Enhancing the online learning experience using virtual interactive classrooms

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KEY WORDS

Online learning nursing students, interactive classrooms, active participation, non- traditional

ABSTRACT

Objective
Enhancing online learning through the design, implementation and evaluation of a project piloting virtual interactive classrooms.

Design
The virtual interactive classroom (classroom) design was underpinned with current best practice in higher education pedagogy. Evaluation of the project used a cross-sectional, electronic survey.

Setting
This study was undertaken at a School of Nursing and Midwifery in a Western Australia University.

Subjects
144 nurse students: 130 undergraduate, 14 postgraduate.

Interventions
Classroom options were introduced into two online units, incorporating blended learning approaches and promoting active participation in learning.

Main outcome measures
Quantitative measures included student demographics, ease of classroom navigation, percentage participating in the classroom option in real-time and those who did so actively (questioning, discussing, etc.). Qualitative data of student learning experiences informed the findings further.

Results
Fifty-six percent of enrolled students participated in classrooms in real-time and 9% viewed recorded sessions. The survey response rate was 56%. Non-traditional students were highly represented; with 65% of undergraduate and 100% of postgraduate students being mature-age. Seventy-one percent of undergraduate and 89% of postgraduate survey responders who participated in classrooms in real-time did so actively. The most common reason for non-participation in real-time was family and work commitments (76%). Participating students gave overwhelming positive feedback of the classroom experience, in particular around its interactive nature, blended learning approaches and user-friendliness.

Conclusion
The classrooms supported active student participation in online learning. Students valued the interactive and blended learning features, known to be congruent with effective learning, student satisfaction and retention.

INTRODUCTION

In recognition of the importance of online learning options to the rising number of non-traditional nurse students juggling study, home and work commitments, and the potential limitations of traditional online delivery, a project was undertaken to enhance online learning via interactive classroom technology. This paper describes the development, design, implementation and evaluation of this project.

Nursing is an increasingly popular degree choice with students categorised as non-traditional (Department of Education, Employment and Workplace Relations (DEEWR), 2010) including those who are mature-age (21 years old and above on entry) (Bradley Committee 2008), from lower socio-economic status (LSES) backgrounds and entering via non-traditional pathways such as portfolio routes (James et al 2010; Bradley Committee 2008). The importance of non-traditional students to nursing has been acknowledged by Donaldson et al (2010 p.655) as "a rich and necessary source of recruitment for the nursing profession..." However they also recognize that "...this has resulted in a changing student nurse profile". This altered profile includes a growing population of students for whom home and paid work commitments compete directly with requirements of university study (Dante et al 2011). Reduced participation in learning activities is regarded as a major factor affecting retention (Glogowska et al 2007; Glossop 2002), unsurprisingly therefore, lower retention rates are reported among non-traditional nurse students (Pryjmachuk et al 2009; Jeffreys 2012). With the predicted shortfall of qualified nurses within the Australian and global healthcare workforce (Health Workforce Australia (HWA) 2012; Royal College of Nursing (RCN) 2011; Buerhaus et al 2008), the support of nursing students to degree completion and registration is of increasing significance. Online learning, a progressively popular choice in higher education (James et al 2010), is one way of providing this support, offering flexibility and accessibility for time-poor students (Ali et al 2004). Regarding online provision as a solution for these students requires caution however, as online delivery is linked to less effective learning, reduced student satisfaction (Australian Council for Educational Research (ACER) 2008) and lower retention rates (Tinto 2012; Simpson 2004) and is considered a less favorable option to face to face teaching by leading nurse educators (Allen and Seaman 2011).

LITERATURE REVIEW

Current literature in pedagogic excellence places student engagement as central to effective learning, student satisfaction and retention (Casuso-Holgado et al 2013; Kuh et al 2008). Engagement is defined as "students' involvement with activities and conditions likely to generate high quality learning" (ACER 2008 p.vi). Leading educational theorist Vincent Tinto advises successful learning activities must promote both academic engagement (active participation in learning materials and activities) and social engagement (shared interaction with university peers) (Tinto 2012). Whilst face-to-face delivery can easily incorporate these tenets, online delivery traditionally involves individual and isolated student access to learning materials limiting the opportunity for active participation. The introduction of technology to online delivery such as opinion polls, discussion platforms and debating scenarios is one method of increasing this (Moreno and Mayer 2007).

