Confronting Challenges in Online Teaching: The WebQuest Solution

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Abstract

When faced with the need to prepare students to be successful in using technology in an online class environment, faculty from the University of Tennessee Health Science Center's College of Nursing faced multiple challenges. Among these challenges was not only a severely restricted timeframe to complete the task, but also to design a course that would meet the needs of a diverse student population who had a wide range of experiential and technical knowledge. Determined to stimulate interest of students who were more at ease in using technology while not overwhelming those with very limited technological skills, faculty turned to WebQuests. WebQuests, which use an authentic scenario to engage students in active learning, not only met best practice standards for online teaching, but also provided a way to integrate several learning outcomes within a single assignment. The decision to use WebQuests proved to be beneficial for both students and faculty. Lessons learned in incorporating WebQuests can be used to equip interested faculty in all disciplines to adapt WebQuests to address similar challenges that are faced in other institutions.

Keywords: education, best practices, constructivism, innovation, undergraduate, nursing, template

Introduction

Faculty have always faced challenges as they mold bright and eager students into professionals equipped with the knowledge and skills necessary for success. Challenges are nothing new, yet the rapidly changing work environments and increased use of technology required in the contemporary work place add new dimensions for learning outcomes (American Association of Colleges of Nursing [AACN], 1998).

The purpose of this article is to show how faculty at The University of Tennessee Health Science Center's College of Nursing (UTHSC-CON) used WebQuests to address the multiple and complex challenges in an undergraduate informatics and technology online course that brought together new nursing students with various backgrounds and levels of expertise. This article will provide information that will equip interested faculty in all disciplines to adapt WebQuests to address similar challenges that are faced in other institutions.

The Challenges

In the summer of 2005, the UTHSC-CON launched a new accelerated Bachelor of Science in Nursing (a-BSN) program. Faculty agreed early in planning the a-BSN curriculum that technology would be integrated throughout the program. Most courses would require that students access the university's library databases to acquire scholarly articles and many would require use of various computer programs to generate assignments. Further, because all subsequent courses would have an online component, it was important that students learn how to navigate the online course management system. By ensuring mastery of these skills by incoming students, faculty could be assured that students would have the baseline skill set needed for subsequent courses. To address this need, a five-week Informatics for Healthcare course was planned for incoming students. The purpose of the informatics course was to prepare students for program success through focus on a number of goals and learning outcomes that encompassed mastery of diverse content and skills necessary to function effectively in an increasingly complex health care delivery system. The challenge was to develop course content that would meet the needs of all students regardless of their levels of knowledge and expertise and that would incorporate those components deemed necessary to prepare students for success in meeting course requirements in this accelerated program of study.

Diverse Content to be Mastered

The plan for the Informatics for Healthcare course was an ambitious one. The overarching goal of the course was to equip students with the basic knowledge and skills necessary for using technology, particularly information technology, necessary for success in their undergraduate nursing and clinical courses and in the work setting upon graduation. For some students, this would require introducing and teaching all needed skills; whereas, for others, the aim would be to build upon and improve students' technology and information literacy skills. Among the learning outcomes was that students would be able to efficiently access information technology via online library databases and authoritative websites; that they would be able to critically evaluate information obtained through the use of information technology; that they would use the data and information obtained in ways to improve health care planning, delivery, and evaluation; and that they would be able to format and reference resources using the American Psychological Association (APA) style (2001). Students were also expected, by the end of the course, to competently use certain Microsoft software programs such as Word® and PowerPoint® and to use equipment such as a personal data assistant (PDA). They were to learn to navigate the Blackboard® course management system that provided the framework for this and subsequent courses. Accomplishing these outcomes required the use of email, discussion boards, and online chats and the application of these communication devices to engage in effective student-to-student collaboration in an online environment. These components alone could easily fill the five weeks allowed for the course; however, there were other course components to be covered, as well, including critical thinking and test-taking skills, introduction to hospital information systems and computerized documentation used in clinical settings, and introduction to the legal and ethical issues associated with information technology.

