Best Practices in Web-based Courses: Generational Differences Across Undergraduate and Graduate Nursing Students

DIANE M. BILLINGS, EDD, RN, FAAN,* DIANE J. SKIBA, PHD, FAAN, FACMI,† AND HELEN R. CONNORS, PHD, RN, FAAN‡

The demand for online courses is greatly increasing across all levels of the curriculum in higher education. With this change in teaching and learning strategies comes the need for quality control to determine best practices in online learning communities. This study examines the differences in student perceptions of the use of technology, educational practices, and outcomes between undergraduate and graduate students enrolled in Web-based courses. The multisite study uses the benchmarking process and the Flashlight Program Evaluating Educational Uses of the Web in Nursing survey instrument to study best practices and examine generational differences between the two groups of students. The outcomes of the study establish benchmarks for quality improvement in online learning. The results support the educational model for online learning and postulates about generational differences for future study. (Index words: Web courses; Best practices; Generational differences; Benchmarking) ***J Prof Nurs 21: 126–133, 2005 © 2005 Elsevier Inc. All rights reserved.***

AN ESSENTIAL COMPONENT of teaching and learning is understanding learners, including their learning styles and perceptions about various teaching strategies. Today's learners expect to use technology in the classroom, but the faculty's ideas about the use of technology and the students' have the potential to be quite different. These differences are based upon life experiences. When it comes to the use of technology, there are vast differences between the faculty experiences with technology and the different generations that make up our student populations. Current higher education administrators, as well as many faculty and staff, represent a different generation from the majority of today's student populations. The average age of faculty is 50 years old and most graduated from college in the 1970s (Baby Boomers). The experiences of the 1970s generation of students are likely to be quite different from that generation entering college today (Millennials). These experiences of the undergraduate students also are different from those of graduate students (Gen-Xers). A major challenge for faculty is how to deal with this variety of new learners, especially in the Web-based class environment (Oblinger, 2003).

Over the last several years, Web-based courses have increased in popularity as colleges and universities strive to maintain a competitive edge and meet the demand for quality, cost-effective, student-centered learning. As we continue to evaluate Web-based teaching and learning, understanding these differences in life experiences and their implications on perceptions of best teaching and learning practices is crucial. A review of the literature revealed no research that examined the differences in perception of best practices in online learning courses between undergraduate and graduate nursing students. Although most Web-based courses started in graduate programs, they also have found a place in undergraduate education. This may become more commonplace in the future as the technology-oriented student enters higher education and demands more flexible learner-focused educational experiences. The study reported here was designed to establish benchmarks for these different groups of students and to gain insight into teaching strategies that meet best practices. This will allow educators to target their strategies to the specific market to enhance customer service and increase satisfaction in online learning communities.

*Indiana University School of Nursing, Indianapolis, IN.
†University of Colorado Health Sciences Center, Denver, CO.
‡University of Kansas School of Nursing, Kansas City, KS.
Address correspondence and reprint requests to Dr. Connors: University of Kansas School of Nursing, Mail Stop 4043, 3901 Rainbow Boulevard, Kansas City, KS 66160. E-mail: hconnors@kumc.edu

8755-7223/$ - see front matter

doi:10.1016/j.profnurs.2005.01.002

Benchmarking

Benchmarking is a continuous systematic process for measurement of products, services, and processes that lead to better practices and improved performances. The benchmarking process provides factual data to assist in gaining insight on performance and to identify performance gaps and opportunities. Focusing on benchmarks creates a shared vision for discussion of performance and allows for realistic goal setting. Benchmarking is a quality improvement tool that helps educators strive for excellence and maintain accountability for outcomes (Camp, 1995).

Online learning is considered an emerging industry that is changing the landscape of higher education and creating a competitive edge. Benchmarking is seen as a viable measurement strategy for assessing best education practices in online learning communities. Although the practice of benchmarking has been considered a business tool for quality improvement for some time, only recently has it seen its way in higher education.

