Pushing the collaborative envelope: A virtual classroom for clinical practice

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In an era of evidence based practice it is appropriate that nurses working in the speciality area of burns have postgraduate education qualifications. This education needs to combine knowledge acquisition and skill development within the context of the local clinical environment. To meet the interactive requirements for delivery of the Graduate Diploma in Burns Nursing, it was decided that the best solution was the use of synchronous e-learning also known as live e-learning or virtual classroom.

Using live online tutorials in a virtual classroom, the clinical lecturer / expert clinician are able to provide students enrolled in this program with a unique opportunity to interact. Students are able to discuss clinical protocols, issues and solutions in an environment previously only found at Burn Care conferences. Multi media materials such as video footage add visual context to the information being taught / discussed.

The use of the virtual classroom has facilitated the delivery of knowledge and skill development within the context of the local clinical environment. The virtual classroom framework and tools reflect contemporary practice and have enabled the learning expectations of engagement, informative content and relevance to be exceeded in a cost effective and efficient manner.

Keywords: clinical practice, clinical protocols, virtual classroom, burns, online

Introduction

In an era of evidence based practice it is appropriate that nurses working in the speciality area of burns have postgraduate education qualifications. This education needs to combine knowledge acquisition and skill development within the context of the local clinical environment and evidence based practice. Before the introduction of this course there was no burns specific post graduate course available in either Australia or New Zealand. Previously available courses offered by traditional face to face teaching faltered due to lack of student numbers. The sustainability of any course is contingent on the quality of course content, administration and student numbers. To meet the requirement of providing a totally external course to widely distributed students, it was decided that the best solution was the incorporation of synchronous e-learning. In order to ensure course content reflects contemporary practice, the Department of Clinical Nursing at the University of Adelaide has developed a network of expert clinicians to inform and participate in an innovative postgraduate diploma in burns nursing. This course is available to national and international students.

The University of Adelaide has been using 'MyUni' since 2001, the Learning Management System (LMS) from Blackboard Inc.

The challenge was to incorporate the clinical focus and interpersonal essence of nursing in delivery of an external course. To facilitate this there was a need to provide an opportunity for the students and expert clinicians to discuss various clinical issues and problem solve. The group also needed to view clinical material in a secure venue to discuss different management techniques. Asynchronous discussion was not seen to meet this need appropriately.

Synchronous methods available through MyUni did not meet the interactive requirements for delivery of the Graduate Diploma in Burns Nursing. It was decided that the best solution was live e-learning which is also called a 'virtual classroom'.

Using live (synchronous) online tutorials in a virtual classroom, the clinical lecturer,expert clinician or visiting speaker is able to provide students (local, national and international) enrolled in this program with a unique opportunity to interact. Students are able to discuss clinical protocols, issues and solutions in an environment previously only found at Burn Care conferences. Multi media materials such as video footage add visual context to the information being taught / discussed / debated. Plans for course development include the incorporation of interactive online scenario based learning.

This paper provides information on course development, collaboration with the Learning and Teaching Development Unit (LTDU), clinician involvement, collaboration, and course implementation. It reflects the experience of working with a small group of six students widely distributed across the country. Preliminary course evaluation is presented.

Background

Burns nursing is a speciality consisting of relatively small numbers of burns nurses working in both adult and paediatric settings in geographically distant States and Territories. Historically only one Burns specific postgraduate nursing course has been made available in Australia. This course was offered by internal delivery only, which limited access to students within range of the host University. This course ceased to be offered after the graduation of the first student cohort. Subsequently, a variety of postgraduate courses including general plastic surgery, general wound management, Intensive Care and High dependency nursing to name a few, contained some Burn care content.

In July 2003, a joint initiative by the South Australian Department of Human Services, The Royal Adelaide Hospital and the Women's and Children's Hospital saw funding made available for the establishment of a PostGraduate Diploma in Nursing Science (Burns Nursing). This process was to be facilitated by The Department of Clinical Nursing, The University of Adelaide, South Australia. The, Clinical Nurse Consultant, Burns Unit, Royal Adelaide Hospital and the Burns Co-ordinator, Women's and Children's Hospital were seconded to the University to construct and write the course to commence delivery to students in Semester 1, 2004.

