

## **VIRTUAL COLLABORATION: USING EMAIL TO PROVIDE FLEXIBLE LEARNING AND SUPPORT ENVIRONMENTS**

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### **ABSTRACT**

*Technology-based active and collaborative learning tasks lend themselves well to generating enthusiasm, engaging students, and promoting scholarship and ownership of problems in a supportive environment. This paper will describe two separate projects, which adopt an innovative approach to the use of Email as a collaborative learning tool. The first of these projects involves first year undergraduate nursing students in a 'Virtual Colleague' activity in which Email is used as a vehicle to facilitate the development of scholarly dialogue and an ethos of scholarship. This activity requires the students to search for an article from an electronic journal. They then perform a critical review of this article. The review is then Emailed to an assigned 'virtual colleague' who is another class member for peer review. The review is then returned to the colleague as feedback and to the facilitator for marking.*

*The second project, 'The Virtual Mentor Program' uses Email to engage senior registered nurses enrolled in a Master of Nursing with new graduate nurses. This collaborative project brings the theoretical and practical knowledge base of a University postgraduate course nurse to the health care work environment. The Masters students are allocated a beginning practitioner undertaking a hospital Graduate Nurse program. For the course of the semester the Masters students are required to act as an electronic mentor for these beginning nurses, offering knowledge and support from their own experiences. This project will forge collaborative links between expert nurses and new graduates facilitating scholarship, mentorship and ownership of clinical problems within a supportive learning environment.*

*This paper will describe the theoretical underpinning of the projects, present the initial project results and discuss difficulties faced by the varied parties involved including the project designers. Furthermore, the paper will underscore the benefits of a confluence of traditional scholarly attributes, professional values and contemporary information and telecommunication technology. The logistics of using such an approach in teaching and learning will be presented together with recommendations for future developments.*

### **KEY WORDS**

Nursing, email, education, scholarship, mentor, information technology.

### **1. INTRODUCTION**

At a time of rapidly changing information and telecommunication technologies, nursing faculties are faced with the challenge of fostering traditional scholarly attributes and professional values while simultaneously promoting information literacy. Many might argue that the traditional values of scholarship are far removed from modern information technologies. To the contrary,

they are in fact, complimentary. The traditional hallmarks of nursing scholarship such as critical thinking, reflection, creativity, critical analysis and an openness to new thinking (Fuller-Jonap, Morrison et al. 1994) are prerequisite skills for information literacy.

The juxtaposition of scholarly activities and computer and communication technologies is an interesting one. Traditional forms of scholarship have been founded in print media. The advent of electronic discourse in the form of email, electronic journals, newsgroups and various other synchronous and asynchronous media should prompt academics to evaluate the usefulness of these technologies to scholarship. Foertsch predicts electronic communications will become "...a major form of scholarly communication, perhaps even replacing its non-electronic counterparts, and scholars who want to survive had better learn how to use it" (Foertsch 1995). Email is quickly becoming the most popular and probably the most productive resource available on the Internet (Statistics 1998). The ability to send messages in a cost and time effective manner is one reason for the rapid growth of email technology. Many institutions and educators are now offering email as an alternative method for students to lodge reports, assignments, workbooks, and course evaluations.

There are, however, far more creative uses for email technology. This paper will describe a two-stage project, which adopts an innovative approach to the use of email as a collaborative learning tool. The first stage of the project has already been implemented. It involves first year undergraduate nursing students in a 'Virtual Colleague' activity in which email is used as a vehicle to facilitate peer review, the development of scholarly dialogue and an ethos of scholarship. The second stage; 'The Virtual Mentor Program' which will be implemented in the first half of 1999, uses email to engage senior registered nurses enrolled in a Master of Nursing with new graduate nurses. This collaborative project brings the theoretical and practical knowledge base of a university postgraduate course nurse to the hospital environment. The Masters students will be allocated a beginning practitioner undertaking a hospital Graduate Nurse program. For the course of the semester the Masters students will be required to act as an electronic mentor for these newly graduated nurses, offering knowledge and support from their own experiences.

This paper will discuss the theoretical underpinning of the project together with the initial project results and the difficulties faced by the varied parties involved including the project designers. It will also outline the benefits of a confluence of traditional scholarly attributes, professional values and contemporary information and telecommunication technology. Finally, the logistics of using such an approach in teaching and learning will be presented together with recommendations for future developments.