The benchmarking process starts with establishing the framework or defining the benchmarks and mapping the process. Defining the boundaries is the most important and challenging component of the process. Although time consuming, it is important to determine the questions to be answered and to narrow the focus by creating a framework/model to support the benchmarking.

The benchmarking framework for this study has four major components, each with several subscales. These include use of technology (technology supports productive use of time), educational practices (active learning, feedback, time on task, student–faculty interaction, interaction with peers, and respect for diverse ways of learning), student support (orientation to using technology, responsibility for own learning), and outcomes (access, convenience, connections, preference for face-to-face interaction, professionalism, computer proficiency, and satisfaction) (Billings, 2000; Billings, Connors, & Skiba, 2001; Billings, Connors, Skiba, & Zuniga, 2003; Skiba, Billings, & Connors, 2003a, 2003b) (Figure 1).

Purpose of the Study

The purpose of this study was to identify differences in perceptions of undergraduate and graduate students' experiences in Web-based courses. Specific questions were the following: (1) Are there differences in student perceptions about the educational practices in Web courses for students in undergraduate (BSN and RN-BSN) and graduate (MSN, RN-MSN and doctoral) programs? (2) Are there differences in student perceptions about the outcomes of Web courses for students in these programs? (3) Are there differences in student perceptions of support for online learning? (4) Are there differences in student perceptions in the use of technology in these programs?

Methods

After receiving approval to conduct the study from the institutional review boards at each of the schools of nursing participating in the study, the survey was linked into the Web courses and students voluntarily

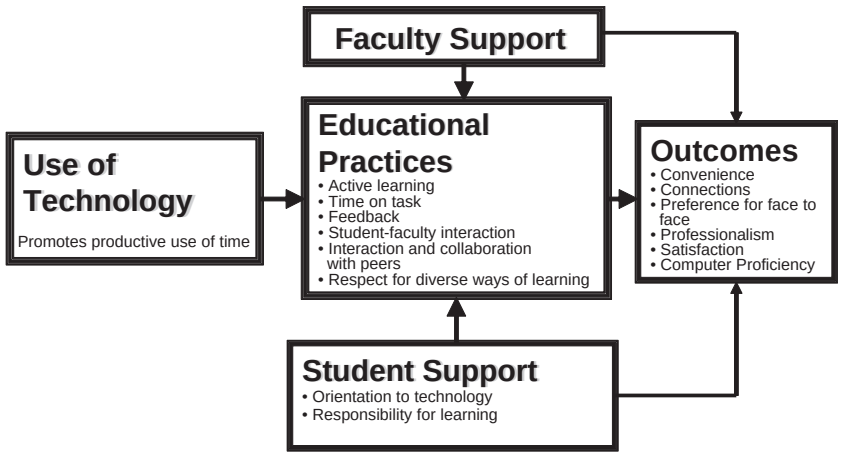

Figure 1. Model for the study.

completed the survey toward the end of the semester. Anonymity of the students' responses was preserved by deploying the survey from a file server used by the Flashlight Program at the Washington State University, removing any identifying information, and reporting only aggregated data.

SAMPLE

The sample consisted of 558 students from six schools of nursing with BSN, RN-BSN, MSN, RN-MSN, and doctoral degree (PhD and ND) programs and who were enrolled in courses that were offered as full Web courses spring semester 2003. Of these, 328 students were enrolled in undergraduate courses (BSN and RN-BSN) and 230 were enrolled in graduate level courses (MSN, RN-MSN-ND, and PhD). Sixty-seven of the students were men; 529 were women. The courses were primarily "required" in the curriculum and about half of them were three-credit courses.

The students ranged in age. Less than 1% were under 20 years old. Thirty-nine percent were between the ages of 20 and 29 years old, 20% were age 30–39 years old, 28% were age 40–50 years old, and 10% were over 50 years old.

