moving, and reflection
is, to a large extent, discouraged by the forward moving nature of discussion.

There is a written record; everybody [in the class] can access what
you have said in the virtual classroom months down the track. Whereas in a classroom, discussion isn't recorded or can’t be used
against you at a later date, so you are probably not as careful in what
you say. And also because your views do change. You might have a
point of view at the start of a discussion, after the discussion you go
away for a few days and think about it and you think maybe they have got a point there. So you come back to the discussion board and say ‘look I've reconsidered what I said about such and such, and so and so said this and I think they have got a point there’. So that is a bonus about online discussion that you don't get in the tute room. Because often the next tute you come to, you are talking about a completely different subject. So you might during that week think of [something relevant to a previous topic]... but you don't ever come back and readdress that thing. Whereas online, because it is open for two weeks, the tutorial is over a two week period, or one week depending on the course, you do have more time to consider it and think, and do your readings, so its not only a half hour session... Often its not until after the discussion that you form an opinion on things or your opinions are challenged and you sort of think, why do I think that? I do go back and read it [the discussion board] and often reflect on that, and if my opinion has changed, or my view has changed, often I will reflect back and say, ‘well what has happened here?’ So it is good in that you can reflect on your learning and why your views have changed on the topics. Often, in on-campus subjects you don't have that time for reflection... There is that upside to that that you can go back and look at what people have written. And it’s a permanent record too; you can print that out. (S2).

This archiving of material in a written form also prompted students to develop ways of thinking and writing that moved beyond the conversation with their fellow students and teachers, and into the disciplinary conversations that are implicit in the literature - a conversation that academics participate in through research and publication, but one that is less often joined by students. The online forum or discussion board is perhaps offering a place for nurses to learn how to join this disciplinary conversation. The way in which the student described the effect of having to write rather than speak a contribution, and the way the group interacted shows an understanding of this wider conversation and the challenges to learning and knowledge that it brought.

I think online, because you have to write something, people are more prone to go and research it more thoroughly and have quotes to back up what they are saying. You know, they'll say 'so and so says this in the literature... which is in opposition to what you have said about this, how do you think about that?’ whereas in the tutorial group, you don't really have that, you don't have people coming in with a pile of journal articles saying well look at this, you know. You don't have time for that. But online you do. (S2).

As the foregoing descriptions of students’ approaches to learning demonstrate, some students needed to shape knowledge; others were interested in challenging and extending their understanding. In the instances where students were trying to build their knowledge, it
was clear that students felt they were learning effectively, only when they received the
guidance each individually felt they needed to learn the information that was central to
becoming a nurse. This need for guidance however, varied from student to student.

**Seeking Guidance**

Whilst academics in the first instance must teach a group, students learn as individuals within that group. Online learning environments gave students a wider range of approaches to study that they could employ, as their individual needs demanded. A web site could incorporate guidance for those students who felt they needed it, but the online environment, particularly hypertext features, also allowed for academics to provide greater complexity of resources to engage students at many levels, and in learning more in-depth.

Most of them [course web sites] have the appropriate links in there. It says if you want to know a bit more click here, and it would take you to a link. I like that. (S4).

Having the opportunity to construct individual and personalised interaction with various learning activities was helpful, and the online environment could offer this in a way that the face-to-face classroom could not. However, the integration of hypertext links and additional information into course web sites was only helpful to students with the skills to be self directed in their own learning. The students who could not discriminate between what they must know, and what was interesting to know, were less able to use the information effectively in their learning. Some students were overwhelmed by how difficult they found it to develop the skills of evaluating information needed for learning online, and how to know if they were responding to the information appropriately in what they were learning. These students consistently described their need for guidance from academics. For some novice students, their focus was on what was the necessary knowledge to pass their courses, and they found it particularly difficult when they struggled to learn all the information offered only to find that some was not necessary, but had distracted them from the necessary content.

That’s the big difference between online and face-to-face. Face-to-face you can say ‘how much of this do I really need to know? Is this a needs-to-know basis or is this a for-your-own-interest basis?’ And a lot of the online things are really for your own interest… you can’t discern… There's nothing to say really take notice of this one, because this is really important and you must know it, or that’s just a little bit of extra for your own interest. And when you finally do catch up with the lecturer and you say… I spent the last three days trying to go over all of this stuff, how much of it did I really need to know, and she said
‘Oh that was really there just for you to have a look at’ or ‘I thought it might be interesting.’ And you think I have just put in three days where you are really going right in to something and thinking there is so much to this, and it’s not even things that you need to know. (S9).

Students described being able to engage with learning when academics constructed the online environment in ways that were consistent with a shift from a teaching environment to a learning environment. This included guiding students. If there was an overload of information without guiding students and assisting them to construct a clear understanding of the focus of the subject, then some students either did not read the information, or were unable to transform the information into knowledge through their own thinking processes. These students needed the academic to provide guidance for them to effectively engage with learning.

I find the subjects where they give you heaps and heaps and heaps of lecture notes; I never end up reading all of them. (S6).

If it's just all information thrown at you it's not so [helpful]… but if there's questions you have to ask yourself, that is how you have to learn. If you just have to read, then it's like ‘well what am I reading? why am I reading it?’ But if you have questions with it, it is great. (S5).

Novice students, particularly, found it difficult to construct their learning effectively from course websites that provided too much information, and too little guidance about the information. In this situation, the online material only served to increase their frustration levels, and in some instances, led them to disengage from learning in the online environment, especially where the student was also unable to get any individual guidance from the academic.

I was apprehensive about going back to using the net, because I had just spent so much time doing it [and was afterwards told that they didn’t need to do the activities]. I would always say ‘what are we supposed to be doing on it’ before I would go home and do it. It just wasn’t clearly outlined… and I would have liked to have known if I had done it right. And then maybe I could have concentrated on it more, because I wouldn’t have felt iffy about it. Like ‘Oh I might not have done it right so what is the use of remembering it’. (S4).

You could sort through it yourself and learn at your pace if you knew what you had to know now, and what you could go back to later on to enhance that when you had time. If you knew, if you could work out where your dividing line was, you could concentrate on the here and now stuff. And I would think that the majority of people still would go back and look at the other stuff at a later date when they had more
time. But… to not know, you are trying to cram in the lot, and then you don’t have time to do that, and then you get all stressed out that you are trying to cover too much ground all at once. (S9).

Students lacked the visible cues online that they were accustomed to attending to for guidance in the face-to-face environment. Some students attempted to resolve this difficulty by trying to have ad hoc face-to-face encounters added to online courses.

We found that by the end of the semester, we were all looking for some face-to-face… to clarify things before exams. (S9).

However, a course web site that did give students guidance assisted them in engaging more fully with their learning, and could also aid them in using other resources such as textbooks in a way that engaged them further.

I like it [the course website] because it gives you some direction when you are studying at home… But you will find that what the lecturer puts on there [the web site] as to what is in the book, is more appropriate because it is what they want you to learn. The book is good, and… the CD in the book is good, but what [the academics] put in it [the course web site] concentrates in those areas and it summarised those areas. Whereas in the book it is a big thing, and how much of that do you need to learn? What part of the book is more important? There were questions on the web… so it's a lot easier to be able to see where they are coming from, what they want you to learn. (S5).

A further advantage of the guidance that can be provided in a well-structured web site was evident. When students failed to receive guidance through academic feedback in other ways, such as when assessments are not returned in a timely fashion, students used the web site to gain direction for their learning.

It [the course web site] was great. Because with [a particular course]… you have to put assignments in… on paper… and we didn’t get any of them back from the start of semester right through until the end of the semester. And it's not much use to study for an exam, because you just don’t have them to study with… But on the Internet because it's straight away [feedback from question and answer activity], you think ‘Oh I am really, really bad at that section, because I got nothing right.’ (S5).

**Learning nursing**

Courses that undergraduate students found helpful in assisting them in constructing knowledge and understanding for clinical, were ones in which the academic, through the
web site, had assisted students to put information into an appropriate context. Despite the separation of students and the academic, the perception of the students was that some academics were able to put something of their experience into the course web site, gave deeper explanations, and expanded information beyond just the facts.

…What you think may happen [in a given nursing situation], they’ll tell you if it did happen in their particular experience and when I went out on clinical, a lot of this stuff came back to me, of what I had read in the online stuff and it was like ‘OK that makes sense now’. Just the general things like the privacy issues, and the patients feelings, and with the lecturer explaining, getting us to think how we would feel if we were the patient, sort of explains it all better I think, than a text book does or can. In some cases, maybe not in all cases. It really depends on the person that is putting the stuff on the web. You see, that can be a lot different with the online learning, you may have one that does it quite well and it gives you something really to go off and its really good. (S7).

Students’ valued contextually dependent information and communication, and that was at risk of being lost with the invisibility of the academic. However, some academics found effective ways of reaching out to students and engaging them in learning online. Students also perceived that online material and learning activities that harnessed the potential of multimedia to provide vision and sound were preparation not only for the classroom, but also for clinical practice. Some students used these activities to prepare themselves for what was expected out on clinical placement. In addition, certain activities had the potential to fill in some gaps in clinical experience, as students did not get experiences in all clinical areas.

If you go into the respiratory [online activity] you could listen to different breath sounds. We could listen to normal ones. We could also listen to abnormal ones. And that was really good … because if you are not in clinical practice you would never get to auscultate those [abnormal] breath sounds unless you were in that field and you might never get to listen to those until maybe your second or third year. But we were doing that in the first year. And I’m actually doing some part time work, so it gave me a chance to listen to that on the net and then listen to it in real life, and know what I was looking for, because I had already listened to it on the web. (S1).

Moreover, the multimedia capacities of online web sites meant that students were able to prepare themselves for some aspects of clinical practice in a way that was impossible with a textbook. For example, reading about a sound, rather than listening to that sound provides a totally different learning experience. Multimedia activities, that provide a virtual
reality in which some clinical skills can be practised, enabled learners to have the advantage of, for example, both the sound to listen to, and the guidance to understand the sound that can be provided in an accompanying commentary. Students perceived the simulation of reality as helpful in skill acquisition.

A textbook can tell you it [respiratory sound] is supposed to sound like this, or the pitch, or the length of it… they can write down what it sounds like, but it's not the same as actually listening to it yourself. And some of those web-based things… we did heart sounds and all that kind of thing… when you’re interacting with something and actually listening to it you’re going to remember it a lot more than if you’re just reading. (S1).

Another student found a multimedia interactive exercise captured the feel of a lecturer’s presence in the way it simulated a step-by-step approach to learning a clinical skill, reinforcing the clinical skill for the student.

…in the [nursing practice] subject, you work through… in what order a procedure might occur…the order that you are doing things and when you are doing what… That reinforces what you have already learned in the classroom. It's almost like you have got the lecturer standing over your shoulder saying ‘OK we have done this, now we’ll just go through it again, and no that bit’s not right, try it again’. Until you get it right. And so that just reinforces. (S9).

**Accommodating the teachers’ view**

Academics attitudes towards online learning, although not totally shaping what students think of this medium, certainly had some influence. Academics who marginalise the web in their courses, and either have little information available, or fail to construct their web sites to support learning as opposed to being a mere repository for information, influence students perceptions, use of, and engagement with, online learning differently to academics who are enthusiastic about the web and carefully plan activities to encourage student learning.

You always have your basic outline of what the course is and when the exams are and when the assessments are. And that [web site] there was nothing on it [other than the administrative information] and [the academic] doesn’t like to use the web herself, so she didn’t put anything on for us, we just had the one book to read off and that was it. Whereas other ones that like to use the web had heaps of stuff on it and that was really good. (S4).
And the net stuff hasn’t been talked about much. The lecturers [in a particular course]... have hardly even mentioned it. They have just said it's there, it's extra if you want it. And a lot of it, if it's just the same as what you do in class then why bother? (S5).

Such views of some course websites highlight how students who are gaining expertise with the technology, are aware that some academics may be little better prepared than they themselves are for online learning. Students considered it the academics’ responsibility to know how to use the technology available in education.

I really feel that maybe they [academics] need to take the time, because the industry is really going ahead, I mean we are all becoming computerised; there is no ifs or buts. I know some of them may not be really fluent in it, but it may pay for them to start becoming aware that they need to sit down and... even if it is just sitting down and like week one we are doing this and you need to particularly look at this and that and see how they interact and work or whatever. That would have helped a lot of people I think. (S7).

The students also indicated that not only they, but also the academics, needed to keep current with what is happening in clinical areas in relation to computer and Internet literacy. With the huge increase in health information systems, e-health, and advancing digitisation of technology in the health care system, this is a new kind of clinical currency that academics and students need to maintain.