## **2. THEORETICAL UNDERPINNING**

The cognitive process of the scholar involves the accumulation, critical analysis, synthesis and utilization of knowledge. Such activity contributes to the unique body of knowledge that underpins any academic discipline. May, Melis and Winstead-Fry (May, Meleis et al. 1982) suggest scholarship requires scepticism, risk-taking with new ideas, creativity, and taking on the role of the critic. The latter characteristic is aligned with the scholar's ability to develop new insights by subjecting their work to the scrutiny of others. The scholar is not only critical yet receptive to the scholarly work of others, but also stands open to the criticism of others.

Some form of scholarly output is the gauge of scholarship in virtually all academic disciplines (Wakefield-Fisher and Frank 1989). In an environment increasingly influenced by digital media future scholars will need to be especially literate in the area of electronic scholarly dialogue. Much of the growth in email utilization has occurred in educational settings, where email facilities are now commonplace (Lewis 1994; Foertsch 1995; Todd 1998). Educators are using this technology routinely as a method of communicating with faculty colleagues, researchers and students (D'Souza 1991; Lewis 1994; Peckham 1996; Mastrian and McGonigle 1997; Ward 1997; Todd 1998).

Todd (Todd 1998) suggests the use of email can increase the individual interactions between faculty and students and facilitate the development of computer literacy. Email technologies have been used to facilitate group work and group interaction (Lyness and Raimond 1992) and to promote the process of writing (Lewis 1994). Email is also used to facilitate the ever-increasing number of Internet mailing lists. Lyness and Raimond (Lyness and Raimond 1992) suggest future management of information to achieve educational goals will come more readily to educators with telecommunication skills than to those who lack such skills. It is clear therefore, that nursing scholars will need to be effective and efficient users of email technology.

Another important aspect of scholarship this project is attempting to emphasise is that of mentorship. Mentorship has been defined as “an intense relationship calling for a high degree of involvement between a novice in a discipline and a person who is knowledgeable and wise in that area” (May, Meleis et al. 1982). Darling (Darling 1984) suggests the existence of three basic mentoring roles: the Inspirer, the Investor and the Supporter. The Inspirer is able to effectively communicate a goal or ideal to the neophyte and is able to model the behaviour required to achieve such goals. The Investor is able to act in such a way as to protect and promote the activities of the new graduate. The third role, the Supporter, provides the new graduate with the emotional encouragement and reassurance required to develop self-confidence in their area of interest (Darling 1984).

Fuller-Jonap *et al* (Fuller-Jonap, Morrison et al. 1994) indicate the need for competent practitioners to act as mentors in clinical settings, particularly those with graduate programs. Such individuals involved in managing problems in a creative manner can serve as excellent role models for graduate nurses. Furthermore, senior nurses with broad collegial networks are able to provide access to other like-minded health care professionals that may be of assistance to the new graduate. Such relationships are vital for the professional development of neophyte scholars (Ellis 1993).

In terms of collaboration, as is the aim of this stage of the project, a number of characteristics should be evident. The mentor and neophyte should enter into a partnership. Spouse suggests such a partnership should demonstrate an ability of the mentor to share their craft knowledge as well as theoretical knowledge. This form of support is particularly important when the graduate is new to the clinical area (Donovan 1990; Spouse 1996). Partnerships such as this are also beneficial for the mentor as they provide an opportunity for the mentor to reflect on aspects of their own practice in order to model appropriate practice or offer appropriate counsel.

### **3. STAGE ONE: THE VIRTUAL COLLEAGUE**

Students enrolled in a first year undergraduate “Introduction to Nursing Studies” subject were required to perform a series of electronic workbook tasks. The assignment tasks involved students using the World Wide Web and email. Students were paired by the facilitator, with each student being given the email address of a randomly assigned ‘Virtual Colleague’. Students were advised that they did not have to reveal their identity to the virtual colleague; essentially a blind peer review.

The task required students to access one of two WWW-base articles. Each student was required to perform a critique of the research article and send this critique to their virtual colleague. Upon receiving their colleague’s work, students were asked to study the critique, keeping in mind the purpose and potential audience for the critique. They were then required to compose a considered ‘critique memo’ (Lewis 1994) as a form of peer review. Students were reminded that the critique should address global issues of purpose and audience, then organisation of content, support of claims, writing style and tone and finally grammatical and spelling errors. Students were also encouraged to compose their peer review ‘on-line’, using the power of the computer to edit and proof their work. The completed peer review was emailed back to the original student and a ‘CC’ (carbon copy) of the review was sent to the facilitator for marking.