Diverse Levels of Expertise

Another challenge faculty faced was the diversity of student backgrounds relative to nursing. There were three groups: those who had completed the general education and science courses required for admission (traditional); those who had achieved a baccalaureate degree in a non-nursing program (second degree); and registered nurses who had graduated from either an associate degree or diploma program (RN). Each group faced inherent advantages and disadvantages based on prior experiences.

The registered nurses had the advantage of some years of experience in nursing; however, many had been out of school for a number of years and needed to re-cultivate learning skills in addition to learning new technology skills. On the other hand, most students who had recently completed some college-level courses or were returning for a second degree had already developed learning skills and had better computer skills. It was important to faculty to attempt to meet all students' needs without providing redundant information to those who had prior knowledge and expertise. Additionally, faculty felt it would be advantageous if students could benefit from the knowledge and skills of their colleagues with varied backgrounds.

Time Constraints

Perhaps the greatest obstacle facing faculty was to determine how to encompass the large amount of content to be covered within a five-week span of time. A related concern was that faculty wanted students to remain optimistic and energized even though the content to be learned could easily become overwhelming if approached in a traditional manner.

A Desire for Innovation

Beyond the barriers facing faculty was the challenge to prevent tediousness. As users of technology who felt that an informatics class should be fun, faculty determined not to employ many individual unrelated assignments that merely taught content and would require students to pass a test on the content. Ideally, the activities would promote social interaction and bonding among students new to the program, in addition to increasing their information technology knowledge and skills.

WebQuests as a Solution

What are WebQuests?

WebQuests are guided activities that can be used to engage students in learning about specific topics and then applying that knowledge in new ways. Dr. Bernie Dodge and his former student, Tom March, are the creators of the WebQuest design (Dodge, 2001). Dodge (1997) defines a WebQuest as "an inquiry-oriented activity in which some or all of the information that learners interact with comes from resources on the internet" (Definitions section, ¶ 1). Although there are a number of online learning activities that depend on internet resources, Dodge distinguishes WebQuests from other web-based experiences thus:

> The key idea that distinguishes WebQuests from other Web-based experiences is this: A WebQuest is built around an engaging and doable task that elicits higher order thinking of some kind. It's about *doing* something with information. The thinking can be creative or critical, and involve problem solving, judgment, analysis, or synthesis (Starr, 2005, ¶ 14).

March (2006) elaborates:

> A WebQuest is a scaffolded learning structure that uses links to essential resources on the World Wide Web and an authentic task to motivate students' investigation of a central, open-ended question, development of individual expertise and participation in a final group process that attempts to transform newly acquired information into a more sophisticated understanding.

> The best WebQuests do this in a way that inspires students to see richer thematic relationships, facilitate a contribution to the real world of learning and reflect on their own metacognitive processes (¶ 7).

The development of a WebQuest activity is guided through the use of templates. A WebQuest template provides for an introductory scenario, assigns a task to be accomplished, describes the process for completing the task, delineates resources, provides evaluation criteria, and provides reflection for a meaningful conclusion of the activity (Dodge, 1997).

The Appropriateness of WebQuests for Meeting Needs

In their classic work, *Seven Principles for Good Practice in Undergraduate Education*, Chickering and Gamson (1991) identify seven principles that need to be incorporated in undergraduate courses. They determined that good practice is that which

1. encourages contact between students and faculty;
2. develops reciprocity and cooperation among students;
3. encourages active learning;
4. gives prompt feedback;
5. emphasizes time on task;
6. communicates high expectations; and
7. respects diverse talents and ways of learning (p. 63).

It was readily apparent that WebQuests embrace all these principles. Further, a subsequent article (Chickering & Ehrmann, 1996) which explicates how these principles are applied in online environments provided additional support of WebQuests as one way to incorporate best practices in education.

There were also several practical advantages of WebQuests that made them particularly well suited for the Informatics for Healthcare course. First, WebQuests provided a way to integrate several learning outcomes within a single assignment. By synthesizing these, faculty would not have to devise individual assignments for evaluation of learning and students would not have to struggle with numerous individual assignments focused on a single task. Another advantage was that WebQuests required that students use critical thinking skills. It was important that nursing students begin using the higher cognitive levels of analysis, synthesis, and evaluation (Bloom, 1956) in order to function adequately as they progressed through their coursework. Finally, from the vantage point of faculty, the WebQuest template provided a ready framework for constructing assignments and developing learning activities. These advantages are explored in more detail below using one of the nine WebQuests developed as an illustration.