A further limitation of online delivery can be the overreliance of student learning on reading and completion of written tasks. The literature on pedagogic excellence emphasises the importance of appealing to a wider range of student learning styles through the integration of written, visual and audio materials (Birch and Sankey, 2008). The integration of technology to transform online delivery from traditional platforms of content to vehicles that support blended learning approaches are therefore paramount to the further development of effective online learning (Duffy and Bruns 2006). Whilst nursing students are increasingly reliant on online delivery, nurse education has been slow to embrace such changes (Rounds and Rappaport 2008).

METHOD

Study objective

To enhance online learning in two nurse theory units through a pilot project to design, implement and evaluate the introduction of interactive classroom technology.

Project design

Adobe Connect interactive tutorial classrooms were chosen as the vehicle to support the integration of blended learning and interaction opportunities recommended in the literature on pedagogic excellence. One undergraduate (UG) and one postgraduate (PG) unit piloted the classrooms. The UG unit in Primary Health Care (130 students enrolled) and the PG unit in Advanced Nursing Science (14 students enrolled) had previously been delivered online using the traditional methods of lecture notes, guided reading, individual question and answer activities and discussion boards, the latter used infrequently by students. The pilot introduced an additional option of taking part in weekly ninety minute, interactive classrooms throughout the semester.

Interactive classrooms were conducted in the evening, in anticipation of daytime work and family commitments. Students were sent a URL link via email to enter the classroom. During the first session tutors demonstrated classroom navigation. All sessions incorporated a range of blended and interactive learning opportunities. Content was shared through PowerPoint slides, images, case-studies, audio and video clips. Within the interactive classroom, students could see and hear tutors in real-time and actively participate via shared polls, quizzes, debates and discussion in real-time using either a microphone or written comments or chose to watch and listen only. A chat space provided the opportunity to socialise before sessions commenced and for a period of time following completion of the class. Recordings were also made available to all students.

Survey design

A descriptive cross sectional survey of multiple-choice, open ended and free text response options was used to evaluate the pilot project. The survey was piloted with four student nurses and a panel of independent nurse educators prior to distribution to establish face and content validity.

Respondents

All 144 students enrolled in the units incorporating the classrooms were surveyed, whether or not they participated in the interactive classrooms.

Data collection

The electronic survey was distributed via student email at the end of semester. Data were also gathered via the Adobe Connect data management program on numbers of students participating in classrooms in real-time and accessing later recordings.

Data analysis

Quantitative data were analysed using descriptive statistics; percentages were rounded up to the nearest whole number. Thematic analysis of qualitative responses was undertaken by the researchers, using a consensus approach to develop categories.

Ethics

Ethical approval was obtained from the University Ethics Committee. Students were assured that their survey responses would remain anonymous and they would not be identified by any of the comments that may be used in future publications or presentations. Consent to participate in the study was inferred by participating in the survey. Students were informed that a decision not to participate would not result in any academic or other penalty.

RESULTS

Participation in classroom option

Of the total 144 students enrolled in the online units, a total of 56% participated in classrooms in real-time and 9% viewed a later recording (see table 1).

Table 1: Real-time and recordings classroom uptake

	Undergraduate unit	Postgraduate unit	Total
Total enrolment in online units offering classroom option	130	14	144
Participated in classroom option (real-time)	69/130 (53%)	11/14 (79%)	80/144 (56%)
Did not participate in classroom option (real-time)	61/130 (46%)	3/14 (21%)	64/144 (44%)
Accessed recording at a later date	11/130 (8%)	2/14 (14%)	13/144 (9%)

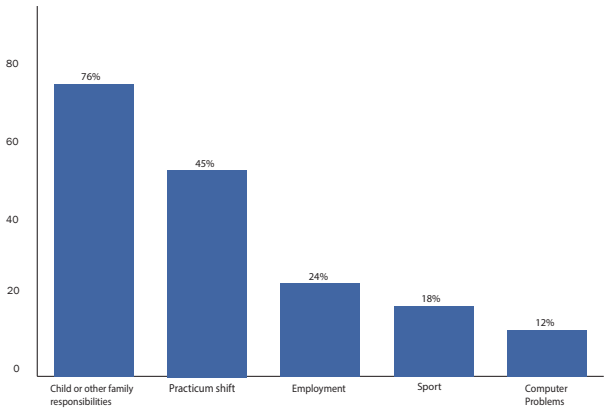
Survey response rate

Fifty-six percent of students enrolled in the online units returned completed surveys. Of these, the response rate of students who had participated in classrooms in real- time was 71%. The response rate of enrolled students who had not was lower, at 28% (see table 2).