#### **4. STAGE TWO: THE VIRTUAL MENTOR**

The second stage of this project involves hospital-based graduate nurses from one Melbourne Health Care Network and students enrolled in a Master of Nursing program. The 'Virtual Mentor' represents a collaborative venture between a university School of Nursing and the regional health care network. The program aim is to provide new graduates with additional support from senior nurses who are involved with university study. The project will also assist in developing closer links between clinical areas and academic settings.

The project utilises the concept of a 'virtual mentor' with new graduates communicating with senior nurses via email. New graduates are allocated a mentor from among students enrolled in a nursing informatics subject. The mentoring process aims to set up a collaborative relationship between a nurse in clinical transition and an experienced nurse. The project stemmed from the need to provide such a relationship in an extended support environment. As an integral part of their studies the Masters students are required to develop expertise in the utilisation and application of communication technologies in nursing. This project will therefore satisfy both requirements.

In addition to providing personal communication between graduate and mentor, a collegial web site will be established on an existing web server. This site will feature a threaded discussion list where clinical problems and professional issues can be discussed in an open forum. This forum will provide both mentors and new graduates with a pool of additional expertise. It is envisaged this use of communication technologies will have a number of benefits. In addition to the open forum, the project will provide graduates with an impartial sounding board especially when dealing with interpersonal problems they feel they can not discuss in the workplace. It also provides Masters students with an opportunity to view contemporary issues faced by new nurses through new nurses' eyes. It should also provide an opportunity for these senior practitioners to sharpen their problem solving skills in a real world, technology-based situation. Of benefit to both groups will be the development of skills in computer, information and communication technologies. It should be emphasised this project is not designed to replace clinical mentors or educators. Rather, it will be a 'value-add' to the current new graduate program by developing a richer, more dynamic support environment.

#### **5. INITIAL RESULTS**

In order to gauge student attitudes and the effectiveness of stage one of the project, a convenience sample of 140 students comprising 129 females and 11 males was taken during the second last lecture of the semester. The instrument used for data collection was designed by the authors and consisted of eight closed (yes/no) questions, three open ended questions and 4 Likert-type scaled items. Participation in the study was entirely voluntary. No names or other personally identifying data were required to complete the questionnaire.

Eighty-two completed questionnaires were returned representing a response rate of 58.6%. Sixty-seven percent (N = 55) of the respondents had never used email prior to enrolment in the subject. The majority of respondents; 91.5% (N = 75) indicated they felt they knew more about email at the end of the subject than they did at the commencement of the semester. Students were asked if they had used email other than to perform the assignment task; for example to communicate with family or friends. Seventy-one percent (N = 58) of the respondents indicated such extracurricular use of email. Sixty-seven percent (N = 55) of respondents believed email was able to enhance communication with their facilitator. Students were also asked if they understood the purpose of the email tasks. Seventy-seven percent (N = 63) answered in the affirmative. Responses related to the benefits of email in nursing were also gauged. The results are illustrated in Figure 1.

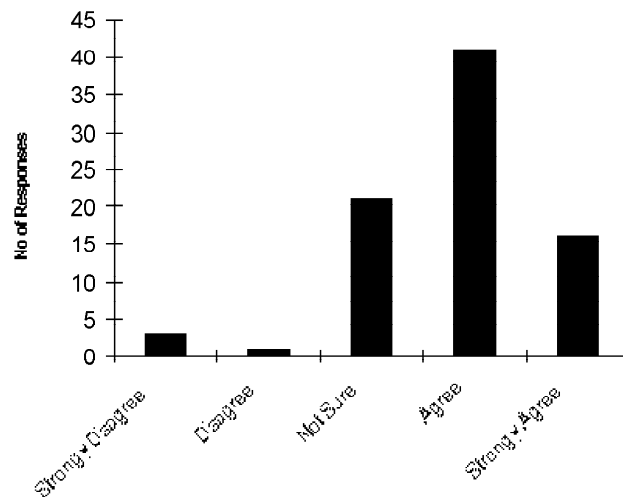


Figure 1: Benefit of E-mail in Nursin

Twenty nine percent (N = 24) of students reported no difficulty with the task. The remaining 58 students reported some form of technical or logistical difficulty. More than 50% (n = 42) of students reported queued email due to a corruption of the email application's .ini file. A number of other less critical difficulties occurred including students having difficulties with getting their virtual colleague to reply on time (N = 19), incorrect email addresses resulting in undeliverable or unroutable mail delivery system failures (N =16). When asked if the use of email was worthwhile 75% of the respondents (N=62) either agreed or strongly agreed (see Figure 2). This was a very pleasing result given the large number of first-time email users and the impact of the software failures encountered during this stage of the project.