If you go to any ward... in the nurses station they have computers there. So maybe that is something they [the school of nursing] want to look at as far as making sure that people actually are computer literate. I know some third years that are now finished that really aren’t sure how it all works, and what happens. And you think they are going to be out there, and they use the computers constantly [in practice]. Just on one ward out there, there were two computers there at the nurses station, so obviously it is heavily used if there was two there. And I don’t think it would be good for someone to get out there and be thinking ‘Ok I know how it turns on, but how do I get into there.’ (S7).

Students sometimes found out the importance of these technological skills only when they were on a clinical practice placement. As one student related, some academics are not giving students this information. Students wanted this information from their teachers and at such a time that they still had an opportunity to learn the skills required.

You have to know these skills; you have to know how to use a computer and the Internet before you leave. Because they don’t really tell you that until we got out there and were talking to the nurses and
they were saying how much computer work you do now out there. We hadn’t been told that in class, how much computer work you actually do. So I think they need to start telling, especially with first years, because you have got that little bit of time to be able to play around, especially with essay writing and all that. They should say use it and use it, you have to when you get out there. (S4).

SUMMARY

This chapter has examined data from the interviews with eleven students. The students’ accounts provided a view of their experiences and perceptions of learning ‘in front of the screens.’ While having many different concerns and rewards to the academics described in the previous chapter, the major student themes similarly reflect the way in which Internet technology has created, not a gradually progressive change, but one that fundamentally dislocated students from their previously understood learning environment. Nonetheless, students were relocating their constructions of learning within the new technology. Students had to shift to a learning focus that demanded increased self-direction and self-responsibility. For some students learning in Internet environments met their needs well. However, within this new environment, it was very evident that many students needed preparation and support to facilitate their learning. They also needed time and practise to learn, not only the skills and knowledge required for learning online, but also, the culture of online learning, of which there is only an emerging understanding in nursing education. The students’ accounts of their experiences illustrated the complexities of learning in this environment, and it is from these complex and sometimes paradoxical findings, that the ways in which they are relocating learning are understood.

The next chapter brings together the academics’ and students’ constructions and discusses the implications for reconstructing teaching and learning in Australian nursing education. Recommendations for nursing education and research are made, and the limitations of the study are discussed.
CHAPTER SEVEN

RECONSTRUCTING TEACHING AND LEARNING

The action of knowledge upon knowledge itself is central to the thesis of a new world order. Innovation and new knowledge grow out of a catalytic feedback loop where, as knowledge comes to be understood, the user manipulates and modifies the knowledge-base, reviews it and moves again - reality is transformed as one comes to know it (Draper, 1999, p.18).

INTRODUCTION

The purpose of this study was to explore teaching and learning in Internet environments in Australian nursing education and to examine whether, and in what ways, Internet learning environments enhanced or detracted from learning in nursing education. To this end, this study sought to:

1. Examine the ways Internet technology was being integrated into learning environments in nursing education in Australia
2. Explore students’ experiences and perceptions of learning in Internet environments.
3. Explore academics’ experiences and perceptions of teaching and learning in Internet environments.

Based in a constructivist conceptual framework and methodology, the study was conducted in two phases. In the first phase, a survey ascertained ways in which Internet technology was being integrated into nursing education in Australia and provided a context for the next phase of the research that was comprised of in-depth interviews with students and academics undertaking a variety of Internet-based and Internet-supported courses. These three sources provided the data for the interpretive analysis presented in the chapters five and six, and the pedagogical constructions built and developed in this chapter. It is important to acknowledge that there has been a conscious dialectical stance in this work that captures both the differences and commonalities that arise from the diverse views of participants in this research. The intention here is not to repeat the findings of chapters five and six, but to
discuss points of particular significance arising from the views from ‘behind the screens’ and ‘in front of the screens’.

**SYNOPSIS OF THE FINDINGS**

The key findings of this study were drawn from the experiences of academics and students in a variety of nursing courses in universities located across Australia. The Internet was employed in these courses in a variety of ways. At the time of data collection for both the survey and the interviews, more courses were Internet-supported than Internet-based. A variety of Internet information and communication features were used in courses, with the more highly evolved Internet-based courses being found predominantly in postgraduate courses. What constitutes an Internet-based or Internet-supported course, however, is still fluid, and defied easy definition. Even in courses not administratively classified as being Internet-supported, academics and students may depend extensively on Internet technology for communication.

The survey findings provided both a context for the interview findings, and a degree of confirmation of these findings. The context reported was diverse and uncertain, consistent with an emergent educational environment with few precedents to guide its implementation. The academics’ experiences revealed that teaching in online environments was vastly different to face-to-face teaching and required different practices of teaching and learning that took into consideration the separation of teachers from learners, and learners from each other. While often enthusiastic about the new environment, many teachers were ill-prepared for the transition to teaching online and the impact of this medium on preparation and teaching. The universities structures and processes were predominantly organised around face-to-face teaching and academics experiences revealed little systemic recognition of, or provision for the particular resource, skills development and support needs of those teaching online.

Similarly, students experienced a dislocation from the learning environments to which they were accustomed. Significant shifts were apparent in the students’ constructions of both individual and collaborative learning that were contingent upon the separation of teachers and learners, and the necessity of communicating in a written medium.

Both teachers and learners revealed how, consequent upon their dislocation, they were relocating to a new interpretation of time, place and relationships in Internet learning environments and reconstructing teaching and learning. The reconstructions of learning included ways of relating that built learning communities predicated on the shift in focus from teaching to learning, that supported a number of changes. These included both a shift in
individual student’s learning, and a constructed understanding that arose variously from shaping a fundamental comprehension or challenging thinking, to expand comprehension in the group.

Through new understandings and practices, the participants were beginning to construct a place for students and teachers to realise the possibilities for enriched learning that online communities can provide. The picture painted by these findings is one of evolving practices and emergent processes of teaching and learning in nursing education.

**Reconstructing Teaching and Learning**

Reconstruction is used here as the organising concept that allows an interrogation of the findings in relation to the research questions, the literature and the conceptual framework. This discussion and the resulting pedagogical conclusions are developed through a discussion of the reconstruction that has arisen from the findings presented earlier in chapters five and six. Reconstruction in this study involved firstly, a fundamental deconstruction of time, place, and person in teaching and learning. This process was foundational to the subsequent construction of new teaching practices and learning processes in the Internet learning environment. Thus reconstruction moves beyond the discrete constituent themes discussed in the findings and shows the meaning of these themes in relationship to each other. When integrated, these themes illustrate not merely a crossing of the familiar boundaries of teaching and learning (although this is encapsulated within the reconstruction), but both a breaking down and a shifting of the boundaries themselves, in the sense of both an external and an internal relocation for teachers and learners. These shifts brought new understandings and new pedagogical constructions. However, these constructions were not homogenous and thus the themes presented in chapters five and six were deliberately framed to capture the complexities and diversity of the experiences of learning and teaching in Internet environments. For some academics and students, there was enthusiasm and a will to adopt the technology and reconstruct learning, while for others there was some resistance to these notions. Between these extremes there were those who were accepting, but neither extremely enthusiastic nor resistant. These diverse approaches to constructing teaching and learning in Internet environments were valuable to the researcher as they continually challenged the interpretations, and were pivotal in maintaining the rigour of the analysis. Hence, consistent with the dialectical foundations of this dissertation, these multiple views also assisted in determining the critical points for discussion. This discussion will focus on Reconstructing teaching and learning nursing in Internet environments through the following:
Teaching and learning online
Learning nursing online

The notion of reconstruction provides an understanding that can inform changes in teaching and learning in nursing education, and reveals possibilities for developing online pedagogy. Possibilities, however, are always situated; they are neither limitless nor unbounded. The limitations of this study, as perceived by the researcher, will be examined to reveal the boundaries of this study, and how the parameters of the project constrained the interpretations and constructions made in this research study. As already discussed within chapter three, in constructivist research there are no understandings that are not already constructed (Larochelle & Bednarz, 1998), thus a discussion of the limitations enables the reader to hold the constraints in mind when constructing their own understandings of teaching and learning practices. In this way, the reader is able to both extend the interpretations and construct their own understandings, and judge the applicability of the study to informing practice.

This discussion chapter culminates in a set of recommendations for nursing education and practice. Consistent with the methodology, these recommendations are neither predictive nor prescriptive, nor are they exhaustive. Rather, the discussion seeks to interrogate the findings from these teachers’ and students’ experiences in a way that reveals what could be, and this is used to underpin the recommendations for nursing education and practice. This study and its recommendations make an important contribution to nursing’s knowledge of Internet learning environments; a knowledge base that is currently inadequate and hampers “the ability to advocate, integrate or reject Internet or distance education strategies” (Woo & Kimmick, 2000, p.137). The major impact of the current study is intended to be a clearer understanding of Internet learning environments (that appear to be part of the future of higher education, whether nursing wills it or not) as tools that support teaching and learning in nursing education. This is essential knowledge for the future, despite varying levels of enthusiasm for Internet learning amongst educators. One academic in this study eloquently captured the dissonance experienced by some nurses in relation to online learning in nursing when she said:

Everyone who is a nurse understands, [nursing is] a practice profession, hands-on. And when we remove it, and put it into the educational environment, with simulated clinical beds and all sorts of things, we are removing ourselves from that wonderful, rich environment of human interaction, because we are playing with dummies and we are pretending… but it’s necessary for safety. But when we remove it one step further and we put it in an electronic
form, we’re losing even more of that contact process and we’re not with a patient, and we're not even with our friend in the classroom. We're in a static environment that's not much better than a textbook. So for anyone who thinks they can remove nursing degrees completely to the web, I think they are losing… the foundation of what nursing is, interacting and communicating and touching… that very humanistic part of it. Having said that, we must also evolve into the technology that is available today. And if we think we can shut ourselves away from the web and say, we don’t like it because it's not touchy, feely and it's not ‘nursey’, we're putting ourselves back behind every other discipline that it's taken us how many years to come up close to. We have to evolve with the technology. (T2).

The recommendations from this study are intended to support managers, teachers, and learners in both nursing education and practice to make new pedagogical constructions that include the possibilities of Internet technologies and their place in teaching and learning nursing, so that nursing may evolve with the technology.

Finally, the implications for further research are explored, again with the proviso that the reader, in constructing their own understanding, may have questions of their own arise that have not been foreseen by the researcher.

IMPLICATIONS FOR TEACHING ONLINE

Many of the studies in the nursing literature reviewed in chapter two implied there are major changes in the teaching and learning environment. However, because of a predominant focus in the specifics of a single course, few reported the systemic issues that arise from online teaching and learning within the conventional university context. The findings in this study provide compelling evidence of a major shift in nursing education because of Internet technologies and how this changes the relationships between academics and students, and the traditional university system. This illustrates the need to scrutinise both academic and institutional practices in this discussion.

THE BROADER PICTURE

Both individual academics and institutional practices are underpinned, albeit often tacitly, by philosophical beliefs about the place of technology in education. As such, the place of technology in epistemological transformation and practice reformation demands ongoing critical examination. Technology is undoubtedly reshaping both nursing practice (Sandelowski, 1999) and nursing education. Whether academics embrace Internet technology or not, view it as good or bad, it is changing educational practice. Purkis (1999) drawing on the work of Latour (1991) argues that technology is transformational rather than
neutral, and that moreover, the effects of technology cannot be predicted. Outcomes of integrating technologies into education may be unexpected and unsettling as they depend not on technical or human factors alone, but on a complex interaction of humans, technology and the context in which they are located (Boddy, 1999). Purkis (1999, p.155) contends that attention must be paid to “how technological innovations move through organisations” to understand the effects of those innovations. Such context-dependent engagement with the epistemological changes occurring in nursing education is useful in promoting better understanding of Internet learning environments at a local level. Open debate, criticism and critique of Internet technologies and their place in education are required by, and from, academics (Brabazon, 2002) as much as explanations of the uses of technologies. Brabazon (2002) claims that the current rhetoric surrounding Internet technology in higher education is effectively privileging certain knowledges. Bringing multiple lenses, such as feminist (Fairman & D’Antonio, 1999; Im & Chee, 2001) and critical analysis, to the debate about epistemological transformations in nursing is advocated as another means of resisting the notion that the Internet is an homogenous medium. By not attempting to cover over the differences that were found in the interpretations in this study, and by examining the relationships that exist between the different and in the paradoxical, a place is made to ponder how these differences belong together in nursing education. de Castell, Bryson and Jenson (2002, para.1) suggest that challenges to thinking about online epistemology and pedagogy might be brought about by repositioning questions; by “asking, not how education might use these new tools, but instead asking what, educationally, they might offer; instead of theorising educational technology, then, the focus becomes an educational theory of technology.” This suggests that nurse academics must continue to question teaching and learning practices and their relationship to Internet technologies.

