

# Teacher-student interactions in online nursing education

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The United States is in the midst of a severe nursing shortage that is expected to increase in intensity due to the aging nursing population and the increasingly complex healthcare environment. Complicating this situation is the fact that a majority of Registered Nurses find they must acquire additional education if they want to advance their careers or obtain leadership positions, and online learning provides the perfect opportunity for nurses to continue working while pursuing their educational goals. To date, research in nursing education has primarily focused on specific distance delivery formats and technology integration with outcomes measured primarily by grades the students received and their satisfaction with the course and instructor. Nurse educators are challenged to meet the complex needs of the current nursing student and humanise their online courses by intentionally designing relevant curriculum in a supportive learning environment. The purpose of this study was to investigate current nursing students' perceptions of teacher-student interactions in their online nursing courses. Relationships between the students' perceptions and demographic factors of age, professional and online learning experience, and type of program were also explored. Data were collected from a convenience sample of nursing students representing both urban and rural geographic areas of the southwest. Describing students' perceptions provided insight into who the current student is, their needs and information about where teachers need to direct instructional design efforts to develop and maintain attractive and supportive online learning environments.

**Keywords:** Nursing Education, Teacher-Student Interaction, Instructional Design, Online Learning

## Introduction

At a time when Registered Nurses (RNs) are in greater demand than ever, online learning provides the perfect opportunity for beginning nursing students to pursue their educational goals and RNs to continue working while pursuing additional education that will afford career advancement and increased opportunities to contribute to nursing's unique body of knowledge (Allen & Seaman, 2005; American Association of Colleges of Nursing [AACN], 2005; AACN, 2007a; Bellack, 2004; Grumet & Gilbert, 2004; Neuman, 2006; Salyers, 2005). The unprecedented need for more RNs coupled with the flexibility of online learning has created an aggressive marketplace among nursing programs. Nursing teachers are challenged to provide both relevant and supportive online courses through innovative instructional design to attract, motivate and retain students (Kirschling & Green, 2007). Learning experiences designed with the nursing profession's core values of caring, compassion and respect integrated into the curriculum provide supportive teacher-student interactions (TSI) and learning environments (Cumbie & Wolverson, 2004; Fawcett, 2005; Jairath & Stair, 2004; Nightingale, 1859/1946; Tanner, 2004).

Integration of new technologies, migrating courses to online delivery formats and student satisfaction with delivery formats have been the predominate focus of research into nursing education over the past 10 years (Johnston, 2001; Powers, 1998; Shovein, Huston, Fox & Damazo, 2005; Sternberger, 2002; Yonge et al., 2005). As the Internet has become an accepted part of daily life and nursing teachers become increasingly comfortable with technology, efforts to design innovative, effective and supportive online learning environments have emerged (Bellack, 2004; Diekelmann, 2000; Diekelmann & Smythe, 2004; Salyers, 2005). Just as the demand for RNs and online learning opportunities has increased, the complexity of providing this type of education has also grown. Nursing staff are facing the challenges of changing not only their pedagogical beliefs about teaching but also the entire way they design nursing education to meet the increased demand for nurses and simultaneously, meet current student needs (AACN, 2005; Connors, 2001; Gebbie et al., 2003; Ironside & Valiga, 2006; Murray, 2005; Ritchie,

MacNeil, Evans & Micsinszki, 2005; Runquist, DeLaO’Kerns, Fee, Choi, & Glittenberg, 2006; Waddell & Hayes, 2000). Further complicating this milieu is the fact that mandated nursing curriculum is historically based on a model (Tyler, 1949) recognised as unresponsive to learner preferences and needs (Fawcett, 2005). This leaves nurse educators wondering what the current learner perceives as attractive and motivating in their online learning experiences.

