

## Getting Started with Web-Based Learning in Nursing: The Essentials

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### Abstract

Distance education via the World Wide Web has increased exponentially over the last 20 years. This article provides a brief historical perspective and research on online education, a description of selected learning management systems, and advantages and disadvantages of web-based learning for students, faculty, and the organization. Pedagogical implications and best-practice strategies for web-based learning are included. The article concludes with recommendations for getting started with web-based learning, many of which are supported by evidence-based research literature.

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Distance education has been around for at least a century and probably longer. However, with rapid technological changes and the World-Wide-Web, more colleges and universities (AACN, 2010) and service and professional organizations are meeting the challenges of providing education beyond physical walls and the barriers of time and space. A meta-analysis of research mostly conducted in the United States of America and Australia reports that students in online learning environments perform modestly better than students in face-to-face interaction. Moreover, synchronous learning in real time has not demonstrated increased learning over asynchronous learning (Bernard, Abrami, Yiping, Borokhovski, Wade-Huang, (2004). The most common users of online education in no specific order are the military, corporations, medicine, and nursing.

### Types of Learning Platforms

Many Learning Management Systems (LMSs) can be used to support delivery of online offerings. Selected platforms are reviewed in this paper with discussion of features that are available with each. The writers are not offering a critique or an endorsement of any particular LMS.

Regardless of which LMS is used, there are a few key features that are "must have". These include a mechanism to facilitate feedback and communication such as efficient course mail and reports on faculty and student activities. An early warning system for lack of faculty or student participation is also an essential feature.

Blackboard is a LMS that allows easy access to all course materials and information such as announcements, discussion boards (with reports that count the number of posts), course mail and assignments (written assignments, discussions, journals, or portfolios), and a grade book that can be customized by the professor. An additional feature is the ability to easily link to information sources within the course and to external Uniform Resource Locators (URLs). Blackboard is a closed source, proprietary LMS.

LMSs are almost continuously upgraded (updated) and the current version of ANGEL is 8.0. While ANGEL has the features mentioned in the discussion of Blackboard, there are also additions such as more flexibility in new browser support, and more mobile learning with both faculty and students using their mobile devices to engage in courses. Since provision of adequate assessment of student learning is particularly critical in nursing education, any LMS of choice must have the capability to host an array of assessments.

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ANGEL 8.0 has an assessment navigation option that allows faculty and students to manage brief (quizzes) and complex (case studies) assessments. ANGEL is also a closed source, proprietary LMS.

Moodle is a LMS characterized by courses that contain activities and resources. Some of the activities include forums, wikis, databases, and other activities and assessments previously mentioned. The intent is to engage faculty and students collaboratively and help guide students throughout their learning. Since many of the activities in Moodle allow sharing of common content (forums, wikis, etc.) both the faculty and students shape the nature of the course experience. Moodle has the capability to facilitate communication via blogs, messaging, and participant lists as well as providing resources for grading and reporting to benefit faculty and students. Due to its open nature, Moodle is an open educational source and many of its tools can be customized from simple to complex.

Desire 2 Learn, or D2L, offers a platform to help design courses and manage a variety of tools such as eportfolio, a learning repository, analytics to generate reports on student achievement of learning outcomes, and mobile learning. In addition to the features described earlier, this system has integration with Turn-It-In. Turn-It-In is a service that verifies that students are submitting their original work in written assignments rather than plagiarized material. Desire 2 Learn is a closed source, proprietary LMS.

There are several other LMSs that will be briefly discussed and these include Campus Cruiser, Sakai, Drupal, and Canvas. Campus Cruiser can be used not only as a LMS for online courses but also for face to face instruction or blended learning models. It features flexible course management including tools to manage forums, chats, and files as well as an integrated grade book and online journal for faculty. Campus Cruiser is a fee based LMS.

Sakai OAE is an open academic environment that is social. This social network facilitates networking among learners and scholars and helps build academic communities. All of the resources that are developed are designed to be widely shared and further developed through this sharing and networking process. Sakai is a free open source.

Drupal is an open-source content management system with features such as menu management, page layout customization, and system administration. Unique to Drupal is its ability to allow others to "plug in" content thus expanding the content and resources archived in the system. Drupal offers basic website installation at no cost and no programming skills are needed for this basic installation.

Canvas is an open source, commercial LMS which provides features such as speed grader, rich content edition (allows picture and videos from web), online testing, messaging, and submission of assignments in a variety of for-

mats including videos and slide shows. This LMS also provides an integrated calendar, creation of ad hoc groups to form interest groups outside the course environment, and grading rubrics to facilitate grading and rater consistency.