FROM INNOVATION TO SUSTAINED INTEGRATION

Many of the Internet learning environments that formed the context of the academics’ and students’ experiences in this study, were at an innovative, early adoption stage of development. The academics that developed and managed these courses, mainly fell into two groups. Either the academic was the sole innovator, or one of a small teaching group, who had made the decision to move a course online, more or less independently of the wider university system, or they were implementing a school or university directive. The experiences of both these groups of academics were important in highlighting the deconstruction of several areas of the familiar institutional system that accompanied the move online. Even where participants in this study were located in schools where multiple
courses were being developed with Internet support, structures and processes in the broader institution often failed to keep pace with the transformations in teaching and learning processes. The academics’ experiences and views also indicated the reconstruction that is necessary to sustain online teaching and learning and extend it into the mainstream of teaching and learning practices.

Taylor (1998) characterises the forefront of innovation as constituting a “lone ranger” approach (p. 272). In this approach much is gained, in terms of a specific course’s development, from the energy and commitment of individual academics. A dominant feature of this approach is a preference for autonomous practices and a flexible attitude towards complying with traditional university structures. In other words, this type of practice innovation leads to a voluntary dislocation from the structures, policies and processes of universities (Taylor, 1998). Much is learned about the innovative use of Internet technology from these academics, and they have, in this study, clearly shown how their courses have often been “seen as the trailblazer” that has then “spilled over into other courses” (T5). These early adopters modelled possibilities for using Internet technologies in nursing courses in innovative ways. Concomitantly, they brought into view some of the fundamental ways in which the courses were dislocated from the institutional structure, and revealed strategies for circumventing the established processes, for instance, in their flexible use of time, or in creative and novel assessment work they assigned to students.

The alternative experiences of many academics have illustrated the challenge of moving beyond the innovative stage and constructing sustainable online courses and practices within the mainstream of nursing education. Many online courses or projects in higher education generally, have burgeoned under the influence of the enthusiastic founding academic and the seeding funding that may have accompanied the project, but failed to be sustained or to become mainstream activities (Alexander & McKenzie, 1998; Oliver, 2001). The dislocation from accepted university structures and processes that allowed an academic to do things differently and introduce an online innovation into their individual practice is frequently a barrier to transforming the innovation into widespread sustainable practices within the school. Particular challenges to academics include managing dislocation from time in preparation, teaching, and learning; from place in delivering and accessing courses; and from the people teaching and learning in the course. Reaping the benefits Internet technologies promise in higher education rests on moving Internet learning from the sole province of the “lone rangers” (Taylor, 1998, p.272) into widespread, thoughtfully integrated use that is sustainable within the university through appropriate teacher expertise, students
readiness and, effective and efficient technological infrastructure (Oliver, 2001). The prospect of shifting from innovation to widespread adoption raises thought-provoking questions for consideration by both academics and managers, such as, what is the purpose of online learning in a given context? How does this reflect the discipline and its future directions? And how can Internet technologies contribute to students learning?

**SHIFTING TEACHING TO LEARNING**

The different responses amongst academics in this study (and their reported perception of their managers’ attitudes) to the challenges of Internet learning environments have highlighted the differences between “reforming” and “re-formating” (Taylor, Lopez & Quadrelli, 1996, p.90) teaching and learning. In the former, fundamental pedagogical changes are necessary; in the latter the method of delivery changes, but little else (de Castell, Bryson & Jenson, 2002). For example, academics who use the Internet merely to post lecture notes are providing the same teaching as a lecture, but in a different format, and managers who advise academics to ‘cut back’ in Internet-based courses are similarly supporting re-formatting of teaching, not reform. This is not to say that providing students with lecture notes online is not useful, it is. However, it is an example of adapting old teaching practices to new technology. Such re-formatting can be a useful step within a wider pedagogical reform project, but on its own falls short of realising the potential of the Internet, or justifying the expense of large scale Internet technology infrastructure.

The findings of this study showed that a shift in focus from teaching to learning was fundamental to successful reform. The kind of shift that was evident in the academic’s story of changing her practices of information gathering, because in her Internet-supported course she was now looking for what might be useful for students to learn from, not necessarily a perspective from which to teach (chapter 5, p. 119). Such a change illustrates the necessary epistemological transformation that moves academics beyond having technology-driven teaching strategies to having educational goals that focus on engaging students in learning through appropriate technology use. Moreover, this shift applied not only to academics’ focus on their teaching, but also had implications for teachers as learners.

It was apparent that, to an extent, many in the current cohort of academics are a “transition generation” (McPherson, 1997, para.15). They are teaching in between the print culture and the networked digital/multimedia culture, and across students groups that range from those who have little experience with Internet technologies to those who have advanced expertise. To successfully negotiate a transition from their previous expertise in teaching to a new expertise in teaching online, it is evident that academics must first become learners
again, and necessary that they be supported in gaining the required expertise to shift to a learning focus in the Internet environment.

Although familiarity and advanced skills with Internet technologies were not apparent in nursing’s current student cohort reported both in this study and much of the nursing research (Ali, Hodson-Carlton & Ryan, 2002; Cartwright & Menkens, 2002; Oliffe, 2001, 2002; Ribbons & Vance, 2001; Todd, 1998), this is a situation unlikely to last with successive generations of nursing students. Already, many of nursing’s next generation of students (in digitally developed countries at least), are completely ‘at home’ with Internet environments. Such familiarity blurs the boundaries of reality and virtuality and locates these young people well beyond the acts of translation that many academics are undertaking to approximate the meaning of teaching technologies to the world they previously understood. The next generation already consider virtual communication as ‘real’ (White, 2003).

A development that may occur with those who have “grow[n] up digitally” (Seely-Brown, 2000, p.11) will be that these students may become “pedagogical co-authors” (Draper, 1999, p. 197) with academics as they invent new ways of using Internet media (for example, this is being seen in activities such as ‘blogging’\(^5\) that are now being considered for educational uses (Baggaley, 2003). This will call for a great degree of flexibility in academic-student relationships, and a focus on learning in teaching practices. Before such new pedagogical relationships can become reality, however, academics need to be supported to move beyond the novice state that many of those who are not the technological innovators, currently feel they occupy. Hence, critical requirements in the shift from a teaching to a learning focus online will be relevant, appropriately resourced, and timely academic education and development. This change must, however retain a necessary fluidity in the pedagogy enabling responses to other emerging changes. To implement online learning successfully, both existing and new academics will need development as online teachers and a significant and sustained investment by universities.

\(^5\) A blog is a form of participatory media found on the Internet (blog evolved from the original term web-log). The term blog encompasses two main types of website. One type of blog filters news, offers commentary on that news, and contains links. More recently this has evolved into a second type - personal journal-like blogs that eschew the earlier focus on filtering the web, and instead focus on personal reflections (Blood, 2000). Blogging (producing a blog) is located in the borders between two media, being a cross between traditional journalism and talk-back radio (Sullivan, 2002). Through “seizing the means of production” (Sullivan, 2002, para.3) blogs are emerging as an important means of people moving from passive audience to public participation in the production of information and opinion.
RECONSTRUCTING TEACHING PRACTICES

There are three academic needs for the reconstruction of teaching practices that became apparent in this study. Firstly, the development of technical skills is an absolute necessity, although skills alone are insufficient to prepare academics for teaching online. Academics were often teaching on the Internet, in highly visible teaching spaces, while they were still learning how to use the medium. This points to a second academic development need; that of having opportunities to practice the new skills, or at least be accorded some acceptance that teaching these courses may take practice and support. More than one cycle of delivery will be required to develop course structures and educational strategies to a high standard. Some academics in this study also found that some students were resistant to major changes in teaching approaches, responding with negative evaluations. Evaluations of courses should take these developmental issues into account. The third aspect, outlined above, is the requirement of developing appropriate pedagogical underpinnings for teaching with the new technology. Many academics felt the need to ponder and determine the “value” (T2) of what the Internet offered for teaching and learning. Academics need to know how their role as a teacher is re-conceptualised within the learning focus of the new pedagogy, and how teaching is practised within this. Thus staff development for academics needs to address pedagogical beliefs and their relation to online teaching and learning, the changing roles of the teacher and student, and specific technical skills. Development strategies should also provide time and opportunity to practice teaching online and develop experience.

A further consideration is the context-dependent nature of academics’ learning needs. It was apparent in this research that academics show a large degree of variability in their skills and knowledge and were looking for both general, and specific help related to the stage of development of both themselves and the courses they managed and taught. For both initial and ongoing learning strategies and supports to be effective, they must ‘fit’ with both the context-bound needs of the individual academics, and the resources available in different schools of nursing and different universities.

There are, however, some generic changes to the traditional roles of the academic as teacher that emerged in online teaching. These include academics adopting the roles of: being a guide rather than a lecturer (providing guidance and scaffolding, assisting students to develop complex thinking skills, and challenging thinking); being a ‘connector’ between group members to support establishing relations in an online community; being a facilitator of ongoing communication and group processes; being an educational designer of online courses; and being a technology support person for students. These roles are all consistent
with shifting from a teaching to a learning focus, and a loosening of teacher control over students’ learning. Similar role changes are reported in the higher education literature including, the shift from transmitter of information to coach, as identified by Herrington and Oliver (2001), and the eight main roles identified by Goodyear, Salmon, Spector, Steeples and Tickner (2001) that included process facilitator, advisor-counsellor, assessor, researcher, content facilitator, technologist, designer and manager-administrator. Berge (2000), focuses on shifts in the teacher’s role from oracle and lecturer to consultant, guide and resource provider; from a provider of answers to an expert questioner; from solitary teacher to member of a learning team; from controller of the teaching environment to fellow learner.

Some possibilities for academic development are ones that could formalise what academic teachers already find supportive, such as academics helping each other. It was obvious in this study, from both the academics’ and students’ constructions of online education, that there are ‘innovator’ academics in many schools who have already built considerable knowledge and skills in online teaching practice. It was equally clear that these academics are enthusiastic and ready to share this expertise with interested colleagues. There is much value in schools of nursing determining what they already do well within their walls, and valuing and acknowledging this as a foundation for both academic staff development and collaborative endeavours in online practice. Mentors and nurses with specific technological, and online educational design knowledge and skills were also mentioned by academics as an emerging nursing education specialty that could provide assistance to novice online teachers.

Sharing with peers on a larger scale can also be facilitated and enhanced through use of the Internet itself. Online communities of practice (Bieber, Civille, Gurstein & White, 2002; White, 2003) are a collaborative means of practitioner’s learning, sharing expertise and resources, developing online skills and a meta-practice of membership in an online community (White, 2003). While having a primary focus on the domain or discipline, these online communities of practice have the additional advantage of providing a location for border-crossing, that is, for finding and developing new knowledge and resources in collaborations that would usually be unavailable within any one university.

The findings also argue for increased collaboration in the ongoing development of online learning and teaching in nursing. Nursing’s particular need for regulatory standards across the profession, and a moral imperative and public mandate to provide the best-educated nurses the profession can, overrides the competitive interests of universities in many nurse educators’ views. However, these interests are not mutually exclusive, and
commercialisation of learning activities is already beginning in nursing education. Collaborative sharing of multimedia activities and reusable learning designs that could be adapted to each school’s particular needs are a viable way of increasing the usefulness and cost-effectiveness of learning objects that are often expensive to produce, and sometimes re-invented across multiple sites. However, while some academics in this study saw the merit in sharing in this way, within the current funding climate in Australia, there remain competitive and commercial difficulties to overcome. Nonetheless, the Australian University Teaching Committee is currently investigating such initiatives in higher education with a study into the feasibility of reusing high quality learning designs as guidelines, templates and/or software in locations other than those in which they were originally developed (Agostinho, Oliver, Harper, Hedburg & Wills, 2002; Oliver, 2001).

One further noteworthy aspect of the reconstruction of teaching practices is the ‘backflow’ effect to classroom teaching from online teaching. This was noted in a variety of course structures: in Internet-supported courses, and in classroom courses that had an Internet-based equivalent. It would seem that implementing an alternative pedagogical approach, such as online teaching, offers academics ways to reconsider the pedagogy of the classroom and an opportunity for reflection on their existing teaching practices. As indicated in the findings presented in chapter five, this has brought beneficial results to some courses. Although there are few references in the literature to these backflow effects, in one noteworthy study, Harden (2003) used Internet-based discussion groups to support lectures delivered to a class of 117 nursing students. This innovation was viewed positively by students as supporting their learning in a way that the lecture alone could not have and shows a practical use of reflecting on traditional teaching methods in relation to online pedagogy. Changes in any one part of a teaching and learning system do not occur in isolation, and both academics and managers need to consider the possible backflow effects on classroom teaching when planning Internet-supported or multiple delivery mode courses.