Aggressive marketing by nursing programs provides many choices for both pre-licensure nursing students and RNs returning to school (Hayes, 2007; Kolanko, Clark, Heinrich, Olive, Serembus & Sifford, 2006; Leonard, 2003; Mueller, 2001). This creates an unprecedented urgency to find ways to compete for and retain students (Sand-Jecklin & Schaffer, 2006). Nurse educators have previously concentrated on supplying accessible online courses hoping these are perceived as both attractive and supportive (Diekelmann & Smythe, 2004). To recruit and retain students nurse educators must have current information in order to design effective, relevant and caring online nursing programs (Trossman, 2007; Steefel, 2007; Walker, Martin, White, Elliott, Norwood, Mangum, et al., 2006). Determining the current perspectives of students regarding teacher-student interactions in their online courses provided vital information about where nurse educators need to direct their focus when developing or revising courses (Potter & Perry, 2005; Sand-Jecklin & Schaffer; Trilling & Hood, 1999).

The purpose of this study was to investigate nursing students’ perceptions of staff-student interactions in their online course(s). Relationships between students’ perceptions and the demographic factors of age, professional and online learning experience, and the type of program they are (or were within the past year) enrolled in were also explored. Professionals benefiting from the results of this study will be nursing staff planning implementation of new online courses or programs and those teaching in established programs along with administrative officials (Hale, 2004). The specific questions addressed in this study of students’ perceptions of staff-student interactions in online nursing education were:

1. What are nursing student perceptions of staff-student interactions in their online nursing courses?
2. Is there a relationship between student perceptions of staff-student interactions and age?
3. Is there a relationship between student perceptions of staff-student interactions and years of professional experience?

## Methodology

The study was conducted using a convenience sample of volunteer students enrolled in nursing programs in four nursing education programs representing both urban and rural geographic areas in the southwest United States. Study participants were currently enrolled or had graduated from one of the nursing program no more than 1 year prior to the commencement of the study. The research instruments utilised to collect data in the study included a modified Organisational Climate for Caring Questionnaire (Hughes, 1993; Watson, 2002), one standardised scale in the form of a questionnaire and one demographic questionnaire. Student perception of their interaction with staff in online nursing courses was measured by the OCCQ, a 30-question Likert scale questionnaire (containing three subscales: Confirmation/Affirmation, Dialogue and Modeling) administered in an online delivery format. The OCCQ responses (each individual item being ordinal level data) were summed and treated as equal interval level data, thus allowing more sophisticated statistical analyses (Burns & Grove, 2004). The student’s perception of their online interactions with staff (measured by the OCCQ Total and subscale scores) was regarded as the dependent, continuous variable (equal interval level data) throughout the study. Higher total and subscale scores on the OCCQ indicated increased student perceptions of supportive, caring staff-student interaction in their online nursing courses with lower scores indicating perceptions of less supportive and caring interaction with staff. The maximum total score that could be achieved by answering all 30 questions on the OCCQ was 180 points.

## Results

A total of 227 nursing students who were either currently enrolled in or had completed online nursing courses within the past year responded to the online questionnaires. The age of the respondent ranged from 18 to 60 years old ( $N = 227$ ) with the mean reported age 34.9 years. To discuss these age-related issues respondents were divided into four groups, using the most frequent age categories: (a) 26–35 year age group ( $n = 62$ ) and (b) 18–25 year age group ( $n = 61$ ), the two groups representing 54.2% of the sample, (c) 36–45 group ( $n = 50$ ) and (d) 46–60 group ( $n = 54$ ), the two groups representing 45.8% of the sample.

Each participant provided his or her years of professional experience as an RN. The years of professional experience ranged from 0 to 42 years. The mean reported years of experience was 9.083 years. Previous life experiences and professional expertise can be used as a resource and knowledge base for learning new skills (Cumbie & Wolverton, 2004) and as a tool by the nurse educator to design relevant curriculum. This range of professional experience indicates participants had a wide range of life experience and were members of different developmental life stages. As a result, the participants were divided into two groups: (a) pre-RN licensure undergraduate nursing students (36.6%  $n=83$ ) and (b) graduate, post-RN licensure nursing students (59.5%  $n = 135$ ).