There are many more LMSs available as open or fee based services, and with emerging technology more are being developed each day. Choosing the best LMS is the responsibility of all key stakeholders such as administrators, information technology (IT) professionals, faculty, instructional design professionals, and students.

### **Historical Development of Distance Education**

Distance education is neither new nor a tentative means of providing opportunities for students to engage in learning endeavors. From its beginnings, distance education evolved from correspondence courses sent via mail in the 1900s, to providing education via radio in the 1920s (Whitehead, Brown, Kearns, 2007). From televised broadcasts in the 1960s to teleconferencing venues in the 1990s, distance education options continued to be shaped by the technology available during those same time periods.

### **Pedagogy**

The pedagogy involving web-based education differs from traditional methods of education. While traditional pedagogical methods are teacher-centered and essentially relegates students to a dependent role, the pedagogy associated with online education shifts the focus to a student-centered learning experience that often takes into consideration the unique reality-based experiences of the learners. As a result, students involved with non-traditional approaches to education tend to be actively engaged in the process of learning and the role of the instructor shifts from the traditional notion of the “*sage on the stage*” to the “*guide on the side*.”

Theory and learning principles associated with student-centered approaches to learning often include principles of adult learning and Constructivism theory. Knowles (1984) radically altered traditional notions of teaching and learning by proposing principles of adult learning including the premise that adults are self-directed and want control and responsibility for their own learning. Another fundamental principle from Knowles (1984) includes taking into account the learners’ experiences, which brings an added dimension to the learning process. As a result, students learn from each other and will often engage in peer-to-peer helping activities.

Although Constructivism theory has evolved over several years, its foundational tenets involving knowledge acquisition continue to postulate that learners construct new knowledge and meaning from their own previous experiences. Implicit in this theory is the notion that knowledge construction is based on an active process that involves social interaction (Brandon & Hall, 2010). As a result, students bring previously acquired knowledge and experiences to new situations in order to problem solve and construct new meanings (Keating, 2006). Using principles of adult learning along with Constructivism theory when designing and developing web-based education provides a framework that optimizes student-centered learning for adult learners.

### **Best Practice Strategies**

It’s not a surprise that best practice strategies associated with web-based education are also student-centered. While many organizations are involved with best practice strategies, two groups including the Sloan Consortium and

Quality Matters are recognized leaders in providing standards and conducting research related to best practices. Best practice strategies are typically categorized as those related to course design and structure and those that involve teaching methods and instructor practices.

### **Design and Structure**

From a design and structure perspective, courses need to consistently follow a format that makes course navigation easy and intuitive for students along with clear instructions that prompt the student how to proceed along the way. Not only is having a consistent format with clear instructions within a course beneficial, students who take multiple courses can easily progress from one course to the next without having to figure out nuances of a different design. Using master templates when developing learning modules that include the syllabus, faculty notes, learning activities, and evaluation measures also provide a degree of consistency from course to course.

Other best practice design elements include using advance organizers and concept maps. While advance organizers help students to organize and interpret new information, concept maps provide a visual representation of various course components (Hung, Smith, Harris, & Lockard, 2010). Collectively, the advance organizers and concepts maps help students organize thinking, make connections, and create new meanings.

Critical to web based education is the need to provide opportunities for students to interact on multiple levels, including engagement with the course content, their instructor, and their classmates. Best practice strategies to accomplish a multiplicity of interactions include developing collaborative learning and assessment activities that are engaging, relevant, and represent real world experiences, which in turn generates more interaction, inquiry, critical thinking, and knowledge construction.

### **Teaching Methods and Instructor Practices**

Best practices strategies related to teaching methods and instructor practices are geared towards student engagement and student-focused learning. As the “*guide on the side*”, the instructor engages students by motivating deeper thinking, promoting exchange of ideas, creating collaborative activities, and by providing frequent and timely feedback to students. Other best practices involve using multiple modes to convey course content because it helps to reinforce salient points and simultaneously provides a means to address various learning style preferences. Commonly, instructors use a variety of web-based technology tools including webinars and webcasts, white boards, video streaming, You Tube, and power point presentations with voice over capabilities. Using this type of technology also provides a means to reinforce content since students can replay the content on demand. Maintaining open and frequent communication is also essential for instructors in facilitated learning venues (Boettcher, 2010).

### **Challenges**

Challenges involving web-based education relate to technology, faculty attitudes and perceptions, the visibility factor, and assessment of learning. Technology challenges include the need to possess proficient skills to comfortably navigate within virtual environments (De Bonis & De Bonis, 2011). In addition, other technology challenges relate to the infrastructure that is necessary to support a robust learning management system, the availability of a redundant server to handle scheduled and unplanned system

down times, and sufficient numbers of qualified personnel who serve as tech support resources.