Table 2: Survey response rate

	Undergraduate students	Postgraduate students	Total
Total enrolled	130	14	144
Survey response rate	69/130 (53%)	11/14 (79%)	80/144 (56%)
Responders who participated in real-time classrooms	48/69 (70% survey response)	9/11 (82% survey response)	57/80 (71%)
Responders who did not participate in real-time classrooms	16/61 (26% survey response)	2/3 (67% survey response)	18/64 (28%)

Figure 1: Reasons for non-participation



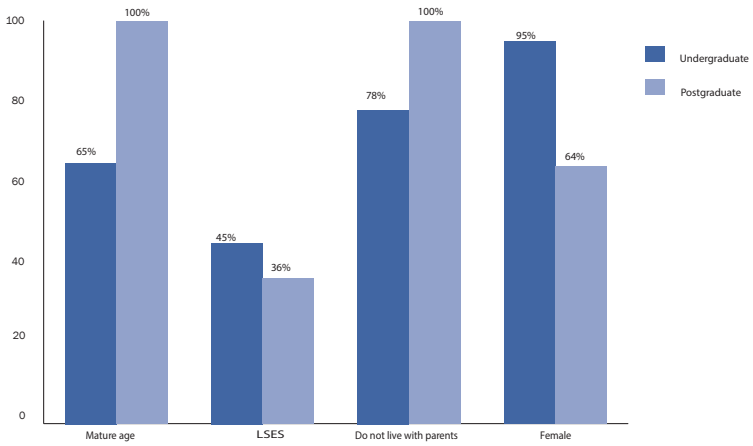
Non-participation of classroom option

Seventeen of the 18 students responding to the survey who did not participate in the classrooms in real-time provided reasons (students could indicate more than one) these being: child and other family responsibilities 76% (n=13/17), practicum placement 53% (n=9/17), paid employment 24% (n=4/17) sporting commitment 18% (n=3/17) and computer problems 12% (n=2/17) (see figure 1).

Demographics

Ninety-five percent of the UG and 64% of the PG survey respondents were female. A high percentage were identified as non-traditional, including over 65% of UG (n=45/69) and 100% of PG (11/11) being mature age and 45% (31/69) of UG and 36% (4/11) from low socio-economic status (ascertained by home postcode). Seventy-eight percent (54/69) UG and 100% PG (11/11) lived away from parents. None identified themselves as being of Aboriginal or Torres Strait Islander origin (see figure 2).