An Exemplar

Type 2 Diabetes: Community Health Nurses, Older Southern Women & their Good Cookin' was the title of a WebQuest that combined several challenges for the students by incorporating a disease process (diabetes), persons affected by the disease process (a group of older women living in the deep south), and a challenge (a culture built around a style of cooking that is incompatible with management of diabetes).

The introduction (http://www.technology-escapades.net/webquests/informatics/diabetes/intro.htm) provided the students with the dilemma and the charge to come up with a way to convince older southern women that it is possible to make dietary changes without giving up their cultural heritage.

The task section (http://www.technology-escapades.net/webquests/informatics/diabetes/task.htm) identified the outcomes for the learning activity. Students had both individual and group outcomes. Team outcomes required that students use Microsoft Word® in developing a persuasive, evidence-based, culturally and linguistically appropriate patient education handout about healthy Southern cooking appropriate for older women and that students use Microsoft PowerPoint® in creating a short

presentation to share their findings with others in the course. Individual outcomes of this WebQuest required that each student use the Publication Manual of the APA, 5th edition (2001) to develop and submit an annotated reference list of resources used in completing the activity.

The process section (http://www.technology-escapades.net/webquests/informatics/diabetes/process.htm) identified the roles that each student would assume in completing the task. Students selected one of three community health nursing roles: a nurse with a clinical focus who had responsibility for assuring that the end product reflected evidence-based practice; a nurse with an education focus who had responsibility for assuring that the end product reflected sound education principles; and a nurse with a cultural diversity focus who had responsibility for assuring that the final products were culturally and linguistically appropriate. Students in each role also had specific assignments to accomplish as the student groups worked toward resolving the challenges brought forth in the introductory scenario.

The resources (http://www.technology-escapades.net/webquests/informatics/diabetes/resources.htm) section provided a variety of quality websites for students to use. Resources pertaining to specific issues that were interwoven in the scenario were made available for each role. For example, the student with an education focus was provided with resources that explained how to integrate best practices into the development of education materials and how to tailor materials for special audiences. Because learning outcomes included the ability to identify reliable and authoritative online resources as well as the ability to locate resources in the online library, students were also provided with links to library tutorials and to documents covering specific skills needed to complete the WebQuest.

The evaluation (http://www.technology-escapades.net/webquests/informatics/diabetes/eval.htm) section provided students with a variety of rubrics that they could use to evaluate their progression toward individual and group goals. Furthermore, the importance of peer review as part of the evaluation process was emphasized.

The conclusion (http://www.technology-escapades.net/webquests/informatics/diabetes/conclusion.htm) section reiterated a few of the key outcomes that were accomplished in the process of completing the WebQuest. This provided an opportunity for students to reflect on their work and to consider how they could apply what they had learned to other courses and to real world situations. Additional opportunities for reflection were made possible through sharing of presentations and handouts among and between groups.

WebQuests as a Tool to Integrate Program Goals and Learning Outcomes

Five program goals and three learning outcomes were integrated into the WebQuests. The applicable program goals were to:

1. Improve students' technology and information literacy skills.
2. Build on students' strengths, skills, and backgrounds.
3. Introduce technologies and resources required for success in the undergraduate program.
4. Initiate and promote effective student-to-student collaboration.
5. Engage students in the learning process through student-centered activities.

Learning outcomes that WebQuests addressed primarily centered on the students' abilities to access, critically evaluate, and use online information resources. Skills to be learned and applied included online communication skills within the course management system (use of email, discussion boards, and chat), information access and retrieval skills (use of online search engines, use of the online library resources), documentation skills (use of scholarly writing and APA style formatting), and use of selected software programs, particularly Microsoft Word and Microsoft PowerPoint. Using the WebQuest to encompass all these components provided a means to link learning outcomes in meaningful ways.