INSTRUMENT

The Evaluating Educational Uses of the Web in Nursing (EEUWIN) instrument was used to collect data for this study. This survey instrument has been developed by the authors in collaboration with the Flashlight Program, based on the Flashlight Program's Current Student Inventory Toolkit (Billings et al., 2001) and revised following pilot testing (Billings et al., 2003).

The 57-item instrument includes 46 items to elicit students' perceptions of specific outcomes, educational practices, and the use of technology. The items use a five-point Likert scale asking the students to identify the extent to which they strongly disagree or strongly agree with statements about Web courses or, when compared with a similar course that relied primarily on face-to-face discussions, indicate to what extent they were much less likely or much more likely to participate in various activities within the course (e.g., discussion; interaction with the faculty; apply learning to real world situations). Nine items obtain demographic data about the student, including the type of program in which they are enrolled. Two open-ended questions provide the participant an opportunity to comment on what they like best and how the course could be improved.

Validity of the instrument

Content-related validity of the instrument has been established from a review of the nursing literature, a national consensus panel of experts in using technology to support teaching and learning in higher education, and from a consensus panel of nursing faculty at the three schools initially participating in the survey (Billings et al., 2001).

Reliability of the instrument

In this study, Cronbach's alpha for the total instrument was .94. The reliability of the subscales ranged from .73 to .93. These reliabilities are consistent with previously reported instrument reliabilities (Billings et al., 2001).

ANALYSIS

Data were analyzed using SPSS version 11. Reliability of the instrument was established using SPSS Reliability. Independent samples test using t tests for equality of variances was used to determine differences between the groups of undergraduate and graduate students. The level of significance was set at .05.

Findings

USE OF TECHNOLOGY

There were no differences between the undergraduate students (M = 3.6, SD = 0.81) and graduate students (M = 3.6, SD = 0.75) for this component of the model and the two subscales used to identify the extent to which the technology infrastructure was available and reliable and promoted productive use of time.

EDUCATIONAL PRACTICES

There were several differences between undergraduate and graduate students regarding their perception of educational practices within the course. The undergraduate students perceived greater evidence of the presence of student–faculty interaction (M = 3.0, SD = 1.2) than did the graduate students (M = 2.7, SD = 0.96, t = 3.9, df = 545.6, P = .001, two-tailed). The graduate students perceived spending more time on task in the Web course as compared to an on-campus course. For example, the graduate students reported spending more time studying for the Web course than other comparable on campus courses (M = 3.1, SD = 1.2,) than the undergraduate students (M = 2.7, SD = 1.2, t = −3.66, df = 471.1. P = .000,

two-tailed). The graduate students also reported spending more hours per week on the course (M = 2.8, SD = 1.0) than the undergraduate students (M = 2.3, SD = 1.2, t = −4.79, df = 534.49, P = .000, two-tailed).

OUTCOMES

For this component of the model undergraduate students reported feeling more connected to their instructor and classmates (M = 2.67, SD = 1.25) than the graduate students (M = 2.3, SD = 0.93, t = 3.2, df = 552.19, P = .001, two-tailed). In addition, there were greater gains in computer proficiency throughout the course for the undergraduate students (M = 3.74, SD = 0.63) than for the graduate students (M = 3.75; SD = 0.62, t = 2.2; df = 510.2, P = .02, two-tailed). Interestingly, the mean scores for both groups were high on the professionalism variable (undergraduate, M = 3.8, SD = 0.91; graduate, M = 3.7, SD = 0.79) and the satisfaction variable (undergraduate, M = 3.6, SD = 1.1; graduate, M = 3.6, SD = 1.0), but there were no differences between the groups. Students were also equally willing to assume responsibility for their own learning (undergraduate, M = 3.9, SD =.93; graduate, M = 4.0, SD = 0.88).