### Student perceptions of staff-student interactions

Descriptive statistics were used to describe student perceptions of staff-student interactions in online nursing courses reported by the study sample. Participants were asked to respond regarding their perceptions of interactions with staff in their current or recent online nursing courses based on six choices, rated 1 (*strongly disagree*) to 6 (*strongly agree*) on the OCCQ, the research tool. The Likert-style questionnaire (the OCCQ) was regarded as the dependent, continuous variable (equal interval level data) throughout the study. Higher scores on the OCCQ indicate student perceptions of increased levels of supportive, caring staff-student interaction in their online nursing courses with lower scores indicating student perceptions of lower levels of supportive, caring staff student interaction. The maximum total score that could be achieved on the questionnaire was 180 points. The Total OCCQ scores and the three subscales all revealed high scores with clustering in the score intervals of 129–148 ( $n = 50$ , 21.9%) indicating student perceptions of increased levels of supportive, caring staff-student interaction in their online nursing courses. A summary of this trend is illustrated in Figure 1.

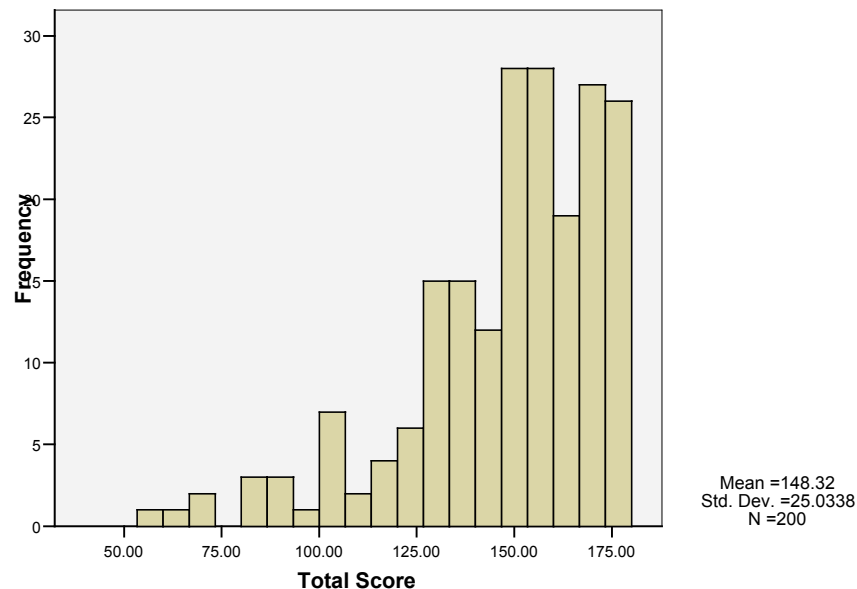


Figure 1: Frequency distribution of OCCQ total scale scores

### Student perceptions of staff-student interactions and age

Along with asking the students about their perceptions of student-staff interaction in their online nursing courses, measured by the OCCQ, the students were also asked their age on the demographic questionnaire. The students' age, regarded as an attribute independent variable and continuous (interval level) data for this study, was measured using the reported years (Burns & Grove, 2004; Pallant, 2001). The relationship between student perceptions of staff-student interaction in their online courses and their ages was investigated using Pearson product-moment correlation coefficient (Table 1). Preliminary analyses were performed to ensure no violation of the assumptions of normality.