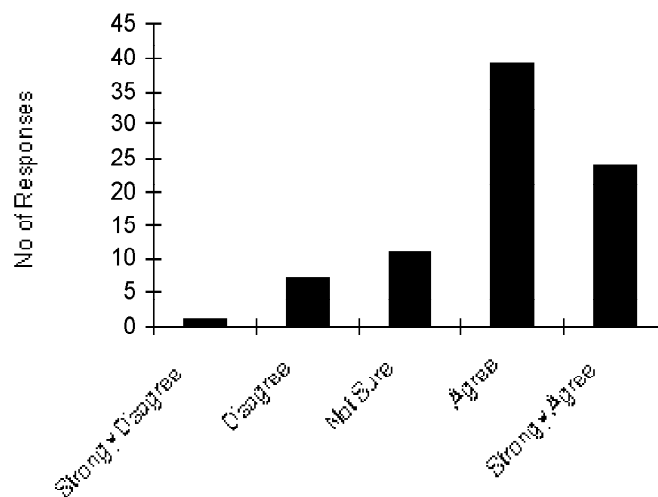


Figure 2. Is E-Mail use in the subject worthwhile?

One limitation of the study is that only measures of participant opinion were gauged. Owing to time and funding constraints a measure of learning outcome was not able to be performed at this time. Future studies will be fashioned to address is aspect.

## **6. BENEFITS OF VIRTUAL COLLABORATION**

Unlike conventional mail, email is a cost and time effective form of communication. Messages can be sent and received from opposite sides of the globe within minutes providing the opportunity for almost immediate responses. Email is also more convenient; one does not need to find paper, envelope, address books, stamps or a post box. All this can be done at the desktop. Recent advances in encryption and digital signatures can provide security and authentication to email based communication.

A major strength of using email as a communication and collaboration tool is that of its global nature. In fact, global collaboration between academics, clinicians and students is now a reality. Email can provide direct access to hundreds of like-minded clinicians and academics throughout the world; many of whom are at the forefront of research in their chosen field. This characteristic makes email invaluable for postgraduate students and academics wishing to keep up with issues that concern nurses in their particular specialty or to access information that would have been impossible to obtain using conventional methods. It also empowers the neophyte who is able to converse directly with nursing leaders from around the world.

The project has a number of positive outcomes in terms of teaching and learning. Firstly, students are exposed to the concept of nursing scholarship and an ethos of scholarship from the earliest stages of their education. The students learn about technology by using it. Students are introduced to the concept and process of scholarly dialogue. The virtual colleague approach forces students to reflect on and develop effective writing skills based on their peer review. They not only have to think about their own writing but have to reflect on the process of scholarly dialogue in order to formulate their peer review. They are also required to interact in an environment where there exists a confluence of traditional scholarship and information and communication technologies. This then establishes the notion that these technologies can indeed facilitate scholarly dialogue in a nursing degree program. Students quickly become familiar with the idiosyncrasies of contemporary computer and telecommunication applications such as email and are able to adapt to the nuances of this rapidly growing form of communication.

Students were able to see how their perception of the article might differ from others' perceptions. Some students openly stated that comments from their peer resulted in them looking at the content of the journal article from an entirely different perspective. The exercise also provided students with the opportunity to reflect on how well they were able to communicate their ideas to their peers.

Anticipated benefits from stage two would result from the establishment of effective collaborative relationships leading to a more rapid adjustment of the neophyte to the clinical setting and provide for more exciting and effective learning (Spouse 1996). Those involved with the project should be able to benefit from modelling specific behaviours unique to electronic discourse. Mentors are able to recognise the value of their own knowledge and skills. The project may also contribute to the professional development of the mentors as the project will require critical reflection in order to offer counsel.

## **7. LOGISTICAL CONSIDERATIONS**

One of the main aims of the project was to develop a beginning ethos of scholarship. To this end, students were required to subject their work to the criticism of others by entering into scholarly dialogue. Students were advised that they did not have to reveal their identity to the virtual colleague (blind peer review). Due to the format of their email addresses, students were afforded some degree of anonymity. This is not to say that anonymity had to be maintained. However, it was made clear that this would be best unless both parties were happy to divulge their identity. This relative anonymity is a double-edged sword. It allows the author of the email message to make open, honest comments with limited fear of retribution. However, this may also lead some students to formulate unwarranted or inappropriate comments. In fact, one student complained that they thought the exercise was too harsh and that it was unrealistic to expect junior students to subject themselves to the possibility of scathing and potentially damaging criticism.