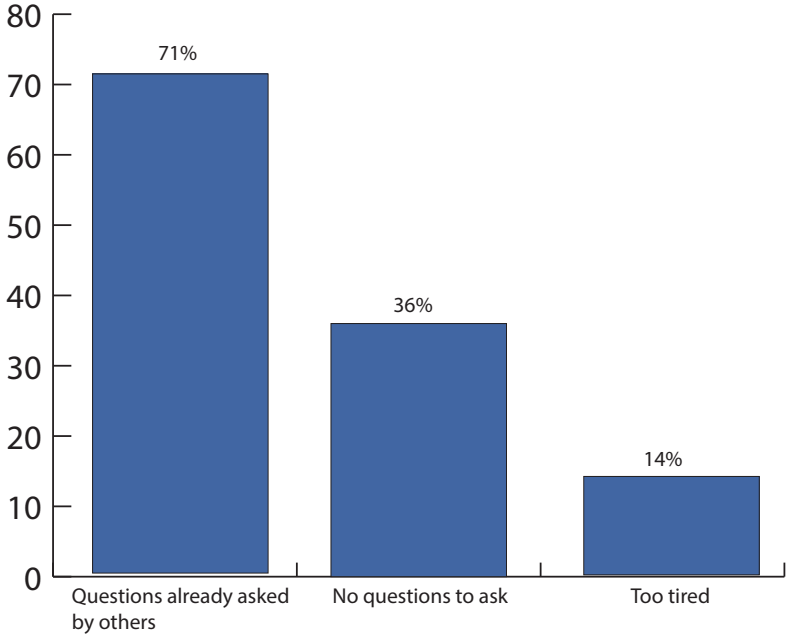
Figure 2: Student demographics



Active participation

Seventy-one percent (n=34/48) of UG student and 89% (n=8/9) of PG student survey responders who had participated in classrooms in real-time indicated they had done so actively (answered questions, took part in discussions, quizzes, etc.). Fourteen of the 15 (93%) of the combined UG and PG student survey responders who chose to observe and listen only stated their reasons for this choice. Seventy-one percent (n=10/14) of students indicated their questions had already been answered by others, 36% (n=5/14) said had no questions to ask and 14% (n=2/14) stated they felt too tired. None of the respondents indicated lack of confidence to be a reason (see figure 3).

Figure 3: Reasons for lack of active participation in the classrooms: all students



Navigation

Sixty-eight percent (n=39/57) of students who participated in classrooms responded to questions about navigation (access into classroom and user-friendliness). Of these students 82% (n=32/39) found classrooms very easy to navigate, 15% (n=6/39) had initial concerns or difficulties in week one and 3% (n=1) stated the navigation was difficult due to poor internet access (see figure 4).

Figure 4: Navigation experiences of classrooms

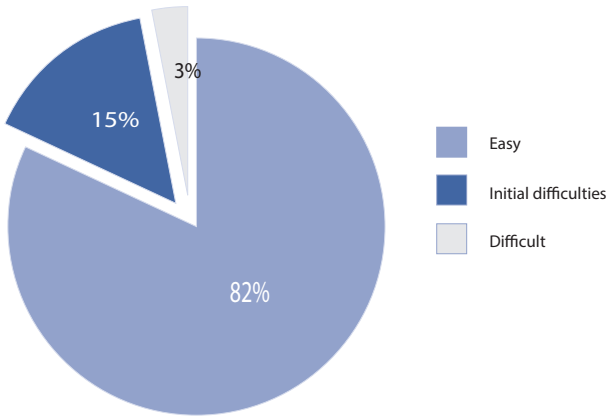
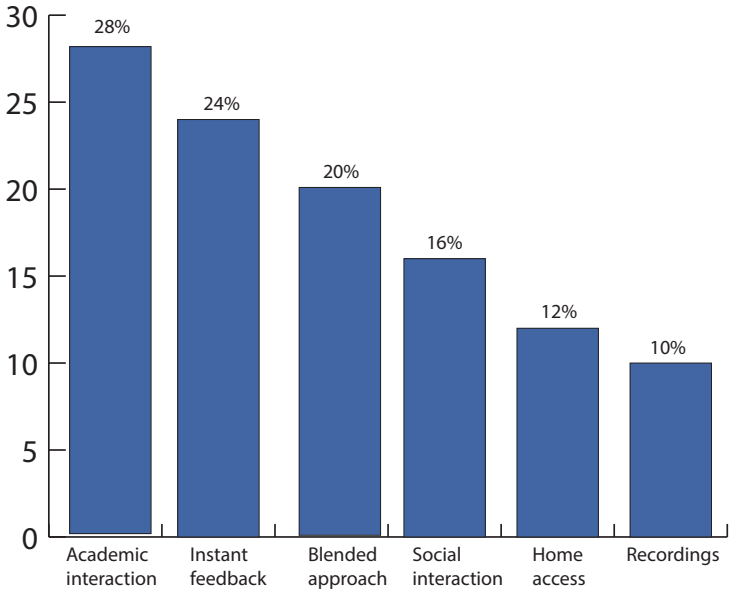


Figure 5: Categories of student learning experiences



Student learning experiences

Fifty (88%) classroom participants chose to provide free text responses to describe classroom learning experiences; only 6% (n=3/50) were negative. Student observations were thematically analysed and organised into six categories. As responses across UG and PG students were very similar, findings were combined. Figure 5 shows the percentage responses per category.