Table 1: Pearson's OCCQ total and subscale score correlations with student age

Measure	Correlation coefficient	Sig. (2-tailed)	N
Total OCCQ scores	.224**	.001	201
Confirmation/Affirmation subscale scores	.171**	.012	215
Dialogue subscale scores	.186**	.006	220
Modeling subscale scores	.250**	.000	216

After the initial data evaluation, the researcher divided the respondents' ages into four groups creating one categorical independent variable with four categories (i.e., 18–25, 26–35, 36–45, 46–60) and a Kruskal–Wallis test was conducted to determine if there were differences in student perceptions of staff-student interaction in their online courses (OCCQ scores) across the four age groups (Table 2).

**Table 2: Kruskal–Wallis OCCQ total and subscale scores and age categories**

	Age category	N	Chi square	Mean rank	df	Asymp. sig.
Total score	18–25	55	16.947	82.35	3	.001
	26–35	56		90.14		
	36–45	44		114.40		
	46–60	46		123.70		
Total		201				
Conf/Aff	18–25	60	13.280	89.53	3	.004
	26–35	56		99.50		
	36–45	49		120.17		
	46–60	50		127.75		
Total		215				
Dialogue	18–25	60	11.284	94.06	3	.010
	26–35	61		101.70		
	36–45	48		122.35		
	46–60	51		129.22		
Total		220				
Modeling	18–25	57	19.561	88.60	3	.000
	26–35	61		95.19		
	36–45	47		121.54		
	46–60	51		134.65		
Total		216				

Since the  $p$  values of all of the correlation coefficients were less than 0.05 (Table 1; Total Score,  $r = .224$ ,  $p < .001$ ; Confirmation/Affirmation,  $r = .171$ ,  $p < .012$ ; Dialogue,  $r = .186$ ,  $p < .006$ ; Modeling,  $r = .250$ ,  $p < .000$ ) there was sufficient evidence to reject the null hypothesis and conclude that there was a positive, weak correlation between the students' age in years and their perceptions of supportive, caring interactions with their staff in nursing online courses. There were statistically significant differences in the continuous variable (OCCQ scores) across the four groups (Total OCCQ scores,  $p = .001$ ) with subscale scores (Confirmation/Affirmation,  $p = < .004$ , Dialogue,  $p = < .010$ , and Modeling,  $p = < .000$ ). The 46–60 age category had the highest overall ranking on all OCCQ total and subscale scores indicating increased perception of supportive, caring staff student interaction with staff in online nursing courses and the youngest group, 18–25 years of age, had the lowest overall ranking (Table 2) indicating lower scores on the OCCQ overall with lower perceptions of supportive, caring online student-staff interaction.

### Student perceptions of staff-student interactions and professional experience

Along with asking the students about their perceptions of student-staff interaction in their online nursing courses, measured by the OCCQ, the students were also asked their years of experiences as a Registered Nurse (regarded as an attribute independent and continuous variable (interval level data) for this study on the demographic questionnaire. The student's years of professional experience was measured using the reported years. The relationship between student perceptions of staff-student interaction in their online courses and their years of professional experience as an RN was investigated using Pearson product-moment correlation coefficient (Table 3).

**Table 3: Pearson's Correlation of OCCQ total and subscale scores and years of professional experience**

Measure	Correlation coefficient	Sig. (2-tailed)	N
Total OCCQ scores	.237**	.001	201
Confirmation/Affirmation subscale scores	.154**	.024	215
Dialogue subscale scores	.234**	.000	220
Modeling subscale scores	.216**	.001	216

Since the  $p$  values of all of the Pearson correlation coefficients were less than 0.05 (Table 3) there was sufficient evidence to reject the null hypothesis and conclude that there were positive, small, weak

correlations between student perceptions of supportive, caring interactions with staff in online nursing courses and their years of professional experience and the null hypothesis was rejected.

The Mann–Whitney test revealed total and subscale scores with significance levels (all  $p < 0.002$ ) indicating a statistically significant difference between pre- and post-RN licensure nursing students' perception of staff student interaction in their online nursing courses. The post-licensure students had the highest mean rankings across all three subscales (Affirmation/Confirmation,  $n = 131$  (118.84,  $p < .001$ ); Dialogue,  $n = 90$  (122.62) and Modeling,  $n = 126$ , (121.34,  $p < .001$ ) and Total Scale scores with  $n = 122$  (111.08) indicating an increased perception of supportive, caring interactions with staff in online nursing courses in students that were RNs.