Workload

Both Internet-supported and Internet-based course preparation and delivery were inconsistent with the conventional structures of university workload allocation. Already committed to clinical requirements not found in other disciplines that have less reliance on strict regulation of practice, nurse academics now face the extra burden of coping with the management and delivery of courses that do not fit the traditional hours allocation (usually somewhere between 36-40 hours per course). Academics estimated that online course preparation took them hundreds of hours. Unfortunately, what appears to often be lacking is
a distinct record of academics’ time, work inputs and outputs. In this way, academics are themselves contributing to the hidden nature of much of their online work. If both traditional workload allocations, and traditionally accepted ways of using time for academic activities are to be successfully challenged in the Internet teaching environment, academics will need to capture the pressures of time dislocation in a detailed record that measures how much time online course development, teaching and management actually consume, and the ways in which these activities are inconsistent with the current time allocations. Vestiges of earlier pedagogies remain in the extant structures and policies of many institutions. In a chaotic, networked knowledge society there are different demands. It is essential however, that online teaching is not viewed in isolation from other teaching responsibilities. Often the academics in this study were teaching both online and in classroom-based courses at multiple academic levels. The impact on workload of such a variety of course formats was exponential, rather than cumulative, as academics found they needed to be available to different student groups at various times through both the day and the evening. Academics’ experiences with workload and the lack of recognition of online teaching call into question even the term ‘workload allocation’ and suggest that models of determining responsibility and workload should derive from negotiation rather than allocation. Such negotiations could then inform Human Resource policies, and practices for valuing academic teaching performance, and assessing and implementing quality measures. The potential to address the equity issues inherent in the current sporadic implementation of online teaching for system where workload, recognition and reward may bear little relationship to each other are also enhanced through a negotiation model.

Throughout this research study, invisibility was a fundamental finding of various aspects of the online environment. It is suggested here that transparency will be a key factor in deconstructing the existing structures, and constructing ones more favourable to institutionalising new pedagogical practices and learning processes in nursing education that use Internet technology to enrich learning. The experiences of some academics in this study, revealed that managers’ initial reactions to time dislocation was often one of advocating that academics’ find ways to ‘cut down’ on the work and time allocation to online courses. This reaction signals that, if they are to be successful in changing the existing system, it will be necessary for academics to articulate clearly to those in control of resource allocation, both the educational purpose and predicted improvements from using Internet technologies in their given context, and detailed information about the time and work involved in online course development, management and teaching.
Ownership

Issues of ownership in the Internet environment are complex and grow more, rather than less, convoluted as the technology develops. There are considerable legal issues involved in intellectual property rights and the complicated demands of digital copyright legislation, both in Australia and globally. These impact upon academics developing and delivering online courses. To a large extent, academics are waiting on the outcomes of courtroom deliberations from around the world as they struggle with the daily barriers imposed by copyright restrictions. Other than highlighting that navigating copyright restrictions is a significant organisational and time-consuming challenge for academics, this problem is beyond the scope of this research. Suffice it to say, that these issues will likely become more complex, rather than less, before the balance between competitive interests, fair use and the public good are resolved in scholarship and teaching (Katz, 2000). Both individual academics and universities must, of necessity, stay informed about developments in this area. This suggests the need for close collaboration between academics and other colleagues, such as librarians and those in digital information services, who have advanced knowledge of these issues.

Beyond these global issues, there are vexing questions about ownership and collaboration arising at a local practice level for academics teaching within an Internet environment. For example, who owns teaching and learning materials? What happens to these materials when an academic leaves an institution? How is use of digital teaching materials governed if the original academic developer is not reassigned to teaching the course they developed? (Wills, Stommel & Simmons, 2001). How much of the intellectual property resides with the individual academic and how much with the institution? How do/should academics collaborate on online material development and their deployment in teaching? What recognition is given to academics for their intellectual input to a digital resource that is built by a team of people, such as programmers and web builders? How is the flexibility of academics to support each other’s work, or have flexible teaching responsibilities compromised by online structures? What is the place of casual teaching staff within the online environment? Internet technology complicates perceptions of ownership, recognition of curriculum development and challenges the autonomy of academics in ways that make it more difficult to locate innovative online course preparation, management, teaching, participation and maintenance in the mainstream of university teaching.

The substantial time demands, and the intensity of academics’ involvement with course development and teaching in the Internet environment appears to promote a
particularly strong sense of ownership. Most importantly, one could ask, how does this apparent emphasis on autonomy and ownership influence the collaboration previously argued for as a mechanism to sustain and diffuse Internet teaching and learning practices into the nursing education mainstream? Both the emerging legal issues, and these practice issues challenge academics and university management, and it remains unclear at this time whether these issues will be effectively managed. While not insurmountable problems, these issues need to be addressed at both practice and corporate levels and appropriate structures and strategies devised to deal with them, as the online environment is significantly changing the ways in which universities and academics work.

**Recognition of the reality of online teaching**

Given this large investment of time, skills and knowledge by academics, there was a serious lack of recognition within the university structure for online teaching work reported by the participating academics. A lack of recognition is not a new problem in relation to teaching in higher education. This issue has been debated since Boyer’s (1990) work in the early nineties drew attention to the need for scholarship in universities to be reconceived within broader definitions (beyond research and publication). However, it seems that the changes brought by Internet technologies are again bringing this issue to the fore in nursing education. Academics are meeting with little success in having their efforts in teaching online recognised and rewarded either by the university or, in many cases, by colleagues who have yet to experience the online education revolution. Universities need to develop systems that recognise and reward this new kind of teaching scholarship.

Academics seek recognition not only for their personal practice in teaching, but more importantly, recognition for their classes and students within the system. A fundamental problem they experienced was the invisible nature of the class, and the lack of immediacy of system responses to academic and student needs. This dislocation from physical space highlights one of the challenges of Internet classes that were revealed in this study. Students and academics both talked about being ‘on the Internet’ as if this were a place to which they went. A vigorous debate is currently ensuing about whether the Internet is a place and what the impact of beliefs, one way or the other, will mean in society. Despite being an erroneous notion (it is data, not people, that travel on the Internet), the pervasiveness of the metaphor of the Internet as a place is now inescapable (Lemley, 2002). This widespread social construction of the Internet as a place was shown to be important to academics and students teaching and learning nursing on the Internet. While academics and students relied on the creation of a place in which they could feel they were located, within the wider university
system, the Internet is part of the infrastructure. Thus the system was often not structured to treat this specialised part of the infrastructure as a teaching and learning place in the same way as a classroom is. Online classes were handicapped by their lack of presence and immediacy in the greater university structure. In some cases universities were unable to provide reliable, consistent and stable services that located online classes in a ‘place.’ Academics realised, as a pressing systemic issue, that there was a greater need for recognition and provision of services to online courses. Problems often existed with a lack of provision of back up to online courses. Reframing the online systems as being among the teaching spaces of the university would highlight the interactive nature of all the delivery mediums as part of one university teaching system that impacts on both teachers and learners. Academics are at the intersection of university corporate structure and student needs. In this location within the Internet educational environment, they bring special knowledge and a depth of insight about student learning in relation to the policies of university structure. Their experiences in this study illustrated the need for accountability systems to be in place that lead to quality outcomes for students.

IMPLICATIONS FOR LEARNING ONLINE

Identifying the factors that contribute to student success in Internet learning environments is critical for nursing education (Thiele, 2003), as more courses are redesigned for the Internet. Students have different needs in the online environment.

Transparent media

Difficulties with connecting to the Internet (Soon et al., 2000), fear of Internet technology failure, and a lack of skills, knowledge and confidence with using computers and the Internet are persistent issues reported within online learning in nursing education. The literature review (chapter two) highlighted the negative impacts upon students’ learning when they, either anticipated or actually, experienced difficulties when accessing Internet technologies (Ali, Hodson-Carlton & Ryan, 2002; Cartwright & Menkens, 2002; Halstead & Coudret, 2000; Harden, 2003; Herrmann, Downie & O’Connell, 2001; McAlpine, Lockerbie, Ramsay & Beaman, 2002; Morris, Buck-Rolland & Gagne, 2002; Roberts et al. 1998; Soon, Sook, Jung & Im, 2000; Trick et al., 1999; Todd 1998). This study’s findings are consistent with that literature.

Student’s themselves interacted with infrastructure factors to produce a variety of reactions to learning with Internet technology. Contrary to popular assumptions that students are becoming very knowledgeable about computer technology, several students in this study
were, initially at least, neither skilled nor confident with computers. This had an adverse effect on their ability to learn using the medium. For educational media to be most effective it should be transparent to students so they see right through the media to the content, without being distracted by the medium of delivery. At this point in the development and use of Internet learning environments, this transparency is compromised by both students' skills deficits, and by the lack of availability, reliability, and stability of the infrastructure needed to support online learning.

Andersen (2001) has captured in his definition of infrastructure just what students need: “Infrastructure is what I could take for granted, what was there without asking… the things that surprise you by their absence not their presence” (para. 6, emphasis original). Some students in this study, however, felt more than surprise at infrastructure failure: they felt anxiety and frustration at being unable to learn. It would be advantageous for universities to consider infrastructure based on the users’ perceptions of it, rather than the technology itself, and as needing to evolve synchronously with the uses that are required of it, focusing on quality of service, parsimony of features and easy operability (Andersen, 2001). Beyond the institutional provision of an adequate technical infrastructure, academics and information services can help ameliorate the effects of (what seem to be inevitable, if intermittent) technical failures by providing an effective problem-solving service for students. Technical problems that are solved immediately are forgotten quickly (Carswell et al., 2000). The challenge this presents for universities is one of finding viable and realistic ways to meet demand from an ever-increasing number of students who are participating in courses that have some reliance on the Internet. Students cumulatively study across 24 hours a day, seven day a week, and for any technical problem-solving service to be effective, it must be available at all these times.

A lack of skills and confidence with computers is not an isolated occurrence in nursing education, and has been reported consistently in the literature for the last ten years (Kenny, 2002). Finding time and space in many nursing curricula to place computer and information technology skills development, and assigning the responsibility for providing the resources to do so, is a challenge for many schools of nursing. Viewed through a conservative pedagogy predicated on increasing content in curricula to meet future needs, the need to assist students to gain technical skills is problematic as this displaces nursing content from the study programme. Viewing the attainment of these skills as important learning tools that will assist nurses’ learning in both the university and practice reframes this skill acquisition as an integral part of nursing curricula. Although not necessarily the
responsibility of the school to provide (many universities provide such training on an institution wide basis) the findings in this study indicated a need to both monitor and mentor students’ computer and Internet knowledge and skill development. That is, students’ learning is supported when attention is paid to assessing and knowing their individual needs, and giving guidance about gaining the required skills. The findings of this study, such as the reliance of students on other students to assist them with learning technology skills, suggest that innovative ways of helping students may be found in individual contexts. For example, paid peer technology assistance (Cartwright and Menkens, 2002) for specific technology skills may be helpful. Students need to be adequately prepared to meet the requirements of their courses, be they Internet-based or Internet-supported. Many students need both training to learn the skills, and time to practice with both the hardware and software used in nursing courses. To ignore this need is to disadvantage those students who do enter nursing courses with inadequate computer skills.

**Responsibility for learning**

Internet environments are currently one impetus for a change in the student role in learning. The student’s role is shifting from a received-knowledge view of passive learners to constructors of their own knowledge, equipped with complex problem-solving skills, rather than being adept at memorisation. There is a move towards collaborative group work and an increased awareness of diversity, along with an emphasis on learning strategies (both individual and collaborative) that require students to be more self-responsible and self-directed (Berge, 2000).

Research has shown that students and teachers do not always share the same understanding about the nature and purpose of self-directed learning (Hewitt-Taylor, 2001; O’Shea, 2003). While many benefits of self-directed learning are claimed, including student confidence, autonomy, motivation, the development of lifelong learning skills, and ability to transfer knowledge (O’Shea, 2003), the universality of students’ preference and readiness for learning in this way is questionable. Research has reported that nursing students may feel increased stress and anxiety about self-directed learning (Lunyk-Child et al., 2001). Students find self-directed learning challenging even in the conventional face-to-face settings with which they already familiar. The challenge that the Internet context presents to students is even greater. Internet learning environments, by their very nature, focus on individualisation of learning at the point of the end-user and, to a large extent, require self-direction. The medium itself requires students to actively participate in learning (Bachman & Panzarine, 1998) and adds new challenges for their information management skills through the access it
affords to enormous quantities of information (Ribbons, 1998). This increases a sense of being unable to discriminate the necessary information from the unnecessary, and some students also feel unable to determine what is reliable, quality information in this medium.

It was evident in this study that nursing students who were novices in learning this way experienced anxiety about whether they were accurately prioritising their learning to meet the course requirements. These findings are consistent with earlier studies where students were divided as to whether self-directed learning was an advantage or a disadvantage (Morris, Buck-Rolland and Gagne, 2002), and ambivalent about Internet course structures forcing them to be more responsible for their own learning (Cartwright and Menkens, 2002). Such ambivalence suggests that academics need to clearly identify their expectations for students (Halstead & Coudret, 2000). Virtually all the students in the current study wanted guidance from academics about learning and what to learn. Those students who perceived that they received such guidance were positive about the experience while those who did not, were frustrated and anxious about their learning. What was unclear was whether the difference resided in the students, the course structure, or as is more likely, in the interaction between these two.