A description of the six categories and supporting student raw data are provided in table 3. Analysis of qualitative data on the question of improvement suggestions for the classrooms and those related to navigation are also supplied.

Suggestions for future improvements/changes

Fifty-one percent of students (n=29/57) gave answers regarding future improvements for classroom sessions (more than one comment could be offered). Sixty-nine percent (n=21/29) indicated no changes were necessary. Two (7%) gave suggestions for improvements, being: a different session time and the need for clear guidelines around social interaction during class. Fifty-eight percent (n=17/29) of all responses suggested more online units should offer these classrooms (see figure 6).

Figure 6: Suggested improvements for future classroom sessions: all students

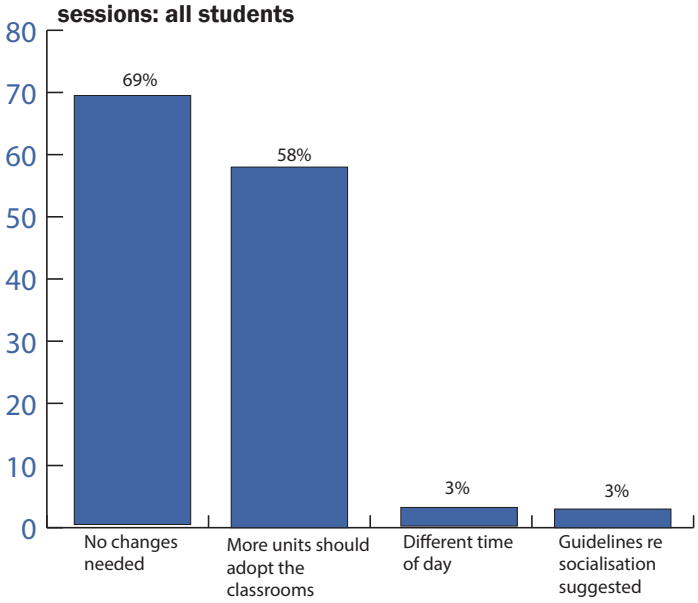


Table 3: Learning experiences, navigation and suggestions for improvement

Category	Description	Raw data examples
Academic engagement	The most frequent comment was around the high value students placed on the opportunity to ask questions and have other interaction with academic aspects of the sessions. A frequently reported comment referred to the high value students placed on their ability to share opinions on learning material.	"The interactive nature of the tutorials made me feel very welcome to ask questions and provide my opinion on various topics that we discussed". "Great forum for those who can be intimidated in a classroom setting and not usually participate in discussions". "I found it made being [an] online student possible".
Instant feedback	The second most common category of comment was around the benefit of instant answers to questions.	"It was great to get a live response to questions instead of looking through discussion boards and sending emails". "[Tutor] was excellent and had time to answer all the questions put to her".
Blended learning	Positive feedback was received on the inclusion of a range of learning materials and approaches used in the classrooms.	"She [tutor] made the tute interesting by adding polls and video clips to watch, I feel I learnt a lot from this form of learning". "I was able to learn better as it was not only visual but audible as well. This helped me remember most of the content that was taught". "Creative, interactive and fun".
Social engagement	The importance of social interaction with other students was clear in the feedback. One student found the interaction reduced her ability to focus on the learning material and a second disliked social interaction during class time.	"[The interactive tutorials] made me feel part of the unit and closer to fellow classmates and the tutor". "Off campus study can be isolating at times and these tutorials were a great tool". "Sometimes I did find that others posting questions at times it was hard to concentrate on the tutorial".
Home access	The ability to access the classroom sessions from home was another area highlighted by students.	"It was better than a normal classroom environment in that I was able to be at home with my family at the same time".
Recordings	Recordings of classroom sessions were valued by students unable to access them in real-time	"As I was at work during each tutorial I was concerned I may miss my opportunity and information however by attending afterwards [recordings] all my questions were answered by other students. I was interested in what others had to say and enjoyed the content". "I did not participate or join in the live tutorials as I always had something on at that time, but I would watch it in my own time which was just as helpful as if I had participated at the allocated time".