## Discussion

The majority of the participants were RNs returning to school for advanced education and who were familiar with online learning. Although online nursing students, particularly RNs returning to school for further education have been characterised as older, the majority (54%) of study participants were 35 years of age or younger. This finding did not support the majority of nursing research discussing the overall age characteristics of the typical nursing student taking online courses (Leonard, 2003; Ritchie et al., 2005) indicating a need for finding out who the current online nursing student is. Online nursing education targeted for an older student population would not be relevant to younger populations learning styles or needs. The wide age range of ages (youngest = 18; oldest = 60) is highly indicative of the age and developmental life stage diversity that exists not only in nursing student populations but also in the nursing profession as a whole (Trossman, 2007). These generational difference findings indicate there are challenging instructional development issues for nursing staff designing online courses. Assuming this trend can be generalised, curricula designed for the older student, as has frequently happened in recent years, due to prevailing assumptions about the online nursing student (Leonard, 2003) will need to be redesigned and developed with increased flexibility to accommodate a wider range of students (Walker et al., 2006). Likewise, the challenges of diversity in age and between generations will need to be addressed when developing online course assignments and projects so all students can build on their respective age and life stage experiences. The study findings do lend credence to Johnston's (2001) and Diekelmann's (2000) urgings that students are changing and nurse educators must find out who the current online nursing student is and what their individual educational needs are so learners can not only be recruited into but also retained in higher education.

An interesting finding for nurse educators designing online curricula was that the majority of the population sample ( $n = 135$ , 59.5%) were RNs returning to school for further education with nine years or more of experience as a nurse. This supports previous research (Leonard, 2003; Ritchie et al., 2005) and highlights the attractiveness of online learning due to the flexibility and increased access to education afforded by online education. Highly complex and technologically rich work settings could also be a contributing factor for the professionally mature nurse seeking further education. Trilling and Hood (1999) and Murray (2005) noted that learning to be an information management specialist with increased problem solving skills has become a necessity for RNs to survive and thrive in many positions. Additionally, aggressive marketing by nursing programs, combined with pressures to obtain advanced degrees with the enticement of increased salary as a result have also been found as a major factor in attracting younger RNs back into the academic world (HRSA, 2002).

The recruitment process and enrollment trends for this study could have been a factor for the sample containing a majority of younger nurse participants (54%;  $n = 123$ ;  $< 35$  years or younger) because study recruitment was controlled by the deans or directors and individual nursing staff from the four university nursing programs. Nursing program enrollment trends may have also played a role in the age and experience distribution in online courses and consequently this study.

The first research question 1 asked "What are nursing student perceptions of staff-student interactions in their online nursing courses?" Descriptive statistics were used to explore the nursing students' perception of staff-student interaction in their online nursing courses with the OCCQ used as the research tool. Overall, the student perceptions of interactions with their nursing instructors staff in their online nursing course(s) was reported as caring and supportive on the total OCCQ scores and in all three subscale scores.

The Modeling subscale, describing caring behaviors that can be modeled by teachers during their interactions with students, garnered the highest overall scores of the three subscales. This finding is contrary to previous research, which found that the use of technology was the major influencing factor in the perceived satisfaction by students (Mueller, 2001). This finding does lend support to research

indicating that it is the effectiveness of the instructor (i.e., role modeling) and not the course delivery method that has the greatest effect on perceived student satisfaction and the creation of a safe educational environment for successful student learning (Jairath & Stair, 2004; Runquist, DeLaO'Kerns, Fee, Choi, & Glittenberg, 2006; Sternberger, 2002). As Shovein et al. (2005) asserted, online learning can result in greater interaction and satisfaction with online staff and serve as a venue for online staff to model caring through their interaction with students. Given the importance of the instructor in the online milieu, staff designing online courses need to focus on integration of more instructor-student interaction in the design of course content.