The findings revealed a need for academics teaching online courses to consider both the students and the course structure and processes. Some students are suitable candidates for an online course, while others may not be. The question raised is how do academics distinguish? Academics should question how they are assessing students’ readiness and preference for online learning, where the opportunities lie for students to assess their own readiness for online learning prior to courses, how the course provides for varying learning styles and the ways in which they are preparing students and assisting them to gain appropriate metacognitive skills that aid the self-direction, self-responsibility and active learning required in online learning. Thoughtful analysis and planning of ways to design learning in an online course to bring together differing learning styles and communication styles with content (Andrusyszyn et al., 2001) has the potential to extend the numbers of students to whom the various multimedia manifestations of online course are beneficial. This would help to accomplish what Dreyfus (2001) refers to as embodied learning.

For motivated students with good time management, appropriate study skills, and the capacity to be self-directed, online learning is a more positive experience (Brown, Kirkpatrick & Wrisley, 2003). Kenny (2002) found that the experience of online learning (even in the presence of initially negative attitudes), when properly supported, promoted learning confidence and reduced dependence on teachers. For students who lack these skills
and/or a preference for learning in this way, the self-direction and self-responsibility required is more stressful and may result in negative experiences of online learning. A resulting challenge for universities is, whether they have the resources to provide sufficiently flexible delivery to meet the individual learning style preferences of all students. In this study, it was a minority of courses that provided equivalent Internet-based and face-to-face classes into which students could self-select. It may well be that Internet-supported learning better meets the needs of a wider range of students, if remote access is not the driving force for choosing Internet delivery. Whatever approach universities take to flexible course delivery, preparing and supporting students to develop the necessary skills and attitudes to successfully learn online is vital.

Preparing students and supporting learning online

It was apparent in this study that, for many students, their cultural inexperience of the online world made learning as difficult as their technical inexperience made it. Developing appropriate academic and student expectations, and adequately preparing students by developing the skills, etiquette and conventions (Carswell et al., 2000) that are required online is necessary for successful online learning, particularly in Internet-based courses. The findings of this study indicate that there are several specific elements of online courses for which students need to be adequately prepared. The writing demands of Internet-based courses, are often particularly difficult for students. Academics can prepare students for this by setting clear expectations and guidelines of how written communications are to be managed in an online environment. Ensuring there is a clear purpose to any online activity encourages learner engagement in the online environment (White, 2003). The opportunity to practice online communication prior to a course commencing, or at the beginning of a course is a way which may ensure that all students have the opportunity to practice with less challenging and non-assessed activities, and can decrease the threat to students and encourage participation. This, in effect, allows all students to start from an equal place, particularly if they are later assessed on communication and participation. Giving appropriate feedback and modelling how communications can be constructed further assists students to communicate more effectively in writing.

Appropriate support for learning is another key area in promoting effective online learning. An important need for students is for the Internet learning environment to be a safe place. Although the literature reports that students who participate less in face-to-face classrooms are afforded a greater opportunity to contribute on the Internet (Kaas et al., 2001; Kenny, 2002; Kozlowski, 2002; Martyr, 1998; Siktberg & Dillard, 1999), some
students in this study felt more vulnerable in the Internet environment than in the face-to-face classroom, where communication is supported by visual and verbal cues and accepted and understood social conventions. White (2003) outlined some of the specific challenges of the Internet communication environment, particularly pertaining to groups. These include: the diffuse attention of the participants, for example, multitasking during group activities (which raises questions about whether students can do this and still participate effectively [Diekelmann, 2000]); diverse intentions, where group members have different goals, a problem that has been identified in online group assessments in nursing (Harden, 2003; Mastrian & McGonigle, 1997; Morris et al., 2002; Siktberg & Dillard, 1999); fuzzier identities because of participants’ invisibility; and invisible personal boundaries that make relationships more difficult online. All these factors may contribute to making participation and relationships in online groups challenging. However, some caution must be exercised to avoid homogenisation in the group. If no one is prepared to provoke higher levels of discussion by spontaneously challenging others, or if everyone is editing or censoring their thoughts, there may be fewer stimuli to group involvement. Academics modelling characteristics of knowledge-centred discussions, such as encouraging further exploration, synthesising, drawing threads together, identifying good ideas, identifying weaknesses in arguments, challenging, and promoting development of the group (Cox, Clark, Heath & Plumpton, 2000), can help students learn how to engage in online discussion. Crossing new borders on the Internet brings new insights and innovations (Bieber et al, 2002), and it is possible for students previously seen as distinct and unrelated such as rural and urban, online and offline, academics and practitioners, to come together in Internet-based learning. Both students and academics therefore need skills in “engagement, collaborative learning… and cultural insight” (Bieber et al, 2002, p.12).

Visible student participation in groups is often assumed to directly relate to learning. This assumption underpins the concept behind the term “lurkers” (Carswell, et al., 2000, p.41) that has been coined to describe those students who follow online discussions but do not actively participate; who are present but invisible (Hong, Lai & Holton, 2003). In the current study there were experiences of students hiding, or being perceived to be hiding and not participating. The students’ descriptions of their place in this learning environment provides a more complex view of this phenomenon, however, and one that opens up possibilities for supporting their learning. Some students’ preferred learning style was that they liked to observe and keep track of what is going on, but to learn independently at a different pace. Some students do not want to participate; others report that a lack of
participation is because there is confusion over roles and unclear expectations. Understanding these different needs removes these students from the blanket term of lurker. Reframing these students as “peripheral participants” (White, 2003) and relating to their individual needs and learning styles gives them more legitimacy and allows for appropriate support and preparation for online learning. Not all students learn by engaging and actively speaking out, a fact that has been accepted in the classroom. Some students learn by watching and reading. Hence these students may be learning quietly on the Internet. Of more concern, are the students who are not participating because they are ill prepared to do so. For these students, addressing their difficulties through preparation, guidance and support is essential to learning. White (2003) has argued that it is the purpose that links virtuality and reality: if there is a relevant, compelling purpose, then students will engage in the online community.

Inclusivity in online nursing education

The survey phase of the study revealed that Internet environments are integrated into a variety of courses within Australian nursing education. A diverse range of courses were represented, consistent with those described in the nursing literature (reviewed in chapter two), where a similarly wide range of Internet structures and content areas are deemed amenable to learning in an Internet environment. It can be assumed from this that nursing content is deemed appropriate for inclusion in Internet offerings by many academics.

However, it is not content alone that requires close scrutiny in terms of inclusivity of online nursing education. White (2003) has suggested that at this time, the Internet is not an inclusive medium and that it is only effective for probably 80% of people. Of these, 20% of people are the ‘early adopters,’ the remainder of that 80% will adapt to the technology as it becomes mainstream, while 20% will never become proficient with it. With this in mind, White recommends that a blended (Internet-supported) approach to course delivery will include more learners. The findings from both academics and students in this study support this viewpoint. Many schools of nursing are blending course delivery approaches. Many courses in this study were Internet-supported rather than Internet-based. Of those that were Internet-based, the majority were postgraduate courses, in which students’ nursing and educational experience may play a significant part in the success and/or appropriateness of the online environment. This potential difference was noted in an evaluation of a nursing course reported by Thiele, Allen and Stucky (1999). Many undergraduate students may have a greater reliance upon at least some face-to-face contact with academics in their courses than postgraduate students. Several academics in this study held the view that Internet-
supported courses with some face-to-face contact were the most beneficial for learning nursing because nurse academics need to share with students ways of thinking not only about learning, but also about nursing. Some feel this is achieved more readily with some face-to-face contact. However, some of the academics in this study reported how they, and particularly postgraduate students, are learning ways of sharing practice knowledge in small group online discussions.

Findings within this study suggest that contrary to what was expected in the early days of the Internet, it is not in dealing with large numbers of students that the Internet is proving most inclusive for nursing. Allowing schools to work with small numbers of students in diverse locations, or diverse specialties, concentrating teachers’ expertise and resources in a central location and bringing students together with them, is increasingly valued. Students, who would not otherwise be able to participate, because numbers were too few to offer a course, can now be linked with other students and the teacher, to produce a viable class that can offer quality teaching and learning opportunities. This is an important step for nursing, suffering as it currently does shortages in many specialties, and in needing to provide services to those in rural and remote locations in Australia.

Two aspects of the online experience that the researcher expected to encounter, but were only dimly foreshadowed in this research, were those of costs and the impact on regulatory structures. While cost increases were hinted at by academics in terms of time and resources necessary for online course development and teaching, it was evident that there is a paucity of information about actual costs, at least at the school level of university structures. This is consistent with the findings of Woo and Kimmick (2000) in the United States, who found that actual financial impacts of online nursing education were not reported and that, instead, assumptions of decreased costs were frequently made. A few respondents in this study addressed the issue of opportunity costs, questioning what would or would not be funded, due to the large financial input demanded by Internet technology infrastructures and developmental costs. Expanded commentary on financial concerns did not emerge in this research, but this does not signal a lack of importance of this issue to academics. It is more likely that the focus on teaching and learning taken by the researcher in this study co-constructed with these academics a story with a focal point other than finances.

The Internet has the potential to push ‘boundary’ and ‘border’ issues to the forefront because interconnectivity is not limited to geo-locality or regulatory boundaries that are a specific feature of Australian nursing licensure. However, this issue, was not apparent in this study. Neither regulatory practice restrictions, (a potential effect of the border crossings
made possible by the Internet) nor impacts on the regulations themselves appeared in the academics’ and students’ stories to any degree. It is speculated here that perhaps this situation has not arisen, particularly in relation to undergraduate courses, because the clinical placements of students, although often at some distance from the university, are carefully controlled in terms of complying with regulatory and legal practice requirements of specific states. Additionally, undergraduate courses represented in this study that contained practice components, were generally Internet-supported rather than Internet-based, and thus were less likely to ‘cross borders’ to the same extent. Postgraduate students and academics teaching postgraduates who mentioned crossing borders, spoke of it as a useful device for challenging students’ own assumptions about practice, but not about actual issues of practising. However, the questions remain: Will this situation last? What are the innovative possibilities that such border crossing will bring to the fore for nursing? What challenges will arise? For example, universities already struggle with credit arrangements, and when there are attempts to match courses for students who relocate, the principles of crossing borders are challenged.

**Online communities of professional practice: a view of the future**

Including groups of nurses in online communities of professional practice is suggested by Billings (2003) as the next iteration of the interaction and collaboration being learned and developed in Internet-based courses in nursing education. New ideas and seeing different ways of practising occurs when borders of any kind (such as geographical, academic, clinical, or disciplinary boundaries) are crossed. Such border crossings have the potential to challenge not only students thinking, but also local nursing practices. Thus, what is being successfully learned in relation to online teaching and learning in nursing education will contribute to this new evolution of Internet technology in nursing. The evolution of online communities holds the promise of a significant change in the relationships between nursing education and clinical practice. As Billings states “educators, preceptors, learners, clinical experts, members of professional nursing organisations, and even clients can be linked in a context-rich learning environment” (Billings, 2003, p.335). Partnering with health care and other relevant agencies and specific clinicians in a participatory approach employs some of the potential of the Internet and will keep nursing education open to “integrating heterogeneous components (physical, human and organisational) in a goal-orientated system (Hughes, 2000, p.21), particularly as education strives to be responsive to the needs of practice. It was evident from the students’ constructions of learning in this study that online multimedia courses can enhance learning for clinical practice. The opportunity is ripe for nursing to now ask where technology can be used to further its educational goals. Online
communities of professional practice may be the next step in how the Internet can be used for constructing enriched learning environments that include communication, as well as multimedia and hypertexted information, that is closely linked to practice.

**Limitations**

While this study is significant in that it reveals aspects of the experience of teaching and learning online that were not previously known, understanding of the limitations of this research enhances its applicability. The methodological limitations and design constraints of this research have been addressed in chapters three and four, and will not be reiterated here. In this research, the strengths of mixed methods approach have outweighed the limitations. Using this approach has allowed a deeper exploration of both the context and the experiences of various key participants in the emerging field of online teaching and learning in nursing education, revealing aspects that a more structured and rigid approach would not have brought out.

The contexts of nursing education and the issues of Internet learning environments explored within this research have not remained static during this study. The rapidity of change within Internet technology and the rapid, if somewhat uneven, adoption of Internet technology into Australian nursing education, renders some of the data, particularly the survey data outdated. The response rate in this survey was modest, but was consistent with the nascent stage of online course development in nursing at the time. The small number of responses has limited the potential for statistical analysis of the survey data, but the descriptive analysis provided a perspective on the place of Internet environments in nursing education available in Australia. This snapshot of the integration of Internet technologies into nursing also provides a context within which to locate the findings of the latter phase of the research, and contributes to interpreting the findings dialectically.