The challenge was to develop a course that was accessible by nurses across Australia and New Zealand. It also needed to strongly reflect the clinical nature of the subject and the requirement that the course be clinically relevant and delivered in a manner that facilitated knowledge transfer across not only the country but also across adult and paediatric burn unit settings.

Exploration

It became apparent after discussion with clinical experts and academics that the only way to ensure the long term viability of the program was to deliver the course by flexible delivery in external mode. The delivery of the theoretical subjects by traditional distance education techniques of study guides plus readings was thought to be appropriate. It was recognised that the delivery of the clinical subjects required an innovative delivery solution that would engage the students in an interactive sharing of information and clinical knowledge while at the same time give access to new and novel therapies, practice and resources.

The clinical subjects required a process that facilitated the interaction of students with other students, course co-ordinators (clinical experts) and also other clinical experts from nursing, medicine, physiotherapy, occupational therapy, social work, staff counselling, migrant health, drug and alcohol, skin laboratories and fire services. The objectives included broadening the knowledge base of the students and challenging them to 'think outside the square' and to come up with new solutions supported with evidence. The inclusion of nurses from adult burn facilities and nurses from paediatric burn settings allowed students to explore practice issues, problems and solutions from different settings. It was hoped that recognition of common ground would support collaboration in the clinical setting and subsequently contribute to improved service delivery.

Good practice in live e-learning

After attending a lecture on instructional design conducted by the LTDU, the course authors posted a message on the discussion board of an online community of educators site asking for any help with online delivery of education for clinical nurses. An enormous range of responses ensued, all with valuable suggestions and links to other resources. One of these contacts led to the construction of a 'virtual classroom'. In close liaison with LTDU's Instructional Designer work was begun on looking at the suitability of this as a process of course delivery.

Salopek (2002) cites Yegin Chen, director and senior analyst at research firm Eduventures.com, who offers the following characteristics of live e-learning:

- professional instructors
- proven course content
- two way audio and text communication in real time
- use of visual materials such as slides and graphics
- ability of the instructor and students to share applications
- ability of any student to lead discussions or present material
- communication tools between students such as messaging and chat
- availability of "breakout rooms" for small groups
- availability of record and playback features for archiving and later review.
  Salopek (2002)

The LTDU has been researching and trialling various rapid live e-learning technologies. There are some feature rich live e-learning solutions, which are quite expensive to hire per month. The choice of a virtual classroom distributed by the Western Australian Software company Compu.Ed was an Australian based solution which is inexpensive and yet meets Chen's characteristics of live e-learning. Salopek (2002)

The chosen virtual classroom has two-way audio and text communication in real time and the teachers / facilitators can use visual materials such as slides and graphics. There is a shared application feature, but LTDU has found that even on the most sophisticated and expensive software solution, this feature is CPU intensive and slows down things to the point of being unmanageable. This will only improve with machine performance. There are communication tools between users including text chat.

At the moment, the class size for the Burns Nurses is quite small and does not require break out rooms, although this feature is available for extra cost, should it be needed. Sessions can be recorded and archived. The Compu.Ed classroom can record the sound and the text. It also cleverly records only the web addresses of the graphics and so the result is smaller file sizes and therefore easier to access on download.

A strong feature of the virtual classroom is synchronized web browsing where the facilitator can "push" all participants to a specific web site. This is sometimes called a web safari. Also participants were dispersed across the country, however time zone differences did not present any difficulties.

The LTDU worked with Compu.Ed to introduce a new feature of the software, that of changing the photo of the person talking, separately to the presentation slides. Learners really appreciated this and it added to both the pedagogy and the community building. The use of individual photographs ensured that students could put a name and face to the voice of the other students and lecturers. The benefits of this were demonstrated when the group met face to face at the national conference and immediately had a bond. Interestingly the student who had not provided a photograph did not appear to attach to the group as well. It is the opinion of the authors that audio stream with this feature is in fact better pedagogy than using, for example, streaming video of talking heads. The animated image of a speaker in the corner of the screen may distract users from the key purpose of the learning.