WebQuests as a Tool to Stimulate Reasoning at Higher Cognitive Levels

WebQuests use an authentic scenario and task to stimulate higher cognitive thinking processes. Constructivist underpinnings compel students to seek out knowledge and use this knowledge in a collaborative activity to come to a viable solution, recommendation, or proposal. For the *Type 2 Diabetes: Community Health Nurses, Older Southern Women & their Good Cookin'* WebQuest, the dilemma presented (not wanting to change lifestyles to improve health) is one frequently encountered in the real world environment. Complicating factors of cultural considerations and nutritional concerns added an additional layer of complexity.

As the students progressed in working through the WebQuest, they engaged in increasingly higher levels of cognition. In his classic work, Bloom (1956) categorizes six cognitive domains: (1) knowledge, (2) comprehension, (3) application, (4) analysis, (5) synthesis, and (6) evaluation. While some initial time was spent gathering information (knowledge), gaining an understanding of this knowledge (comprehension), and developing a proposal to solve the dilemma of the introductory scenario (application), the majority of time spent was in analysis, synthesis, and evaluation. Because each student addressed the solution from a different perspective (i.e. as one with a focus in clinical practice, education, or nutrition) they quickly found that, while a perceived solution might address one concern posed in the scenario, it might conflict with the role perspective of another student. In order to come to a satisfactory resolution, students were required to examine the recommended proposals (analysis) which required an intense period of focus to discriminate which elements of the proposals were in conflict and to find associations in those where conflict did not exist. Once this was done, students had to adapt and reconstruct those elements retained into a singular proposal (synthesis). The final, and highest, level of cognitive thinking was accomplished through an intensive judgment process (evaluation) in which students not only measured the final product according to the evaluation rubric but also gauged the ability of the proposal to adequately address the quandary posed in the introduction.

WebQuests as a Tool to Promote Collaboration

The work of nursing is not carried out in isolation. In their landmark report on quality, the Institute of Medicine (IOM) identified the need for cooperation and collaboration among clinicians (2001). It is essential, therefore, that student education include activities that develop effective collaboration skills as a preparation for future nursing roles (Baumberger-Henry, 2005).

Another reason to incorporate collaboration includes the obvious benefits of cooperative learning. Cooperative learning is "the instructional use of small groups so that students work together to maximize their own and each others' learning" (Smith, Sheppard, Johnson, & Johnson, 2005, p. 88). Research has shown that cooperative learning has a positive impact on academic success, quality of relationships, and psychological adjustment (Fielder, 2002; Smith, Sheppard, Johnson & Johnson, 2005).

Dodge (2001) emphasized that the effective organization of student learners is an important aspect to consider in creating a cooperative learning environment. Several factors were considered in assigning teams. Students were encouraged to select their preferences from among the nine WebQuests. Once this was accomplished, faculty assigned team members so that, where possible, each team included one traditional BSN student, one second degree BSN student, and one RN-to-BSN student. Rationale for this decision centered on knowledge and skills students brought with them into the program. As mentioned earlier, registered nurses possessed knowledge of health conditions. Second-degree students brought with them diverse experiences from their previous careers. On the other hand, the traditional students tended to have more computer knowledge and were more comfortable using the required technology. Thus, each student brought something valuable to the team. This contributed to positive interdependence, a situation in which learners feel that they need one another to succeed (Smith, Sheppard, Johnson, & Johnson, 2005), thereby resulting in improved group processes and outcomes. It also increased the probability of synergistic learning (Sirias, 2005).

The Experience

Faculty Perspectives in Developing and Evaluating WebQuests

Because the WebQuest needed to include program goals and student outcomes, this initial construction took several hours to complete even though the basic WebQuest template was used. Once this was done, however, a course-specific template allowed other faculty to contribute by writing additional WebQuests in a much shorter time span averaging 1.5 hours.

Because the UTHSC-CON comprised faculty with a variety of levels of expertise, participation was solicited from all faculty. While the original intent was to take advantage of faculty expertise, those participating identified additional benefits. All experienced an increased awareness of the Informatics for Healthcare course. Further, faculty new to online teaching were introduced to elements that assisted them in working with students in the online environment. Experienced faculty also benefited. One faculty member shared that the process of WebQuest development helped her to reconceptualize some of her own teaching methods. Perhaps most importantly, though, was the increased sense of collegiality and partnership that developed among those participating in the experience.