The findings of this research are not generalizable. Rather, the informational significance of this study resides in the insights into online teaching and learning that have been revealed in the interpretations. However, because of the diversity of the participants, from various geographical localities and universities, who contributed to this research through sharing their experiences of teaching and learning in assorted courses, these insights will be transferable and applicable in other contexts through the reconstructions of the academics, students and managers involved in nursing education in Internet environments.

Despite these limitations, this research has deepened the knowledge base related to online teaching and learning in nursing education, raised issues that are worthy of further
debate, and highlighted areas that require urgent attention at multiple levels within nursing education.

**RECOMMENDATIONS**

The recommendations that flow from the implications discussed are as follows:

**Recommendations for Nursing Education**

That:

1. Appropriate resourcing is determined and provided to support both Internet-based and Internet-supported teaching and learning. Resourcing needs include, but are not limited to, financial, infrastructure, academic time and workload, academic and student technical skills and knowledge development, academic recognition and reward structures.

2. Priority is given to both general and individualised professional development for academics who design, develop, teach, and manage online courses. This development should include not only technical skill acquisition, but the opportunity to consider, transform and develop online pedagogy and practices.

3. Students are prepared appropriately prior to online courses, and supported adequately during online courses, particularly in relation to developing the metacognitive and study skills required for online learning.

4. Opportunities for dialogue are created on local, national and international levels within nursing education to promote collaborative relationships and share knowledge and skills.

5. Providers of nursing education in Australia involve themselves in greater collaboration and resource sharing.

6. Sensitivity to needs peculiar to teaching and learning nursing be retained in planning, policy development and implementation of teaching and learning in Internet environments in universities.

7. Opportunities for multidisciplinary collaborations are created within the health disciplines but remain open to the possibilities for emerging communities of practice that cross disciplinary boundaries.
Recommendations for Research

Further research should address:

1. A comprehensive evaluation of the Internet-supported learning environment, as distinct from both classroom and Internet-based delivery, with respect to the teaching and learning processes and practices in that particular environment.

2. Research investigating student learning styles and preferences in relation to Internet-based and Internet-supported courses to inform developing teaching and learning practices in nursing education.

3. Research into the management and administrative perspectives in online nursing education to further elucidate the constraints and opportunities for developing online education in nursing.

4. Financial and opportunity-cost analyses of the provision of Internet-based and Internet-supported courses are undertaken to form a basis to challenge conventional budgetary processes that are inappropriate for online education.

5. Exploration of regulatory policy, processes and collaborations and reciprocal agreements across all states of Australia, and the reciprocal relationships between the regulation of nursing and nursing education in Internet environments.

6. Examining the explicit conceptual underpinnings to explore online teaching and learning and challenging the techno-rationality and neutrality implicit in many previous studies.

7. Research into the social and philosophical terrain of human-technology relationships in nursing education.

Conclusion

This dissertation was predicated on the notion of a dialectical understanding that constructs new understandings out of the seemingly paradoxical and inconsistent. It has brought into view the ways that teaching and learning nursing are transformed and reconstructed based in academics’ and students’ experiences of Internet learning environments. While a focus on the learner and learning is “not unique to online education, technology-enhanced learning has served as a catalyst for speeding up the move toward learner-centred approaches, especially in online education” (Berge, 2000, p.4). However, a dichotomy of learner-centred versus teacher-centred education is not supported by this analysis. A shift from a teaching focus to a learning focus does not mean that the needs and interests of academics can be forgotten in the move (McPherson, 1997). What this study has
shown clearly is that effective education using Internet technology must include both teachers and learners at the centre of a learning focus. Nor is a dichotomy of newness and continuity substantiated by the analysis. Academics and managers in nursing education need to examine what is good about what they already do, and retain this, while constructing new pedagogies and practices for online and face-to-face teaching and learning in a transformed nursing education. Thus it is timely to note that; “it is the strategic use of technologies, rather than technologies themselves that is of primary importance” (Johnston, 2000, p.6).

This dissertation began with the suggestion that technology is leading to radical changes in nursing education. These changes, and the experiences of those who are part of the changes, have been explored in the preceding pages. There is a sense that the change continues, is still confronting us, and is even accelerating. As we come back to re-confront the change, the findings of this study have provided a deepened understanding of teaching and learning nursing in an Internet environment to guide teaching practices and learning processes. Like a spiral, this knowledge returns us to a new place from which to seek new understandings and guides to creating future nursing education.

EVERYTHING CHANGES…

BUT NOT AS ANTICIPATED

(Hughes, 2000, p.15)
APPENDIX 1

Email to Head of School requesting approval for research
Dear [Head of School]

Have you ever wondered just how useful the Internet is for nursing? I believe educators need information specifically about its effectiveness for nursing students. My doctoral research is about student learning in Internet environments in Australian nursing education.

The three phases of this study are:
A questionnaire, for subject coordinators, to find out how the Internet is used in nursing subjects.
Interviews with up to fifteen students to explore their experiences, and perceptions of learning in an Internet environment.
A follow up survey of a larger group of students.

I am asking that you give your approval for:
The subject coordinators in your school to participate in a survey.
Subject coordinators to assist me with recruiting students for interviews and a survey.

I will e-mail you in two weeks to receive your approval or otherwise.

Further details of the study are contained in the attached files:
Information sheet, consent form, and questionnaire for the subject coordinators survey.
Information about helping with recruiting students is in the information sheet.

If you give your approval:
Will you please give me e-mail addresses of those coordinators in your school who use the Internet in their subjects, and I will then contact them directly.
These subjects can be either:
Internet-based: subjects that can be completed entirely using Internet delivery.
Internet-supported: subjects where Internet materials or communications are additional to learning in a classroom.
Any other variations: such as subjects that may be partly Internet delivered, but also use other media (eg. print, videotapes, audiotapes).

In return:
I will send a summary of the results to participating schools upon request.

Thank you for considering this request. Please e-mail or telephone me if you have any questions at: (07) 5552 8894 or p.seaton-sykes@mailbox.gu.edu.au

Yours sincerely
Philippa Seaton, RGON, MA(Hons), BA(Nursing & Education).
PhD Student
School of Nursing, Griffith University, Gold Coast Campus
PMB 50, Gold Coast Mail Centre, Queensland 9726
APPENDIX 2

Email to Heads of Schools re change in procedure
Dear [Head of School]

Previous approval:
Some months ago you [and your ethics/research committee] gave your approval for me to
invite staff and students in your school to participate in my research project about learning in
Internet environments. This study involved firstly, subject coordinators completing a
questionnaire about the structure of online subjects, and secondly, allowing me to circulate a
notice to students inviting them to participate in individual interviews. The third phase
planned was for a wider survey of students.

Issues arising:
The first two phases are currently proceeding, and I am gathering interesting data. However,
I have been unable to gain sufficient numbers of coordinators who can help with reaching
students, to enable valid and reliable results for phase three, the wider survey of students.

Change to study procedure:
I have, therefore, gained approval from the Griffith University Human Research Ethics
committee for a change in procedure. Instead of the student survey, the third phase of the
study will now consist of individual interviews with teachers of Internet based/supported
subjects in nursing. These interviews will explore the experiences of academics involved in
teaching in Internet environments, and their perspectives on teaching and learning online.

Significance for Schools of Nursing of the new phase of the research:
Information gathered in this new phase of the research will provide information that may
assist Schools of Nursing to:
Support teachers in developing Internet-based/supported courses for nursing programs.
Target appropriate content and processes in staff development programs for teachers of
Internet-based/supported courses in nursing.

Request for Approval:
I am asking for your approval to re-approach teachers in your school to invite them to
participate in these individual interviews.

Could you please advise me by email as to whether you give your approval for teachers in
your school to participate in this new phase of the research study?

My thanks for your time and consideration of this request.

Please e-mail or telephone me if you have any questions about this change to my study at:
(07) 5552 9702 or p.seaton-sykes@mailbox.gu.edu.au

Yours sincerely
Philippa Seaton
PhD Student
School of Nursing, Griffith University, Gold Coast Campus
PMB 50, Gold Coast Mail Centre, Queensland 9726
APPENDIX 3

SUBJECT COORDINATOR’S QUESTIONNAIRE

This questionnaire relates to subjects that have any Internet component. For the purposes of this research subjects are defined as:

- **Internet-based**: subjects able to be completed entirely using Internet delivery.
- **Internet-supported**: subjects where Internet materials or communications are additional to learning in a classroom.
- **Other Internet environments**: If your subject is delivered in a way other than the above, but has an Internet component, please include it in this survey and describe how you structure your subject (e.g. you may combine the Internet with other media such as print or video).
- **A course** is defined as a programme of study, consisting of subjects, leading to an academic award (for example a certificate, or degree).
- **A subject** is defined as a unit of study leading to the award of a grade

If you coordinate more than one subject, please fill out a separate questionnaire for each subject.

If you choose to fill in this questionnaire on your computer, please:

- **Print and sign** two copies of the consent form, keep one copy for yourself.
- Type your written responses in the text-boxes on the questionnaire.
- Type an X in the appropriate box for each question where required.
- **Print out the completed questionnaire**
  - Please complete and sign the last page regarding helping with student recruitment
  - Return one signed consent form and the completed questionnaire to me at the following postal address.

If you choose to complete this questionnaire by hand, please:

- **Print and sign** two copies of the consent form, keep one copy for yourself.
- **Print out the questionnaire**.
  - Write your response in the space provided on the questionnaire.
  - Write an X in the appropriate box for each question where required.
  - Please complete and sign the last page regarding helping with student recruitment.
  - Return the completed questionnaire and signed consent form to me at the following postal address.

Postal address:
Philippa Seaton,
School of Nursing, Faculty of Nursing & Health, Gold Coast Campus,
Griffith University, PMB 50, Gold Coast Mail Centre,
Queensland 9726,
THESE QUESTIONS ARE ABOUT THE CONTENT AND STRUCTURE OF THE SUBJECT

1. **What is the name of this subject?**

2. **Is this subject offered:**
   - Only on this campus of your university
   - Across more than one campus of your university?

3. **Which of the following definitions best describes this subject?**
   (Please refer to the definitions on page 1)
   - Internet-based
   - Internet-supported
   - Other

4. **Please describe the content of this subject** or, if you are willing, attach and return a subject outline with your questionnaire.*

---

* Strict confidentiality will be adhered to in relation to subject outlines. Intellectual property rights will be respected. Subject outlines will not be reproduced, copied, or referred to in published results in any way that could lead to the identification of the school, the subject, or any individual associated with delivery of the subject.
**What level is this subject offered at?**

For each question please put an X in the box that indicates the level at which this subject is offered

<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>Yes</th>
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<tbody>
<tr>
<td>8.</td>
<td>Pre-registration undergraduate degree</td>
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</tr>
<tr>
<td>9.</td>
<td>Post-registration undergraduate degree</td>
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</tr>
<tr>
<td>10.</td>
<td>Post-graduate certificate</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Post-graduate diploma</td>
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</tr>
<tr>
<td>12.</td>
<td>Masters degree</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Miscellaneous stand-alone subject</td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Multi-level</td>
<td></td>
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<tr>
<td>15.</td>
<td>Other</td>
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(If **miscellaneous**, please state level of subject)

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(If **multi-level**, please state levels this subject is offered at)

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(If **other**, please state the level this subject is offered at)

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**Is this subject part of:**

For each question please put an X in the appropriate box

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<thead>
<tr>
<th></th>
<th>No</th>
<th>Yes</th>
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<tbody>
<tr>
<td>16.</td>
<td>A full time course</td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>A part time course</td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>Offered as a stand-alone subject</td>
<td></td>
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<tr>
<td>19.</td>
<td>Other</td>
<td></td>
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</table>

(If **other**, please explain)

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</table>
In what ways is this subject made available?

For each question please put an X in the box that indicates how this subject is made available

<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>Yes</th>
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<tbody>
<tr>
<td>20. Internet-based on campus (e.g. students may be on campus but can choose Internet-based delivery)</td>
<td></td>
<td></td>
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<tr>
<td>21. Internet-based off campus (e.g. distance students who do not come on campus at all)</td>
<td></td>
<td></td>
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<tr>
<td>22. Internet-supported on campus (e.g. combination of classroom and Internet delivery)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Internet-supported off campus (e.g. distance students who also come for a residential component)</td>
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<tr>
<td>24. Other</td>
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</table>

(If other, please explain the way in which this subject is made available)

25. What were the reasons underlying the decision to offer this subject in an Internet-based or Internet-supported environment?

26. Semester 1 ____________________________

27. Semester 2 ____________________________

How many students enrolled in this subject in the year 2000?
THESE QUESTIONS ARE ABOUT HOW STUDENTS LEARN TO USE COMPUTERS AND THE INTERNET.

In this subject, how do students learn to use computers and the Internet?