Because pedagogies involving web-based education differ from more traditionally-based pedagogies, faculty working in face-to-face venues may not be supportive of a different pedagogical orientation (Sutherland-Smith & Saltmarsh, 2010). Some faculty also express concern that virtual environments prevent the ability to pick up on visible cues from students that would indicate a level of confusion, disinterest, or distracters that may affect learning.

Maintaining active student engagement is an inherent challenge in web-based education because students are not physically together and may feel isolated (Little, 2009). As a result, courses are designed with learning activities that foster significant peer-to-peer interaction and include grading parameters that focus on the frequency and quality of course-related interactions. From a more informal perspective, many courses also contain virtual chat rooms or student lounges where students can socialize and share casual conversations.

### **Scoring Rubrics**

Rubrics are a widely accepted means to evaluate student performance (Penny & Murphy, 2008). As a tool, rubrics provide information about the categories that will be measured, the performance expectations, and a scoring scale to assign a grade. Using scoring rubrics is ideal since it provides students with clear information about what constitutes excellent, average, and less than average performance. It also provides the instructor with a consistent and reliable means to evaluate and perform grading functions.

For the most part, two types of rubrics are mentioned in the literature; holistic and analytic. While holistic rubrics can be used to score the overall learning product, analytic rubrics are frequently used to score separate components or individual parts of the learning product (Kan, 2007). Both provide an efficient means for instructors to evaluate performance and assign grades, however using analytic rubrics provide more detailed information about the components of the learning activity being assessed.

### **Advantage and Disadvantage of Distance Education**

#### **Advantages**

Online distance learning has distinct advantages. Some of the advantages are the same for students and for faculty while other advantages are for students only or for faculty and the organization.

For students, they can live and study anywhere as long as they have a computer and an adequate internet connection. In fact, they do not have to live in the same country where the courses are offered. Because commuting is not required for fully online courses, students save the costs associated with travel as well as the time it would take to commute to class. However, some colleges and universities charge an extra fee for online classes because of the increased need for technology support, although the increased cost to the student is usually much less than the cost involved with travel. Another distinct advantage for students is the ability to get a degree in a field of study that might not be offered in their community, state, or country (Holly, 2009). Once a student is comfortable with the learning platform and can navigate it, stress is reduced and online delivery is especially beneficial for fast and slow learners, thereby increasing satisfaction. Online learning is ideal for problem-based learning, a current trend in many colle-

ges and universities in the United States and elsewhere in the world. In addition, technology skills gained in online classes are directly transferable to other facets of students' and faculty's lives.

Because there is no set time for class with asynchronous learning, the course can be accessed 24/7. Thus, faculty and students with professional responsibilities requiring irregular work schedules and myriad family responsibilities can access the course at convenient times, whether it is from home, a local library, or other Internet connections while traveling. The same is true for students who are hearing impaired or who have a physical disability making travel difficult. The greater variation in time zones the greater difficulty there is with setting up a convenient and practical time with synchronous learning. Some classes might have a synchronous learning time which can be accommodated with multiple sessions.

A number of programs exist in the health professions that require a clinical component. Successful distance education programs can still be accommodated by using preceptors in distance sites, as long as they have been adequately screened and acceptable to the college or university. Oftentimes, students can help identify preceptors in their workplace or community, something that has been done for decades with graduate professional programs, especially where an instructor cannot observe a large number of students such as in advanced practice nursing, physical therapy, occupational therapy, or with students in specialty areas such as administration and emergency room nursing to name a few.

For the most part, the distinct advantages for students also apply to faculty: accessibility anywhere at a convenient time, decreased travel time, and flexibility with professional responsibilities, including attending conferences in distance locations. If the organization has designated course designers, faculty time can be minimized after the course is developed. For the organization, faculty with a specific expertise and who would otherwise not be available because of distance (even overseas), can be used as guest lecturers and or to lead selected online asynchronous discussions. Using part-time faculty can also have a distinct financial advantage for the organization. For an example: a full-time faculty member has a salary of \$60,000USD per annum and teaches 6 courses a year, although that faculty member has other responsibilities. A part-time faculty member might get paid \$5,000USD for an online course; therefore, the college or university can have 12 courses taught instead of 6 courses for the same amount of money.

#### **Disadvantages**

Online distance learning has some disadvantages. Some of the disadvantages are the same for students and for faculty while other disadvantages are for students only or for faculty and the organization. One of the perpetual disadvantages is slow computer connections that still exist throughout the world.

Even if a definitive schedule has been created for a course, some students may still have difficulty managing their time and maintaining their progress in courses. In addition, some students and faculty may be technophobic being fearful of the varied technology required in some courses. The authors of this manuscript have witnessed that technophobia usually decreases after the first course. For students who are in other countries, in the military, or on ships, advance planning is needed to keep on a course

schedule. For students who desire immediate feedback as they may receive in a classroom, may feel at a disadvantage and find distance learning is undesirable for them.