When grading students' completed WebQuests, the evaluation process was made easier through the use of rubrics that were developed using clear and specific criteria for evaluation. That said, the process was, admittedly, time consuming. This was largely the result of having combined multiple program goals and outcomes into a single activity. Had individual assignments been used instead of the WebQuests, the time investment for creating and evaluating individual exercises would most certainly be longer than that required for the WebQuest evaluation.

Student Perspectives in Participating in WebQuests

Faculty had the unique and privileged position of being able to monitor group discussions. Monitoring is an important role in cooperative learning activities (Smith, Sheppard, Johnson, & Johnson, 2005). This was done, with the students' awareness, for the purpose of assessing students' understanding, participation, and problems. An unanticipated result of monitoring was that faculty were able to ascertain students' affective responses to the WebQuest.

Comments taken from student group discussions illustrated how they perceived the different aspects of working through the WebQuest. They made tentative introductions and expressed confusion. The following post was titled Hi!: "*I just wanted to introduce myself to the group. This is still confusing to me, but I'm sure we'll figure it out."* They negotiated online collaboration and boundaries. The subject heading for the following post was Next Steps: "*Hi! I hope this portion of the assignment is going well for both of you. Don't forget to share your version with the rest of us... When we all get through the questions, let's informally chat about how best to organize the PP and handout… I'd prefer these done earlier than later… I hate waiting until the last minute.…"*

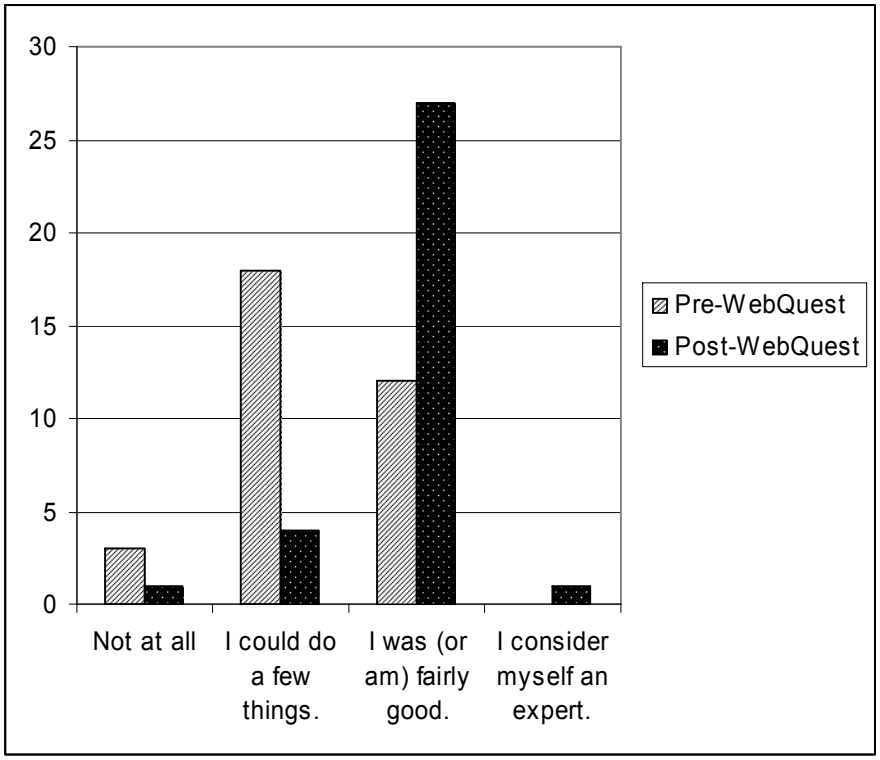
As they gained new knowledge and skills, they all faced uncertainties. The following post was titled Annotated Reference List: "*I've attached my completed annotated reference list in our groups section under file sharing. I don't know if it is done correctly but I learned a lot through this process about reserach* [sic] *techniques and am beginning to become more comfortable with APA format.… When you are finished post your list here so that we can keep track of what sources we have all spent time researching."* Evidence of critical thinking was prevalent. The following post, titled Re: [Student's name] Handout, spoke to the challenges faced as alternate perspectives were considered. "*Hey [student name], with the background info, we need to remember that we are focusing on the diet aspect. These women know they have diabetes, so what they need to know now is 'management' vs 'diagnosis'. How can we get them to stick to the 1200 calorie diet… they should be able to look at this handout whenever they need diet motivation."*