Managing the virtual classroom

There are some logistics that need to be considered in relation to the management of having multiple users accessing the classroom. This has been overcome by using a booking system for the virtual classroom through the University Calendar. It is also wise to allow at least 30 minutes between differing

classes to allow for uploading of new slides through administration board and accommodation of possible session over run.

The acquisition of virtual classroom moderator skills has been a large learning curve for clinical lecturers. Issues that need to be addressed include:

- use of split screen
- default option to resize screen
- monitoring students participation
- managing a guest speaker
- use of photos and the changing of those during a presentation
- compatibility of powerpoint presentation with the virtual classroom

Technology can have a number of roadblocks which divert participants from success. Hoffman (2003) First, there is accessibility, while many online programs claim to work on low bandwidth connections this is often not the case. However one of the strongest features of the virtual classroom is the quality of the audio, even on a 56K modem. With good computer speakers, with a woofer for bass response, it gives the illusion everyone is in the same room. All computers had the necessary hardware requirements for example, sound cards which supported microphones and the Julian Burton Burns Trust provided each student with a headset with microphone built in for the duration of the program.

Another roadblock is the students' ability to use the software. There was adequate orientation provided and "help desk" support before and throughout the learning experience. The only complication, which needed support from local IT resources, was the firewall configuration of some students' access computers. This was because of firewall security settings, which the local IT support quickly fixed.

Many software programs focus on the bells and whistles of the technology. However the Compu.Ed virtual classroom is very simple in its interface and easy to use. Much of the effectiveness of a live e-learning event lies in effective pedagogical adaptation of traditional classroom methods.

Integration

Although the system is relatively easy to use from both a moderator and student perspective, it was still fairly intensive in the couple of weeks between discovering the availability of the system and ensuring that it was up and running for the first week of semester. Prior to the commencement of the semester all students had a practise session in the room with the course co-ordinator, and often the instructional designer, to ensure that they were comfortable with the system and all equipment was working.

Subsequently a step by step booklet has been developed for accessing the system. This has been used successfully by guest speakers logging on from interstate, with minimal assistance required. All guest speakers had a trial run in the classroom prior to the tutorial to ensure that they were comfortable with the system. Guest speakers were asked to forward their slides prior to the presentation for renaming and sizing. The use of the instruction booklet however has allowed slides to arrive in the correct size format. On the day of the session, the speaker indicates when the slides need to be progressed and the facilitator obliges. Guest speakers manage the sessions very well and although they may be a bit slow in the beginning to synchronise with the text box also, quickly adapt. Both course co-ordinators were online for conducting the tutorials. One co-ordinator moderated the session, changing student / speaker photographs, dealing with any technical hitches etc., and the other facilitated the tutorial itself. This ensured that the students received adequate support both with the course information and with the coordination of technical support.

Tools used within the classroom included PowerPoint presentations and accessing websites to view and discuss new technologies, equipment and therapies. Some sites were interactive such as the site that allowed students to use a computerised drawing system to calculate Total Burn Surface Area burned and associated fluid requirements. Currently no Burns unit in Australia use a computerised mapping system. This gave students exposure to new technologies that are available to support clinical practice. students were then able to bring this to the attention of their clinical team for consideration.

Although the system itself does not support video, this is easily overcome by loading small QuickTime movies onto the University of Adelaide's LMS and instructing students to download them onto their desktop prior to the tutorial session. During the tutorial, the virtual classroom was minimised (allowing the group to still communicate by voice) and the movies were activated, viewed and discussed. Rich media is also possible with resources being accessed from CDs or DVDs.

This demonstrates that the sessions needed to be carefully planned. Learning objectives were clearly articulated to students at the beginning of each session. Lecturers planned each session using a planning document (Figure 1) to ensure that all relevant aspects were covered in the discussion. Materials for practical activities undertaken by each student (within the tutorial) were made available in a timely fashion prior to the tutorial.