STUDENT SUPPORT

There were no differences noted in this component of the model. Students did not feel they were at a disadvantage for not having adequate computer skills (undergraduate, M = 1.9, SD = 1.0; graduate, M = 1.8, SD = 0.96).

Implications

The findings of this study continue to validate the educational model proposed by Billings (2000) and refined in subsequent publications (Billings et al., 2001; Billings et al., 2003; Skiba, Billings, & Connors, 2003a, 2003b). Successive testing over the past 3 years has demonstrated positive correlations between educational practices and Web-based outcomes. In the authors' previous writings, the focus was the validation of the model and how data from benchmarking studies could be used to improve Web-based learning. This study represents the first of many comparisons that are possible from the existing benchmarking data set. There are relatively few studies that have examined differences between two educational levels of learners. Thiele, Allen, and Stucky's (1999) work is one of the few nursing studies to examine differences in Web-based courses. This is a particularly important next step in the analysis of Web-based courses. According to Merisotis and Phipps (1999), "gathering samples of students and amalgamating them into averages produces an illusory typical learners, which masks the enormous variability of the student population" (p. 5).

The Use of Technology scale that incorporates productive use of time and the technology infrastructure provided valuable information that is in many ways contradictory to previous research findings. The literature is replete with single study evaluations that examine a variety of outcomes and impacts of Web-based courses. These studies consistently mention the technological problems faced by students and students describe technical problems as one of the negative aspects of Web-based courses (Daugherty & Funke, 1998; Frith & Kee, 2003; Hara & Kling, 1999; Soon, Sook, Jumg, & Im, 2000; Thiele et al., 1999; Yucha & Princen, 2000; Wills & Stommel, 2002). In the current sample of students, the majority of schools had Web-based learning as part of their curriculum for at least 5 years. Although the undergraduate courses have been online for less time, each school designed extensive technology infrastructure supports and ensures that all students have the necessary technical skills before enrolling in online courses. For example, the universities involved in this study have online orientation and skills training as a prerequisite to enrolling in online courses. This includes an extensive "online checklist" that provides necessary information to ensure that technical problems are resolved prior to class (http://www.uchsc.edu/nursing/onlinecentral, http://classes.kumc.edu/general/wbmodule/self_assessment.htm, http://nursing.iupui.edu/LifelongLearning/default.asp?/LifelongLearning/CertificatePrograms/TeachLearn/GettingStarted.htm). In this study, students also reported as part of the outcomes measure that they did not feel at a disadvantage for not having adequate computer skills. Again, it must be reiterated that for this study, technical problems were not an issue and not an indicator of dissatisfaction with Web-based courses. Technology appears to be transparent to the pedagogy for these courses.

Educational practices as exemplified in this study are based upon the best practices identified by Chickering and Gamson (1987). Our data demonstrate that educational practices shape outcomes. It is interesting to note that there were no differences between undergraduate and graduate students in their perceptions of interactions and collaboration with peers, respect for diverse ways of learning, feedback, and active learning strategies.

The differences between the two levels of education were primarily related to faculty–student interactions and time factors (time on task and time spent in course). In the literature there are mixed results in terms of faculty–student interactions. Some students report that there is more interaction between faculty and instructors in a classroom setting, whereas others report feeling more connected with faculty in the online environment (Boyle & Wambach, 2001). In this study, undergraduate students' perceptions of faculty–student interactions were higher than the perceptions of graduate students. There are several plausible explanations for this finding. First, undergraduate students across the program maybe in both classroom and/or clinical courses, as well as Web-based courses. Therefore, there is a greater likelihood that they have additional contacts with faculty members and certainly have more opportunities to interact with faculty in their clinical settings. For graduate students, they may only be enrolled in online courses and, therefore, may perceive less faculty and student contact.