For each question please put an X in the box/s that correspond to the structure in this subject

<table>
<thead>
<tr>
<th>Expected to have skills already</th>
<th>Skills required taught in this subject</th>
<th>Skills required taught in a prerequisite subject</th>
<th>Skills required taught elsewhere in the course</th>
<th>Skills required taught in a general orientation to the university</th>
<th>Other</th>
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<tr>
<td>28. Computers</td>
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<td>29. Internet Applications</td>
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<tr>
<td>applications (such as email)</td>
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<tr>
<td>30. Internet-based Library</td>
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<tr>
<td>resources (such as online</td>
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<tr>
<td>databases)</td>
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</table>

(If other, please explain)

31. What Internet applications do you expect students to be able to use in this subject?  
(for example: email, discussion forums)
In this subject, how are students supported in using computers and Internet applications?

For each question please put an X in the box/s that indicate how students are supported

<table>
<thead>
<tr>
<th>No Support</th>
<th>Online Support</th>
<th>Telephone Support</th>
<th>Telephone &amp; ‘face-to-face’ Support</th>
<th>Support from teaching staff</th>
<th>Other</th>
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</tbody>
</table>

32. Computers

33. Internet Applications (such as email)

34. Internet-based Library resources (such as online databases)

(If other, please explain what support is available and how students access this).

Is support for students:

For each question please put an X in the box/s that indicate how students are supported

<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>35. Initial ‘start up’ support only</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36. Ongoing support</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
THESE QUESTIONS ARE ABOUT SPECIFIC ASPECTS OF THE INTERNET LEARNING ENVIRONMENT:

Listed below are features that can be part of an Internet learning environment.

Please indicate if you incorporate these in this subject by typing an X in the box/s that indicates who provides the feature for *this subject*.

<table>
<thead>
<tr>
<th>Features of the Internet learning environment</th>
<th>Not Available</th>
<th>Feature linked to specific content for this subject</th>
<th>Feature offered by the university</th>
</tr>
</thead>
<tbody>
<tr>
<td>37. Email for student to teacher, and teacher to student communication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38. Live chat sessions (synchronous)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39. Live online teaching sessions (synchronous)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40. Email listserv</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>41. Bulletin board</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>42. Discussion forum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>43. Subject outlines available on the Internet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>44. Subject content available on the Internet</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>45. Online Assessment</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>46. Online textbook</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>47. Hypertext links to other web sites</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48. Links to audio or video course materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49. Frequently asked questions (FAQs)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50. Remote library catalogue access</td>
<td></td>
<td></td>
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<tr>
<td>51. Remote library data base access</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>52. Electronic journals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>53. Other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
If other, please describe the feature and who provides it

54. Please list any interactive features in this subject?

55. Please add any other comments you have about Internet-based or Internet-supported learning environments in nursing education.
THIS QUESTION IS ABOUT YOUR INSTITUTION

56. **What state or territory is your university in?**

Please put an X in the appropriate box

<table>
<thead>
<tr>
<th>Territory</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A.C.T</td>
<td></td>
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<tr>
<td>New South Wales</td>
<td></td>
</tr>
<tr>
<td>Northern Territory</td>
<td></td>
</tr>
<tr>
<td>Queensland</td>
<td></td>
</tr>
<tr>
<td>South Australia</td>
<td></td>
</tr>
<tr>
<td>Tasmania</td>
<td></td>
</tr>
<tr>
<td>Victoria</td>
<td></td>
</tr>
<tr>
<td>Western Australia</td>
<td></td>
</tr>
</tbody>
</table>

Thank you for participating in this survey.

Please turn to the next page and complete the form to indicate if I may re-contact you to assist me in reaching students to participate in phases two and three of this study.
**Indication of willingness to assist with student recruitment**

I have read the section of the information sheet related to this request for assistance with student recruiting, and have had any questions related to this, answered to my satisfaction. I agree to be contacted at a later date by Philippa Seaton, to assist with recruiting student participants for this study of learning in Internet environments in Australian nursing education.

Please put an X in the box that indicates your willingness to assist with student recruitment:

<table>
<thead>
<tr>
<th>I am willing to participate in assisting with recruiting for:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase Two: Student Interviews</td>
<td></td>
</tr>
<tr>
<td>Phase Three: Student Survey</td>
<td></td>
</tr>
<tr>
<td>Both Phases Two and Three</td>
<td></td>
</tr>
<tr>
<td>I do not wish to participate in assisting with student recruiting</td>
<td></td>
</tr>
<tr>
<td>Please do not contact me again</td>
<td></td>
</tr>
</tbody>
</table>

---

**Name**

**Position**

**School of Nursing**

**University**

**Address**

**Phone Number**

**Email**

---

Signature_____________________________ Date_________
APPENDIX 4

Subject Coordinators information sheet

Dear Subject Coordinator

Are you interested in finding out how helpful the Internet is for nursing students? My name is Philippa Seaton. I am a doctoral student at Griffith University, Queensland. This research is exploring student learning using the Internet in Australian nursing education. I want to involve both subject coordinators and students in this. This research will help inform planning and development of Internet education in the future.

THE STUDY
There are three phases to this study.
- A survey of subject coordinators across Australia.
- Interviews with up to 15 students
- A follow up survey of students.

I am interested in hearing from you about subjects that use the Internet in any way at all. This may be:
- **Internet-based:** subjects able to be completed entirely using Internet delivery.
- **Internet-supported:** subjects where Internet materials or communications are additional to learning in a classroom.
- **Any other variations:** such as subjects that may be partly Internet delivered, but also use other media (eg. print, videotapes, audiotapes).

I am asking for your help in all three phases. Participation in any of the three phases would be helpful. Details of this participation follow.

SURVEY OF SUBJECT COORDINATORS
Your responses to the subject coordinator questionnaire attached will assist in describing how the Internet is used in various subjects in Australian nursing education.

Consenting to participate:
Your participation is entirely voluntary. There is no obligation to take part in this study. There are no consequences for you if you don’t participate, and you don’t need to provide a reason for not taking part. You will not directly benefit from taking part, but you will contribute to our developing knowledge about the Internet. If you do participate, please sign the written consent form so I may use your response.

Completing the questionnaire:
Please feel free to contact me with any questions by phone at (07) 5552 9702 or email at p.seaton-sykes@mailbox.gu.edu.au

To participate in this survey:
- The questionnaire should take about 30 minutes of your time.
- Please sign two copies of the consent form attached.
- Keep one copy of the consent form for yourself.
- Then complete the questionnaire and return it, with one copy of your signed consent form, directly to me.
• You can either type the information directly into the questionnaire and then print it, or print off the questionnaire first and fill it in by hand if you prefer. In either case, please post the completed questionnaire back to me.

Confidentiality:
Your Head of School has given approval for you to participate, but they do not know which individuals will take part. The completed consent form, and questionnaire will identify you, your subject and university in the section where you are asked if you will assist with recruiting students. I undertake to keep any information you give me confidential in the final thesis document and published reports of this research.

I will maintain confidentiality by the following:
• My supervisors and myself will be the only people who will see the raw data from this survey. Please note: I will remove your name from the questionnaire before my supervisors see the data. The consent forms are kept separate from the questionnaire.
• Academic subjects will be identified in any written reports by names reflecting the general content (for example ‘a research subject’) rather than be specifically named.
• Strict confidentiality will be adhered to in relation to subject outlines. Intellectual property rights will be respected. Subject outlines will not be reproduced, copied, or referred to in published results in any way that could lead to the identification of the school, the subject, or any individual associated with delivery of the subject.
• All raw data including consent forms, computer discs, and paper copies of questionnaires will be locked in the office of the researcher when not in use.
• All files containing raw data on computer discs or computer hard drive will be protected by a password known only to the researcher and her supervisors.
• The information from subject coordinators will be reported in aggregate form.
• Names and identifying information of universities and any third parties will be removed or disguised in the final research report.
• The information from this survey may also be used as the basis of publications arising from this study, and for education and research seminars or conferences.
• Data will be kept for 5 years following completion of this study as required by Griffith University and then destroyed.

STUDENT INTERVIEWS AND SURVEY
It is important that I talk to students. Once I have compiled the results of the questionnaire from subject coordinators, I will be selecting a group of students to take part in the next phase of the study. Are you willing to help me with finding students for the interviews and surveys?

Helping me recruit students for the interviews would mean:
Distributing a notice to students via a noticeboard or email to invite their participation in the interviews.

Helping me recruit students for the student survey would mean:
Making an information sheet and questionnaire available to students. Students will return the questionnaire directly to me.

If you are willing to help in recruiting students please:
Fill in the last page of the questionnaire that will enable me to re-contact you and return this to me.
I will re-contact you after the completion of the subject coordinators’ survey when the student group is known.

Even if you do not participate in the subject coordinators survey, you can still help with recruiting students for the rest of this study. To do this, please fill in the last page of the questionnaire that will enable me to re-contact you about student recruiting and leave the rest of the questionnaire blank. Please return the questionnaire to me.

In return for your help:
I really value your contribution to this study. In return, if you are interested in receiving a copy of the results, please let me know.

Contact details

Should you have any complaints concerning this research project or the manner in which it is conducted, please contact either:

The Researcher:
Philippa Seaton, School of Nursing, Faculty of Nursing & Health, Gold Coast Campus, Griffith University, PMB 50, Gold Coast Mail Centre, Queensland 9726, telephone (07) 5552 9702. email p.seaton-sykes@mailbox.gu.edu.au

The Research Supervisors:
Professor Anne McMurray, Dean, Faculty of Nursing & Health, Gold Coast Campus, Griffith University, PMB 50, Gold Coast Mail Centre, Queensland 9726, telephone (07) 5552 8788

Dr. Winsome St John, School of Nursing, Faculty of Nursing & Health, Gold Coast Campus, Griffith University, PMB 50, Gold Coast Mail Centre, Queensland 9726, telephone (07) 5552 8935

If you prefer an independent person, please contact either:

The University’s Research Ethics Officer, Office for Research, Bray Centre, Griffith University, Kessels Road, Nathan, Queensland 4111, telephone (07) 3875 6618 or:

The Pro Vice-Chancellor (Administration), Bray Centre, Griffith University, Kessels Road, Nathan, Queensland 4111, telephone (07) 3875 7343.

Thank you very much for your help.
Philippa Seaton
APPENDIX 5

Subject Coordinators Consent Form

Investigator: Philippa Seaton (Doctoral Student)  
School of Nursing, Griffith University, Gold Coast, Queensland

Supervisors:  Professor Anne McMurray (Dean)  
School of Nursing, Griffith University, Gold Coast, Queensland

Dr Winsome St John  
School of Nursing, Griffith University, Gold Coast, Queensland.

Project Title: Student learning in Internet environments in Australian nursing education.

I have read the information sheet for this research study and understand it. I have had an opportunity to ask questions, and I understand that I have the right to ask further questions at any time.

I agree to provide information to the researcher on the questionnaire form provided, on the understanding that my name, the specific name and code of the subject I coordinate, or the name of the university I am employed by, will not be used in the final thesis document or any published reports of the research, and that nothing that may identify me will be published.

I understand I have the right to decline to answer particular questions.

The information I provide will be used for this research, and publications, or presentations at research or educational seminars and conferences, arising from this research.

I agree to participate in this study of learning in Internet environments in Australian nursing education and give my consent freely. I understand that the study will be carried out as described in the information statement, a copy of which I have retained. I realise that whether or not I decide to participate is my decision. I also realise that I can withdraw from the study at any time and that I do not have to give any reasons for withdrawing. I have had all questions answered to my satisfaction.

Signature: .................................................. ..........................
Participant Date

Signature: .................................................. ..........................
Researcher Date
APPENDIX 6
Student Invitation to participate in research

Nurses

►► Have you completed a nursing subject online, or one that is partly online?

►► Are you willing to share your experiences of learning online for a research study?

Your experiences ... your views ... are needed

►► I want to interview nurses and nursing students who have completed any nursing subject that has any online component, for this study of online learning and teaching in Australian nursing education.

►► These interviews are a place for online learners to tell what it’s like for you.

If you are interested in taking part and want more information, please contact Philippa Seaton (PhD student), either by e-mail or phone and I will call you back. I look forward to hearing from you.

Phone: (07) 5552 8894
Email: p.seaton-sykes@mailbox.gu.edu.au
School of Nursing, Griffith University - Gold Coast
Queensland
**APPENDIX 7**

**Student information sheet**

The research study:
Today many schools of nursing are using Internet technology in teaching, to help meet students' learning needs. With more nursing subjects going online, it's important that students can say what learning in an Internet environment is like. I am undertaking a research project to find out about students' learning in nursing subjects that use the Internet.

If you have completed a nursing subject that is either delivered completely online (Internet-based) or has any online component (Internet-supported), would you agree to be interviewed about this?

I want to hear about your experiences of learning online, and your ideas about which features of the Internet were effective in helping you learn in your nursing subjects.