Some employers in the past have perceived that online learning was not comparable to the live classroom. The authors of this manuscript have found very few cases where this perception is currently a concern, although it was moreso in the early 1990s. Technology has advanced in many learning management systems that accommodate for time in real time, although for students who are in multiple time zones, this remains a concern. Finally, some students feel physically and socially isolated in online courses and do not like studying alone (Means, Toyana, Murphy, Bakia, & Jones, 2010). They miss the social interaction that occurs with the traditional classroom setting. Of course, the nonverbal communication can remain a concern for some.

One of the most common disadvantages voiced by faculty is that Web-based learning takes more time than face-to-face teaching. Initially, this is probably true, especially if faculty have to design the format and manage the learning platform. If technology support staff is available for students and staff, this might not be the case, especially once a course is developed, refined, and taught again. Another disadvantage can occur for faculty who prematurely and rapidly change technology in a course before the basics are mastered. This can increase student anxiety and take additional time troubleshooting student computer problems.

### Recommendations

The following recommendations are based on a review of the academic literature and the collective experiences of the authors of this manuscript, all of whom have had significant experience in developing and teaching in web-based programs using different learning management systems.

- ✓ Create a position for an online coordinator who becomes an expert in the learning management system and who can be a resource to faculty and students. This position is critical for the success of Web-based programs.
- ✓ Have a standard visual that readily recognizes the university and the department when accessing the LMS.
- ✓ Have a standard format for course syllabi, which may be different from those used in face-to-face live classroom instruction. Staying with a consistent format decreases learner anxiety. Avoid slang, idiomatic, and colloquial expressions, using only words with pure meanings, especially if students are taking a course in a language other than their mother tongue. Solicit someone who is proficient in the language of the course and the discipline to proof the syllabus.
- ✓ Create a template that all faculty use when developing a course so that students do not have to learn new technologies as the program progresses.
- ✓ Create an online course that faculty at the sponsoring institution can access and practice navigating the technology. They should become proficient with the LMS before teaching online. Revise as necessary before uploading a course for students. Make sure the course syllabus clearly

communicates students' expectations, including etiquette.

- ✓ Keep online modules short; research demonstrates that students do no complete long modules (Pomales,-Garcia, & Lui, 2006).
- ✓ Start with one course using the basics of the LMS. More sophisticated technology can be used as faculty and students become more comfortable with the learning management system. Add videos, webinars, and other technology as the program progresses. Interesting that research reports that incorporating more media into the web-based course does not enhance learning (Zhang, 2005; Zhang, Zhou, Briggs, & Nunamaker. 2006). However, younger students especially appear to like the variety.
- ✓ As the program develops, add additional courses and eventually place the entire program online.
- ✓ Set up a faculty lounge where discussions can be started and faculty can assist each others with their concerns.
- ✓ Decide the advisability of synchronous versus asynchronous discussions. Research reports that an asynchronous online environment provides significantly more reflective thinking than synchronous discussions (Cook, 2007; Hawkes, 2007; Means et al 2010, Toyana, Murphy, Bakia, & Jones, 2010).
- ✓ Develop assignments that require online discussion, an individual formal paper, and a group paper.
- ✓ Devise a schedule where students are required to access the course several times a week, the same as if they were attending a live class.
- ✓ Use strategies that require students to be interactive. Ask discussion questions that are meaningful and require thoughtful critical thinking using online discussions and team papers (Dennen & Willard, 2007; Kay & Knaack, 2007; (Means, et al., 2010). Asking discussion questions that can be answered with a yes or no does not engage students and does not add to learning.
- ✓ Maintain a presence in the online classroom, logging on and responding substantially to students at least three times a week.
- ✓ Provide a space where students can introduce themselves and discuss social and other issues that are not part of the course.
- ✓ Create rubrics that can provide feedback to students for their discussions and formal papers.
- ✓ Save practice exams for when specific content is required for licensure or certification. Research reports that there are no advantages to online quizzes ((Means et al., 2010). However, online practice quizzes appear to decrease anxiety for some students.
- ✓ Assign grades for individual or module discussions so that students know their progress in the course.
- ✓ Evaluate each course quantitatively and qualitatively.

### Summary/Conclusion

Online distance education for nurses and other health professionals has made a significant impact on the ability for

advancing education. With increased technology, students have the potential to obtain a degree or continuing education from around the world. Much research has demonstrated that online education is just as good, and in some aspects better, as traditional education. Colleges and universities have a number of LMS from which to choose. Best practices have been presented along with recommendations for getting started with online distance education.

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