Second, because many undergraduate classes are large and possibly conducted in large lecture halls, it is not surprising that online discussions and emails with faculty represent more faculty–student contact. The online environment and communicating with faculty and peer using a host of electronic communication methods (such as chat, asynchronous discussions, and email) is a more comfortable and consistent communication vehicle. It also could be that many undergraduate students are more comfortable with electronic communication as a way of life. This leads to some interesting speculations about teaching different generations of students within one course. An undergraduate class may represent a variety of different generations of students and, therefore, may be a contributing factor to the differences between the undergraduate and graduates perceptions of faculty–student interactions. Several authors (Frand, 2000; Oblinger, 2003; Skiba, 2002) have discussed the educational implications of having different generations of students in their courses. Schools of nursing populations may include Baby Boomers, Gen-Xers, and Millennials, all of whom may perceive online learning and electronic communication in very different ways. For example, most faculty are considered Baby Boomer and would more likely call a student before sending a text messages to the student on their cell phone. Gen-Xers and Millennials are part of the information-age mindset population described by Frand (2000). Therefore, Gen-Xers and Millennials pride themselves on being connected in their multitasking world. They view electronic communication as a means of connectivity as well an efficient and standard method of communicating and interacting with their world. Both Gen-Xers and Millennials view technology as a "natural part of the environment" (Oblinger, 2003 p. 38). According to Oblinger (2003, p.39), ownership of computers and their use for communication and socialization mechanisms are all measures of the "ubiquity of technology." Graduate students on the other hand are more likely to be older students falling in the Boomer generation and, therefore, miss the face-to-face communication vehicles. They also may want more and different modes of interactions with their faculty than their undergraduate counterparts.

The study time factor differences are an interesting phenomena. Graduates students reported spending more time on task, more time studying, and more hours per week on a Web course than the undergraduate students. Again, there are several possible explanations for these findings. First, this is not surprising, given recent statistics that report undergraduates spend little if any time outside the classroom studying (AACN/EBI Nursing Education Student Satisfaction Survey, 2003). Second, Gen-Xers and Millennials have distinct learning styles that are different from the Baby Boomers that constitute a large portion of the graduate population. The Gen-Xers and Millennials tend to prefer teamwork, experiential activities, and more involvement in their learning. This fits with their expectations. Graduate students on the other hand are more familiar with passive learning and think of course time being defined by the 3 hours (three credit hours) of seat time. Third, many students have the misperception that online courses require less time (Brown, Kirkpatrick, & Wrisley, 2003). Lastly, it is interesting to note that although graduate students reported more hours per week spent in online courses than

School of Nursing student populations (Oblinger (2003))

- Boomers (40 years old and above working mother)
- Gen-Xers (26 years old with high expectations for customer service)
- Millennials (high school graduate who communication channels include instant messaging and text messaging)

classroom courses, the amount of time was less than the recommended 3 hours of study time for each hour of class time. In this study, the majority of the graduate students spent less than 12 hours per week for a three-credit hour Web-based course.

In terms of outcomes, there were no differences between the two educational levels in terms of satisfaction, professionalism, convenience, and preference for face-to-face. There were differences in terms of computer proficiency and feeling more connected. Undergraduate students reported more computer proficiency at the end of the course whereas graduate students did not. This is not surprising because graduate students have taken more online courses and have reached a saturation point in terms of computer proficiency. For the undergraduate students, there have been less online opportunities and the novel effect is still in play, therefore, more undergraduates reported increased computer proficiency at the end of the course.

In terms of perceiving a great sense of connectedness, this again related back to the generational differences. There are mixed results reported in the literature. Several studies report feelings of isolation (Billings et al., 2001; Ryan, Carlton, & Ali, 1999; Buckley, 2003). The undergraduate population has more opportunities for connections in that often they are in both classroom and/or clinical and Web-based environments. This solidifies relationships and that feeling of connectedness. For this generation being connected is essential and occurs through multiple devices such as cell phones, PDAs, online discussions, instant messaging, and real time chats (Frand, 2000). For graduate students, many do not even come to campus and, therefore, do not have the same sense of connectedness. Graduate students may have fewer opportunities for interactions through a variety of communication vehicles.