Figure 1: Example planning document

Date	
Title	
Presenter / co-ordinator	
Objectives	
Pre-readings	
Materials to be loaded onto MyUni prior to tutorial	
Web sites to visit	
Main discussion points	
Suggestions for future sessions	
Student feedback survey completed Yes No	

The co-ordinator needed to check that any websites that were going to be accessed during the tutorial were still available from within the classroom prior to the tutorial itself. This avoided delays if websites had become inactive for some reason. Both clinical experts and students were distributed widely coming from Western Australia, Queensland, Tasmania and New South Wales, as well as South Australia. Their availability was not limited by their geographical location.

The virtual classroom allowed for both audio and text chat which was particularly useful for students who were experiencing technical problems. At times a few people dominated the discussion. As the facilitators are able to text each other privately this enabled the lecturer who was moderating the session to alert the lecturer who was conducting the session to prompt the other students to participate.

Notes were taken during the tutorials by the lecturer who was moderating in relation to questions that were asked and discussions that took place on issues outside the content of the slide show or accompanying notes. These will be used in the planning document for future sessions.

Discussion regarding weekly readings demonstrated the need for the students to have the articles in front of them. Direct passages were discussed and required the students to refer to the text. Plan: in future students will be directed to have the text in front of them.

The tutorial sessions ran for two hours. A five minute break at the one hour mark was given. This worked well and refreshed the students and lecturers. Some of the students attended the 'classroom' while in their office at work. Although this has obvious issues of convenience for them it was problematic on occasions as demonstrated on one occasion when one of the students was called to see patient and subsequently was held up attending the patient for approximately fifteen minutes.

Evaluation

A virtual classroom session was scheduled each week during Semester 1 2004. At the completion of the course, six students, all practising Burns nurses, undertook a web based evaluation survey of the virtual classroom. Thirty two, seven point likert scale questions were designed around the Community of Inquiry conceptual framework of teaching presence. This included questions which addressed the three dimensions of teaching presence, that is: (1) instructional management (2) facilitating discourse, and (3) direct instruction. Effective teaching presence, along with cognitive presence and social presence, are the

three key elements of a community of inquiry within an e-learning environment. (Garrison and Anderson 2003).Notwithstanding the low number of survey participants, the results of this survey do indicate a high degree of teaching presence within the virtual classroom.

Instructional management

Nine questions were incorporated which specifically addressed the design and organisation of the virtual classroom sessions. Students were asked whether they considered the goals and expectations of the virtual classroom sessions were clearly outlined and whether they received adequate and transparent technical training and support in the use of the virtual classroom facility. Students were also queried on whether they felt more comfortable with the learning environment as the sessions progressed; whether they felt an increased sense of belonging to a community of learners as the sessions progressed; whether they assumed more responsibility and control over their virtual classroom learning experience; as well as felt increasingly inclined to actively engage in the discourse. In addition students were asked if they had been given an opportunity to critically reflect on the topics of learning and were they encouraged to maintain independent thought and understanding whilst contributing to mutual understanding. The results indicated that a very high degree of instructional management had been incorporated into the virtual classroom sessions.

Facilitating discourse

A further twelve questions were incorporated which specifically addressed facilitating discourse. These included whether the facilitator: acknowledged and welcomed them into each virtual classroom session; encouraged and supported them to participate and input; provided appropriate insights and information when needed; sought some common understanding or insight; engaged them in meaningful discussions; initiated, sustained and summarised stimulating and meaningful discussions; provided the opportunity for them to informally use the virtual classroom with other class members; focussed discussions on key issues; provided them with stimulating questions; identified puzzling issues arising from their responses; challenged their ideas and brought about reflection; as well as made them aware of their thinking (metacognition).The results indicated a high level of facilitation of discourse, with respondents either agreeing or strongly agreeing with each of the questions

Direct instruction

A further eleven questions were incorporated that addressed the category of direct instruction. These included whether the facilitator provided intellectual and teaching leadership; offered alternative ideas and perspectives for analysis and discussion; responded directly to and elaborated on enquiries; acknowledged uncertainty where it existed; made connections among ideas; constructed frameworks; and summarised the virtual classroom sessions. Students were asked whether they felt comfortable questioning or challenging direct instruction; received constructive feedback; received specific information or direction when required; and received adequate explanations and/or clarification of misconceptions. As with both instructional management and facilitating discourse questions, all students either agreed or strongly agreed that there was a high level of direct instruction incorporated in the virtual classroom sessions.