The unique nature of this project therefore requires more than the usual attention to email etiquette. As part of the concept of respect for others' scholarly work it is critical that students be warned about the possibility of flaming. Flaming is an electronic mail message intended to insult, provoke or rebuke, or the act of sending such a message. Often neophyte email users can unintentionally insult a recipient by sending an ill considered remark, resulting in an affront. This is one reason for emphasising the need for a constructive approach to the peer review and an awareness of the potential problems caused by the immediacy of email. This point can actually be used to underscore the need for scholars to be open and sensitive to the views of others.

As such, it was not a particularly onerous task for the facilitators to manage. More importantly, the shorter nature of the exercise meant that students could concentrate on the cognitive process involved with the exercise rather than be burdened by the need to achieve volume. In other words, the emphasis was on the need for quality of peer feedback rather than the quantity of feedback.

The email system used was relatively user-friendly, however many students had never used email before and were reluctant at first. The requirement of the subject to use email for the submission of assignments provided an incentive for those students to use the system. Many students also expressed concern that the facilitator may not have received their assignment. These concerns were able to be allayed as the email system provided a confirmation of delivery and a confirmation on reading function. Students were encouraged to activate this function when lodging their assignments and were required to save their work to floppy disk

Unfortunately, a major email system failure occurred just as the assignment task was to commence, resulting in a number of technical and logistical difficulties. The fault involved a corruption of the email application '.init' file responsible for individual student email configurations. The result was that all outgoing mail on the effected machines became queued. Students were able to receive but not send email. This resulted in high levels of student anxiety and frustration and many hours of rebuilding mail configurations and deleting queued mail on the part of the facilitator and technical resource manager.

There are also a number of limitations associated with marking electronic assignments. The facilitator can either print the assignments off or mark the assignments on-screen. Printing assignments can be associated with increased cost to the department. On screen marking does tie the facilitator to the computer requiring many hours in front of the monitor. Poor screen resolutions may make this task difficult. However, if assignments are marked on-line, a databank of comments can be developed. This speeds up the process of feedback using copy and paste functions and allows the facilitator to provide more specific feedback were required.

## **8. FUTURE DEVELOPMENTS**

The future for this form of virtual collaboration looks promising. Anecdotal evidence in the form of a demonstrable increase in informatics laboratory use may indicate a successful outcome for the project. Students have informally reported feeling more comfortable with the technology and are now able to use it to assist self-directed study. It is hoped this approach to scholarship adopted by the project will be transferred to other aspects of the curriculum. More importantly, it is hoped that the participants may apply an ethos of scholarship to their future studies and on into clinical practice.

The development of a collegial web site featuring threaded discussion lists offering the participants in the Virtual Mentor program an opportunity to discuss clinical problems and professional issues in an open clinical forum. Such collaborative initiatives will add an additional scholarly dimension to the project drawing on the experiences, skills and knowledge of many mentors. This also provides the neophyte with an avenue whereby they may offer fresh insights into clinical problems not initially seen by the 'clinical expert'. This forum will allow the participant to take risks with new ideas, explore creative solutions to clinical problems and afford the freedom to take on the role of the critic without fear of reprisal.

## 9. CONCLUSION

This project has major ramifications in terms of the familiarisation and utilisation of information and communication technologies by nurses. Clinical information systems are currently being implemented throughout the health care system at various rates and utilisation by nurses is concomitantly varied. Nurses need to see useful and productive benefits from technology before they will adopt it as common practice. The project introduces basic computing skills and moves the learner toward an appreciation of the power and flexibility of information and communication technologies. These learners become familiar with information technology through the purposeful practice and repetition of use.

To date, the project has been considered worthwhile by participants, facilitating the development of new computer skills related to contemporary communication technologies. In doing so the students have developed a positive appreciation of scholarship and have been exposed to a rich and dynamic learning and problem solving tool. With the implementation of stage two, it is anticipated that collaborative links between expert nurses and new graduates will be forged facilitating scholarship, mentorship and ownership of clinical problems within a supportive learning environment. Introducing communication technologies in the new graduate program will offer amazing opportunities for all involved to access relevant clinical and professional information.

The initial results of the project implementation reveals that virtual collaboration in a nursing setting offers an innovative method of fostering scholarly dialogue, providing flexible technology-based learning opportunities aimed at promoting an ethos of scholarship within a supportive environment.

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