Another explanation for this lack of feeling connected may be related to the growing area of research on social presence in computer mediated environments. There is a lack of social interaction among the students and this may be a reason for their feeling less connected. In a recent review of social interaction within collaborative learning environments, Kreijns, Kischner, and Jochems (2003) report that although it is technically possible to promote social interactions among students, this interaction is not occurring. Why is this important? According to Van der Linden and Renshaw (2001), cognitive processes required for meaningful learning and knowledge construction occur in dialogues among students and with faculty. Kreijns et al. (2003, p. 336) postulates that "educators in shifting from contiguous learning groups to asynchronous distributed learning have taken for granted that social interaction will occur since it is technically possible and that there is a tendency to restrict social interaction to educational activities and ignore socio-emotional processes." Although this is not limited to Web-based courses, it is a critical problem when students do not have the opportunities for face-to-face encounters. This is an area of study that needs further exploration.

Recommendations

Based on the results of this study, there are several recommendations for educators. First, there is a significant need for educators to better understand the "new" learners-Boomers, Gen-Xers, Millennials, and the next generation to come (Frand, 2000; Oblinger, 2003; Skiba, 2002). Second, it is of particular importance that educators understand there is an "imbalance between students' expectations of the learning environment and what they find in colleges and universities" (Oblinger, 2003). Third, educators need to explore a variety of instructional strategies to accommodate the various generations of students in the online environment. Fourth, there is a need for continued research to identify best practices in Web-based education, as the authors previous research shows strong correlations between educational practices and outcomes of satisfaction and connectedness (Billings et al., 2001). Last, there is a need to identify factors that facilitate the development of asynchronous "learning communities." These factors (Kreijns et al., 2003 p. 349) need to "not only support and guide social interaction towards critical thinking, argumentation or socially constructed knowledge but also sociable environments" that foster social presence and a feeling of connectedness.

Summary

Understanding generational differences among students and between students and faculty in Web-based courses is an important factor for creating a successful learning environment for both learners and faculty. Although much is written about generational differences among students, there is little information sharing regarding how to work with these differences in the online learning community. This study attempts to define the generational differences, examine the

factors that contribute to the differences in perspective and explore mechanisms through the benchmarking process to use these different perspectives to enhance learning outcomes. This is a baseline study that establishes initial best practice benchmarks for undergraduate and graduate education. The conceptual model used in the study has been previously tested and again is supported through the study. The EEUWIN survey instrument used for data collection has sound psychometric properties; however, further study is required to refine the benchmarks and learn more about the study implications reported here. It is through this research process that academic institutions will ultimately improve and enrich Web-based education.

Acknowledgments

The authors thank Robin Zuniga, associate director of the Flashlight Program of the Teaching, Learning, and Technology Group of the American Association of Higher Education, for assistance in developing the benchmarking survey and analysis of the data.

References

Billings, D. (2000). A framework for assessing outcomes and practices in Web-based courses in nursing. *Journal of Nursing Education, 39*, 60–67.

Billings, D., Connors, H., & Skiba, D. (2001). Benchmarking best practices in Web-based nursing courses. *Advances in Nursing Science, 23*, 41–52.

Billings, D., Connors, H., Skiba, D., & Zuniga, R. (2003). *Benchmarking: Undergraduate vs. graduate online courses.* Presented at the National League for Nursing Summit, September 19, San Antonio, TX.

Boyle, D., & Wambach, K. (2001). Interaction in graduate nursing Web-based instruction. *Journal of Professional Nursing, 17*, 128–134.

Brown, S., Kirkpatrick, M., & Wrisley, C. (2003). Evaluative parameters of a Web-based nursing leadership course from the learner's perspectives. *Journal of Nursing Education, 42*, 134–137.