The second research question explored the relationship between student perceptions of staff-student interactions and age. There were small statistically significant differences between the student perceptions of interaction with staff and the participant's age. Therefore, the null hypothesis was rejected, demonstrating there was a positive correlation between the students' age in years and their perceptions of supportive, caring interactions with their staff in nursing online courses. However, due to the wide range in ages (minimum = 18; maximum = 60) representing distinctly different developmental life stages with unique developmental tasks, the study population was divided into four age groups representing the different developmental life stages. Subsequently, a Kruskal-Wallis was conducted to determine if there were differences in student perceptions across four age groups and the corresponding developmental lifespan stages. There were also statistically significant differences in the continuous variable (OCCQ total and subscale scores) across the four age groups with subscale scores. The 46-60 age group, late middle adulthood developmental life stage, had the highest overall ranking on all total and subscale scores and the youngest group, 18-25 years of age, late adolescence to early adulthood, had the lowest overall ranking.

Analysis revealed a statistically significant difference between age and perception, which when broken down to four major age brackets also revealed significant differences (Table 2). These findings enable the null hypothesis to be rejected and thus conclude that with this sample there was a significant correlation between the OCCQ subscales and the total score and the students' age. The data analysis suggested that increased maturity levels of the nursing students is directly related to high perceptions of support and care provided by their instructors in their online nursing courses. The high rankings of the OCCQ total and subscale scores in the older age group (46-60 years) lends support to the studies in the literature that associate mature RN's achieving not only increased integration and discernment of nursing's core values but also in their sensitivity to discern and display caring and supportive behaviors (Connors, 2001; Nightingale, 1859/1946).

The lowest scoring group, the younger students, were in the developmental life stage of intimacy versus isolation. This finding suggests that their relatively immature life development stage could influence their ability to perceive caring and support in their online courses due to the fact they are experiencing many major life events and tasks happening in rapid succession including separating from their parents and learning how to form close relationships (Erickson, 1963, 1997; Gould, as cited in Potter & Perry, 2005). As Hale (2004) discussed, establishing mentoring relationships with older, more experienced nurses (including staff), serving as role models in the online learning environment, could facilitate the younger students in development of cognitive and life skills. However, the researcher speculates it is possible that the younger learners are overwhelmed with school and life responsibilities, or are not ready or able to learn about caring behaviors or form mentoring relationships with their instructors and therefore, discernment of caring, supportive behaviors may be decreased or may not be possible. However, there are no studies to compare these suppositions with. Further research in this area is needed.

The wide age range in the study population also lends support for the need for awareness and recognition by nurse educators of the generational diversity existing within the nursing profession and nursing student population. As Kolanko et al. (2006) recommended, assessment of the developmental life stage of the student needs to be taken into account when designing curriculum and working with nursing students. Use of the assessment of the specific developmental life stage of students could be useful tool for the nurse educator to identify and integrate developmentally appropriate course assignments and interactions to meet the needs of their younger (and older) online student population.

The third question explored the relationship between student perceptions of staff-student interactions and years of professional experience as a Registered Nurse using Pearson product-moment correlation coefficient (Table 16). There were positive, small correlations between student perceptions of supportive, caring interactions with staff in their online nursing courses and their years of professional experience therefore the null hypothesis was rejected. Subsequently, the student's reported years of professional experience were divided into two groups (pre- and post-RN licensure) and tested for differences in

student perception of staff-student interaction in their online courses across the two categories of professional experience using the Mann–Whitney test revealing total and subscale scores with statistically significance difference between pre- and post-RN licensure nursing students' perception.