A final qualitative question was included asking students to input on what they would say if they were talking to a friend who had asked them for honest and constructive comments about their experience with the virtual classroom. Their responses indicated that they greatly valued the flexibility and convenience of being able to take part in synchronous online tutorials within their own workplace or at home. They also appreciated the structured environment and the ability to be able to interact with other students and facilitators and to discuss first hand and critically reflect on how things are done differently across the country.

Increased collaboration

The Learning and Teaching Development Unit and the Department of Clinical Nursing clinical lecturers are working closely to move this from a live e-learning event to a process. There are tasks and assessment assignments being planned using asynchronous technologies managed by MyUni, the university LMS.

One of the most common methods used by nurses to cope with working in the stressful environment of a burns unit is the support provided by the 'burns team' and communication with co-workers (Steenkamp and van der Merwe, 1998, p.258). The personal experience of both course authors was that the same was true of the burns nursing group on a national level. Unfortunately, the only opportunity that most burns nurse get to interact as a national group is at the once a year national conference, a situation which is often accessed by senior nurses but infrequently by more junior nurses.

It was therefore essential that the students form a sense of community for the facilitation of their learning experience. Spencer and Hiltz (2003) say, establishing a social presence early in a course using synchronous communication technologies can "...draw in potential non-participants and better prepare the class to participate in collaborative and constructivist learning online". It was also hoped that the experience should help foster the development of a national sense of collegiality amongst burns nurses. This had a twofold advantage. Firstly, the establishment of a network across all levels of burns nurses would help provide support to students undertaking further study. Secondly, this network would help sustain the course itself by facilitating the marketing of the course.

The qualitative comments made by the students at the end of the virtual classroom experiences for the semester, support this possibility and are very encouraging indicators that an ongoing learning community has been birthed and strengthened.

A national course advisory committee reviews and comments on course content. The use of the virtual classroom allows the group to discuss course content online and view documents for discussion. This system is much more interactive than a telephone conference and considerably less expensive than video conferencing.

Managing the synchronous blend

LTDU and the Dept of Clinical Nursing are going back to the Instructional Design drawing board. They are re-visiting the instructional goal, performance objectives and assessment techniques in an online environment. Work will continue on the balance between synchronous and asynchronous components. Each segment of the blend is equally important and relevant.

In the coming semesters it is planned that the Rensselaer 80/20 model of interactive distance learning be the model for the Burns Nursing course. This model suggests that students spend 80% of their online time in asynchronous activities and 20% in synchronous activities. Lister, Danchak, Scalzo, Jennings & Wilson (1999) report that this model enables students to work at their own pace, while also helping to keep students on track with course deadlines, facilitating the creation of teams and community, and providing learners with immediate feedback.

Conclusion

It is planned to incorporate more evaluation into future courses incorporating the Community of Inquiry framework, including social and cognitive presence, in order to further analyse the virtual classroom's intellectual environment. In a period of three months, from the initial contact between the Department of Clinical Nursing and the Learning and Teaching Development Unit, the Compu.Ed virtual classroom was able to be developed and implemented as a valuable mode of education delivery.The use of the virtual classroom has facilitated the delivery of knowledge and skill development within the context of the local clinical environment. The virtual classroom framework and tools that are able to be used within it ensures that course content reflects contemporary practice.

In the context of the interactive nature of group discussion within the virtual classroom, this medium is being integrated into an online e-simulation disaster management exercise conducted in Semester 2, 2004 for the Department of Clinical Nursing. The virtual classroom will be used as a simulated boardroom for students (in their 'persona') to interact. It will be then used to facilitate an online debriefing session at the completion of the online exercise.

The virtual classroom framework and tools ensure that course content reflects contemporary practice and has enabled the learning expectations of engagement, informative content and relevance to be exceeded in a cost effective and efficient manner.

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