These interviews are the second part of a larger three-phase study that includes:
- A survey of subject coordinators in Schools of Nursing across Australia.
- Interviews with nursing students who have completed an Internet-based or Internet-supported subject.
- Interviews with teachers of internet-based or internet-supported subjects.

Your involvement:
If you agree to be interviewed, you will be one of about fifteen students from a number of schools of nursing, sharing your experiences with me in an individual interview. I will meet with you at a time and place that is convenient to you. Up to an hour of your time may be needed for me to listen to, and record on a tape recorder, your experiences of learning online. I may need to telephone you later on if I need to follow up an aspect of your interview.

Confidentiality:
A typist will transcribe the audiotapes after signing a confidentiality agreement. I will protect your identity by ensuring that your real name will not be used on any written documents. A pseudonym (false name) will be used instead. If you wish, you may check the transcript. At this time you may delete any information you do not want included in the research.

My two research supervisors, Professor Anne McMurray and Dr Winsome St John will also see your information, in the form of the typed transcript, in their supervisory role. They will however, only know you by your pseudonym. No individual information will be given to your teachers at your university. Your School of Nursing will receive only the combined results from all participants. No information that may identify you will be given to anyone else.

Tapes and interview transcripts will be kept locked in the researchers office and destroyed 5 years after the completion of the research. If you wish, you may request a copy of your transcript and/or your tape be returned to you.
Use of the Information:
The information from these interviews will be used:
- in my thesis that will be submitted to Griffith University for my PhD degree.
- in papers published in journals, or presented at research or education seminars or conferences.

Feedback:
If you would like a summary of the overall results, please give me a postal address, at the time of the interview, where I can send this summary to you.

Participation:
Reading this information sheet does not commit you to this research.
If you do decide to participate, you have the right to:
- withdraw at any time without consequence - this includes withdrawing any information you may have already given me.
- refuse to answer any particular questions and to request that the tape be turned off in the interview, or to make deletions from the typed copy. You do not have to provide any reason for this.

The subject co-ordinator, who sent you the notice about this research, has no involvement with these interviews, beyond helping me to advertise this study. She or he will not know who is part of this study.

The researcher
My name is Philippa Seaton. I am undertaking this research for my PhD degree at the School of Nursing at Griffith University, Gold Coast, Queensland. The Griffith University Human Research Ethics committee has approved this study.

Contacts:
Should you have any complaints concerning this research project or the manner in which it is conducted, please contact either:
The researcher:
Philippa Seaton, School of Nursing, Faculty of Nursing & Health, Gold Coast Campus, Griffith University, PMB 50, Gold Coast Mail Centre, Queensland 9726, telephone (07) 5552 8894, email p.seaton-sykes@mailbox.gu.edu.au or;

The Research Supervisors:
Professor Anne McMurray, Dean, Faculty of Nursing & Health, Gold Coast Campus, Griffith University, PMB 50, Gold Coast Mail Centre, Queensland 9726, telephone (07) 5552 8788

Dr. Winsome St John, School of Nursing, Faculty of Nursing & Health, Gold Coast Campus, Griffith University, PMB 50, Gold Coast Mail Centre, Queensland 9726, telephone (07) 5552 8935

Should you prefer to contact an independent person, please contact either:
The University’s Research Ethics Officer, Office for Research, Bray Centre, Griffith University, Kessels Road, Nathan, Queensland 4111, telephone (07) 3875 6618 or:
The Pro Vice-Chancellor (Administration), Bray Centre, Griffith University, Kessels Road, Nathan, Queensland 4111, telephone (07) 3875 7343.

Thank you for reading this information sheet.

Philippa Seaton
APPENDIX 8

Student consent form

Investigator: Philippa Seaton (Doctoral Student)
School of Nursing, Griffith University, Gold Coast, Queensland
Phone: (07) 5552 9702

Supervisors: Professor Anne McMurray (Dean)
Dr Winsome St John (Senior Lecturer)
Both of the School of Nursing, Griffith University, Gold Coast, Qld.

Project Title: Teaching and learning nursing in Internet environments in Australian nursing education.

I have read the information sheet for this research study and understand it. I have had the details of the study explained to me and have had an opportunity to ask questions. My questions have been answered to my satisfaction, and I understand that I have the right to ask further questions at any time.

I agree to the interview being audiotaped and transcribed. I understand I have the right to ask for the tape recorder to be turned off at any time during the interview, that I can decline to answer particular questions, and that I can ask for material to be deleted from the typed copy of the interview.

I agree to provide information to the researcher on the understanding that this information is confidential and that my name will not be used without my permission, and that no information that may identify me will be published. I understand that the information I provide will be used for this research, and for publications and presentations at research or educational seminars and conferences, arising from this research.

I agree to participate in the teaching and learning nursing in internet environments in Australian nursing education study and give my consent freely. I understand that the study will be carried out as described in the information statement, a copy of which I have retained. I realise that whether or not I decide to participate is my decision. I also realise that I can withdraw from the study at any time and that I do not have to give any reasons for withdrawing.

Signatures:  .................................................. ..............................
            Participant Date

            .................................................. ..............................
            Investigator Date
APPENDIX 9

Academic information sheet

The research study:
Today many schools of nursing are using Internet technology in subjects to help meet students' learning needs. With more nursing subjects going online, it's important that we know more about what teaching and learning in an Internet environment is like. This research is exploring teaching and learning nursing in Internet environments in Australian Schools of Nursing. The results will help inform the development and delivery of Internet education in the future. I will be interviewing both academics and students to gather information.

If you teach a nursing subject that is either delivered completely online (Internet-based) or has an online component (Internet-supported), I would like to talk to you about your experiences and reflections.

I want to hear about your experiences of teaching and learning in Internet environments, and your ideas about which features of the Internet were effective in helping students learn in nursing subjects, and which were not.

These interviews are the third phase of a larger study that includes:
- A survey of subject coordinators in Schools of Nursing across Australia to examine subjects offered in an internet environment.
- Interviews with up to 15 students exploring their experiences and perceptions of learning using the Internet.
- Interviews with 15-20 academics exploring their experiences and perceptions of teaching and learning in internet environments.

Your involvement:
If you agree to be interviewed, you will be one of 15-20 academics from a number of schools of nursing around Australia, sharing your experiences with me in an individual interview. I will meet with you at a time and place that is convenient to you. About an hour of your time may be needed for me to listen to, and record on a tape recorder, your experiences of internet-based or internet-supported teaching and learning. I may need to telephone you later on if I need to follow up an aspect of your interview.

Confidentiality:
A typist will transcribe the audiotapes after signing a confidentiality agreement. I will protect your identity by ensuring that your real name will not be used on any written documents. A pseudonym (false name) will be used instead. Care will be taken to ensure that no published information identifies either you or your institution.

My two research supervisors, Professor Anne McMurray and Dr Winsome St John will also see typed transcripts, in their supervisory role. However, they will only know you by your pseudonym. No individual information will be given to your university. Your School of Nursing will receive only the combined results from all participants.
Tapes and interview transcripts will be kept locked in the researchers office and destroyed 5 years after the completion of the research.

Use of the Information:
The information from these interviews will be used:
- in my thesis that will be submitted to Griffith University for my PhD degree.
- in papers published in journals, or presented at research or education seminars or conferences.

Feedback:
If you would like a summary of the overall results, please provide me with a postal address, at the time of the interview.

Participation:
Reading this information sheet does not commit you to this research.
If you do decide to participate, you have the right to:
- withdraw at any time without consequence - this includes withdrawing any information you may have already given me.
- refuse to answer any particular questions and to request that the tape be turned off in the interview. You do not have to provide any reason for this.

The researcher
My name is Philippa Seaton. I am undertaking this research for my PhD degree at the School of Nursing at Griffith University, Gold Coast, Queensland. The Griffith University Human Research Ethics committee has approved this study.

Contacts
Should you have any concerns regarding this research project or the manner in which it is conducted, please contact either:

The Researcher:
Philippa Seaton, School of Nursing, Faculty of Nursing & Health, Gold Coast Campus, Griffith University, PMB 50, Gold Coast Mail Centre, Queensland 9726, telephone (07) 5552 8894, email p.seaton-sykes@mailbox.gu.edu.au or;

The Research Supervisors:
Professor Anne McMurray, Dean, Faculty of Nursing & Health, Gold Coast Campus, Griffith University, PMB 50, Gold Coast Mail Centre, Queensland 9726, telephone (07) 5552 8788
Dr. Winsome St John, School of Nursing, Faculty of Nursing & Health, Gold Coast Campus, Griffith University, PMB 50, Gold Coast Mail Centre, Queensland 9726, telephone (07) 5552 8935

Should you prefer to contact an independent person, please contact either:

The University’s Research Ethics Officer, Office for Research, Bray Centre, Griffith University, Kessels Road, Nathan, Queensland 4111, telephone (07) 3875 6618 or:

The Pro Vice-Chancellor (Administration), Bray Centre, Griffith University, Kessels Road, Nathan, Queensland 4111, telephone (07) 3875 7343.
Thank you for reading this information sheet.

Philippa Seaton
APPENDIX 10

Academics' Consent for Interview

Investigator: Philippa Seaton (Doctoral Student)  
School of Nursing, Griffith University, Gold Coast, Queensland  
Phone: (07) 5552 9702

Supervisors: Professor Anne McMurray (Dean)  
Dr Winsome St John (Senior Lecturer)  
Both of the School of Nursing, Griffith University, Gold Coast, Qld.

Project Title: Teaching and learning nursing in Internet environments in Australian nursing education.

I have read the information sheet for this research study and understand it. I have had the details of the study explained to me and have had an opportunity to ask questions. My questions have been answered to my satisfaction, and I understand that I have the right to ask further questions at any time.

I agree to the interview being audiotaped and transcribed. I understand I have the right to ask for the tape recorder to be turned off at any time during the interview, that I can decline to answer particular questions, and that I can ask for material to be deleted from the typed copy of the interview.

I agree to provide information to the researcher on the understanding that this information is confidential and that my name will not be used without my permission, and that no information that may identify me will be published. I understand that the information I provide will be used for this research, and for publications and presentations at research or educational seminars and conferences, arising from this research.

I agree to participate in the teaching and learning nursing in internet environments in Australian nursing education study and give my consent freely. I understand that the study will be carried out as described in the information statement, a copy of which I have retained. I realise that whether or not I decide to participate is my decision. I also realise that I can withdraw from the study at any time and that I do not have to give any reasons for withdrawing.

Signatures: .......................................................... .....................  
Participant Date ..........................................................  

..........................................................  
Investigator Date
APPENDIX 11

Interview guide for Student interviews

Demographics:
- Is your course full time or part time?
- What subject(s) was addressed?
- Was it internet-based or internet-supported?
- What year of the course are you in (level)?
- What is your previous experience of nursing?

Infrastructure:
Questions related to technology and access.

- What support for learning to use computer, Internet and other related applications are available and what do you use, and in what ways do you use the supports?
- How often do you access the online part of the subject?
- Do you revisit the information and activities, or only do them once?

Learning:
- What are the influences on you being an effective online learner?
- What additional or different demands are there on you (for example being self directed, motivated etc)?
- What helped learning and what hindered learning?
- How did you participate in online learning?
- How did you spend your time when you were online?
• What feedback did you get?

• How does this help your learning?

• How did the online aspects of the subject fit with the classroom or other learning activities?

• How does this kind of learning help with learning nursing knowledge, and with clinical knowledge?

• What have you learned that you didn't learn before (in other environments)?

• What did you learn that is different in this environment?

**Collaboration:**

• What interaction do you have with others (include students, teacher and any others)?

• How did you learn about professional practice and values online?
APPENDIX 12

Interview guide for Academic's interviews.

Demographics:
Is your course full time or part time?
What subject(s) were addressed?
Was it internet-based or internet-supported?
What is your previous experience of:
  ➢ teaching
  ➢ online teaching?

Teaching and Learning:
• What influenced the decision to have the subject internet-based or internet-supported?

• What is your role(s) in teaching online?

• What is your role(s) in helping students learn online?

• What supports do you need to enable you to teach online?

• What supports do you think the students' need to learn online?

• Can you identify any barriers you face in teaching online?

• To what extent do you feel you are being effective as a teacher in an internet-based/supported subject?
  ➢ Can you tell me a story of when you feel effective?
  ➢ To what extent is this typical or atypical?
  ➢ So what are the concrete things you measure this by? (formal and informal measure)?

• Do you feel using internet-based/supported teaching is more or less stressful than teaching in a classroom?
Can you tell me a story about a time that you felt this?
To what extent is this related to your expectations about online learning?

• What are the trade-offs when teaching in online environments?
  ➢ (ie: What is gained and what is lost in this environment?)

• What is the effect of online learning environments on learning nursing knowledge in particular, and with clinical knowledge specifically?

• Have you had any professional development to assist you in an online teaching role? What would you want for professional development?
REFERENCES


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