Navigation (user-friendliness)	Students commented in this section on the ease of access into and navigation within the site. One student had sound quality issues.	"After the first week it was very easy to log on to the tutorials. It was all set up and ready to go". "For sure, I am no good with computers but it was very easily set out!"
Suggestions for future improvements/changes	One student requested a change of time of the sessions. One called for stricter guidelines on social interaction during the class.	"Very good however with my young family at the time of the tutorial was not conducive to my learning as it was always bedtime for my kids".

DISCUSSION

This was the first time an interactive classroom option had been offered in the School and the real-time participation of 53% UG and 79% PG, with a further 9% accessing recordings was encouraging. The high representation of non-traditional students is indicative of the popularity of nursing with these students (Donaldson et al 2010), the absence of Aboriginal and Torres Strait Islander students reflecting the wider inequity of their representation in Australian Higher Education (DEEWR 2008). The importance of home access to online study was illustrated in the qualitative findings. Students unable to participate in real-time classrooms cited family and employment commitments, such barriers similarly identified by non-traditional students in previous Australian research (James et al 2010).

The majority of students participating in classrooms in real-time did so actively, something not possible with traditional online delivery. Interaction with tutors, learning activities and materials was highly valued. Teaching and learning methods that enhance this academic engagement provide increased student satisfaction, effective learning and retention (Tinto 2012; Kuh et al 2008) making the interactive nature of the classrooms a valuable feature. Although recorded sessions cannot provide active participation opportunities, the provision was appreciated by students as a useful enhancement to learning. Such provision therefore ensures learning can be undertaken at a convenient time, place and pace, found to be valuable for online students (Kenny 2002) with students able to play and revisit sessions as required.

The enjoyment of social interaction with peers before and after weekly sessions was apparent, and the relevance of this in promoting learning cannot be overemphasised, and is well recognised (Rovai 2002) as is the development of social engagement in supporting retention (Tinto 2012). The classrooms promoted an inclusive and shared learning environment, with classrooms described as non-intimidating and welcoming. No students identified a lack of confidence as a barrier to active participation. The inclusion of clear guidelines around appropriate times for social chat may be merited however.

The importance of social presence generated by peer interaction in the mitigation of some unhelpful features of online learning was demonstrated in this study. The isolating nature of traditional online learning, known to influence attrition (Garrison and Cleveland-Innes 2005) was raised in the qualitative findings.

Of further value was the blending of materials and delivery methods, found to increase the fun and interaction in learning. Previous studies with non-traditional students have demonstrated a blended approach supports learning by appealing to the diverse learning styles (Bollinger and Supanakorn 2011; Kraetzig and Arbuthnott 2006).

A user-friendly environment is an important consideration when developing online learning approaches. Computer literacy varies and cannot be assumed, with one study finding this to be an underdeveloped skill in mature-age nurse students (Moule et al 2010). The early classroom navigation support provided in this project can aid student retention and improve satisfaction with online units (Gilmore and Lyons 2012) and findings

demonstrated high ease of navigation of classrooms after a few initial difficulties. Only three students cited poor Information Technology access or sound problems as barriers to participation in classrooms. Caution is required with these findings however, due to the low response rate of non-participating students in the survey.

The high percentage of students indicating interactive classrooms should be adopted in other units further reinforces the positive regard students had for the interactive classroom approach.

Limitations

The high survey response rate of students who participated in the classrooms supports the confidence in the trustworthiness of the findings around learning experiences and levels of active participation. Caution needs to be taken however with the survey findings around reasons for non-participation in real-time due to the low survey response rate from this group. This pilot study was conducted across two programs within a single University and with a relatively small sample size, thus reducing the generalisability of the findings to other higher education programs. The high representation of non-traditional students in the sample however makes the findings particularly relevant to courses with a similar student demographic across nursing and non-nursing.

CONCLUSION

The integration of interactive classrooms in this study was a valued addition to traditional methods of online learning for participating students. Classrooms were user-friendly and the inclusion of blended learning materials and teaching methods valued. High levels of academic and social engagement, important to student satisfaction, effective learning and retention were encouraging. The researchers have begun to roll out these interactive classrooms in other online units across the School.

RECOMMENDATIONS

In recognition of the growing cohort of non-traditional students in nursing today, and the predicted workforce shortfall, nurse educators must develop new approaches to enhance the online learning experience integrating best practice in adult learning. Interactive classrooms provide essential elements of this best practice.

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