Buckley, K. (2003). Evaluation of classroom-based, web-enhanced, and web-based distance learning nutrition courses for undergraduate nursing. *Journal of Nursing Education, 42*, 367–370.

Camp, R. C. (1995). Benchmarking: Finding and implementing best practices. Milwaukee, WI: ASQC Quality Press.

Chickering, A. E., & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. *AAHE Bulletin, 39*, 3–6.

Daugherty, M., & Funke, B. L. (1998). University faculty and student perceptions of Web-based instruction. *Journal of Distance Education, 13*, 21–39.

EBI Service Center. (2003). AACN/EBI Nursing Education Student Satisfaction Survey Benchmarking Data. Springfield, MO: Author.

Frand, J. (2000). The information-age mindset: Changes in students and implications for higher education. *EDUCAUSE Review, 35,* 15–18, 22, 24.

Frith, K., & Kee, C. (2003). The effect of communication on nursing student outcomes in a Web-based course. *Journal of Nursing Education, 42*, 350–358.

Hara, N., & Kling, R. (1999). Student frustration with a Web-based distance education course: A taboo topic in the course. Retrieved January 17, 2003, from http://www.slis.Indiana.edu./CSI/wp99_01.html.

Kreijns, K., Kischner, P., & Jochems, W. (2003). Identifying the pitfalls for social interaction in computer-supported collaborative learning environments: A review of the research. *Computers in Human Behavior, 19*, 335–353.

Merisotis, J. P., & Philipps, R. A. (1999). What's the difference? Outcomes of distance vs traditional classroom-based learning. *Change,* 13–17.

Oblinger, D. (2003). Boomers, Gen Xers, Millennials: Understanding the new students. *EDUCAUSE Review, 38*, 37–47.

Ryan, M., Carlton, K., & Ali, N. (1999). Evaluation of traditional classroom teaching methods versus course delivery via the World Wide Web. *Journal of Nursing Education, 38*, 272–281.

Skiba, D. J. (2002). The Net generation: Implications for nursing education and practice. The living book of teaching and learning. New York: National League for Nursing. Retrieved February 15, 2005, from http://electronicvision.-com/nln/chapter01/index.htm.

Skiba, D., Billings, D., & Connors, H. (2003a). The EEUWIN (Evaluating Educational Uses of the Web in Nursing) benchmarking project. *Proceedings of the International Medical Informatics Association: Education Work Group Symposium: Teach Globally, Learn Locally. Innovations in Health and Biomedical Informatics Education on the 21st Century*. Portland, OR: Oregon Health & Sciences University.

Skiba, D., Billings, D., & Connors, H. (2003b). Benchmarking Web-based courses in nursing: The EEUWIN project. In H. deFatima Marin, E. Pereira Marques, E. Hovenga, W. Goossen (Eds.), *Proceedings of the Eighth International Congress in Nursing Informatics: E-health for All: Designing Nursing Agenda for the Future.* Rio de Janeiro, Brazil: International Medical Informatics Association.

Soon, K. H., Sook, R. I., Jumg, C. W., & Im, K. M. (2000). The effects of Internet-based distance learning in nursing. *Computers in Nursing, 19*, 154–158.

Thiele, J. E., Allen, C., & Stucku, M. (1999). Effects of Web-based instruction on learning behaviors of undergraduate and graduate students. *Nursing and Health Care Perspectives, 20*, 199–203.

Van der Linden, J. & Renshaw, P. (Editors). (2001). Dialogic Learning. Dordrecht, The Netherlands: Kluwer Academic Publishers.

Wills, C., & Stommel, M. (2002). Graduate nursing student's perceptions and postcourse perceptions and preferences concerning completely Web-based courses. *Journal of Nursing Education, 41*, 193–201.

Yucha, C., & Princen, T. (2000). Insights learned from teaching pathophysiology on the World Wide Web. *Journal of Nursing Education, 39*, 68–72.