The post-licensure students, who were already RNs, had the highest mean rankings across all three subscales and total OCCQ scale scores suggesting an increased perception of supportive, caring interactions with staff in their online nursing courses. The results support the supposition that increased perceptions of support and caring in staff-student interactions were due to increased exposure and experience in the nursing profession (Cumbie and Wolverson, 2004; Steefel, 2007). Conversely, the pre-licensure nursing students have not yet reached the stage in their professional development and education or role modeling experiences with their nursing instructors to illustrate the nursing profession's core values. Therefore, they do not yet have the ability to discern caring, supportive behaviors in interactions with their staff in online courses. These findings highlight the urgency and need for educators to deliberately center nursing education on the learner and focus their energies and resources on retaining the student, promoting and role modeling the caring and humanistic legacy of the nursing profession (Ironside, 2004; Hale, 2004). Further study is needed to explore the influence of online nursing staff interactions with students on the learner's development and application of caring behaviors and professional core values.

## Conclusion

The findings from the data analysis demonstrated that although technology and subsequently online learning have successfully integrated into all levels of nursing education (Diekelmann & Smythe, 2004), the main key to successful recruitment and retention of nursing students is the instructor and their skill in not only online communication but also in their curriculum and course design capabilities. These findings affirm what has been found previously in research by others (Jairath & Stair, 2004; Sternberger, 2002; Waddell & Hayes, 2000).

That nurses are in high demand and the nursing shortage is increasing, leaving program administrators scrambling to find ways to produce more RNs and Advanced Practice Nurses is a fact in today's healthcare world. The urgency of the situation is highlighted because the initiatives to increase the numbers of nurses have been unable to meet demands in the current healthcare marketplace (AACN, 2007a, 2007b). Subsequently, as the nursing shortage has worsened, online learning has become both an increasingly attractive option and a recruitment tool in the competitive marketplace of undergraduate and graduate nursing education. The flexibility and increased access provided by online nursing courses has become a key factor in student decisions of where they pursue their education (Allen & Seaman, 2005; AACN, 2005).

To support staff in online learning, the need exists for the development and evolution of an online nursing education pedagogy focused on the learner but with built in support and resources for the instructor (Jairath & Stair, 2004; Sternberger, 2002). As Tanner (2004a) reported, in her analysis of the current pedagogical orientation of nursing education, that staff should work toward a curriculum that goes way beyond the student merely recalling facts and progress to one where the student demonstrates a deep understanding of the concepts and issues and critical thinking skills they will need to competently practice in the current healthcare systems. Establishing and implementing an online nursing education pedagogy will involve a restructuring of the current institutionalised nursing education curriculum (Tyler, 1949). Given the urgency to produce more nurses rapidly to meet current demands, it is critical that staff explore new ways of thinking about curriculum construction so vital critical thinking skills can be learned in the most efficient and relevant manner possible and the student and eventually, graduate will be able to function in today's fast-paced information work environments (Kirschling & Green, 2007). Staff continuing education presentations can be planned to help develop staff online interaction and curriculum design skills based on the proposed conceptual model. Leaders in nursing education must intentionally plan and organise online nursing course development teams and learning experiences for staff and support the formation of mentoring relationships between experienced and novice online staff. Putting the learner where they belong, at the center of their educational experience, is necessary to not only give them the tools they need in today's job market but also provide attractive learning experiences for them (Ironside, 2004; Tanner, 2004a).

The data from this study also suggest the need for more research into the learning environment in online nursing courses to find out how the instructors are creating supportive and caring online learning environments. Ongoing staff support in the form of continuing education and orientation to both evolving software and learner-centered pedagogies is needed. Nurse Educators can transform online learning

environments into opportunities for increased development of not only the individual nursing student's core nursing values but also their critical thinking and information management skills. The real challenge for nurse educators is to find a way to move beyond the technical aspects of designing and implementing online courses and focus on providing nursing care for students by building a learning community that supports and facilitates professional growth and development.

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