Some students became excited as the final products were coming together. An advantage of using authentic situations was evident as one group was able to use their findings to help a team member in providing nursing care. The post titled Glad We Met! read: "*Hey girls! So glad we met… I will work on my information tonight and send it to you as soon as I can. I am excited about our presentation and brochure – I think we have some very pertinent information for your patient's mother!!"* Completion of the WebQuest activities also created a sense of pride and strong bonds, as evidenced in this post titled Good Work!: "*I just wanted to tell ya'll that I had fun working with the two of you and I think our project looks awesome!!!! Good Work. Have a wonderful weekend and Congrats on finishing our first class of Nursing School!!!!!!"*

In addition to information gleaned from student discussions, faculty conducted an online survey four months following completion of the Informatics for Healthcare course in which the WebQuests were used. (See appendix.) The purpose of this survey was to obtain, in retrospect, information from the students regarding the role of the WebQuests in preparing them for their other courses. Participation was voluntary; 33 students responded. This response reflected approximately 50% of the remaining students in the a-BSN program. Of these, 8 were traditional students; 5 were second-degree students; and 20 were RN-BSN students. Twenty-one had never taken an online course previously. Twelve had taken a course that was either online or that had an online component.

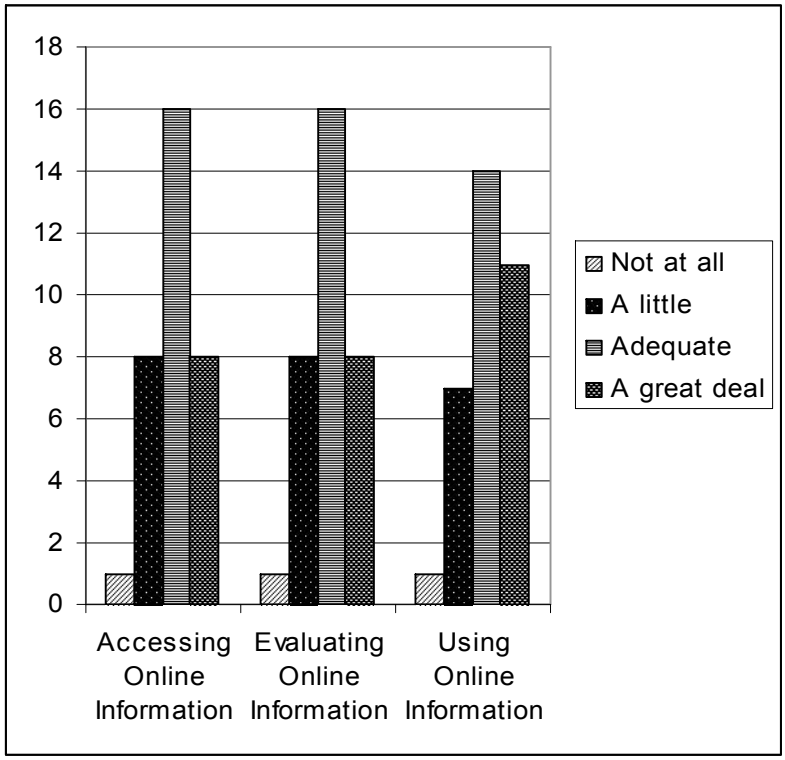
Student perceptions of overall improvement in using technology increased significantly. Prior to the WebQuest, 21 of the 33 students categorized themselves as having little to no technical ability while the remaining 12 reported that they performed fairly well. Following the WebQuest, only 5 identified themselves as remaining in the little to no technical ability category while 28 perceived themselves as performing very good or performing at the expert level (see Figure 1).

Figure 1: Students' perceptions of technical ability pre- and post-WebQuest. (n = 33)



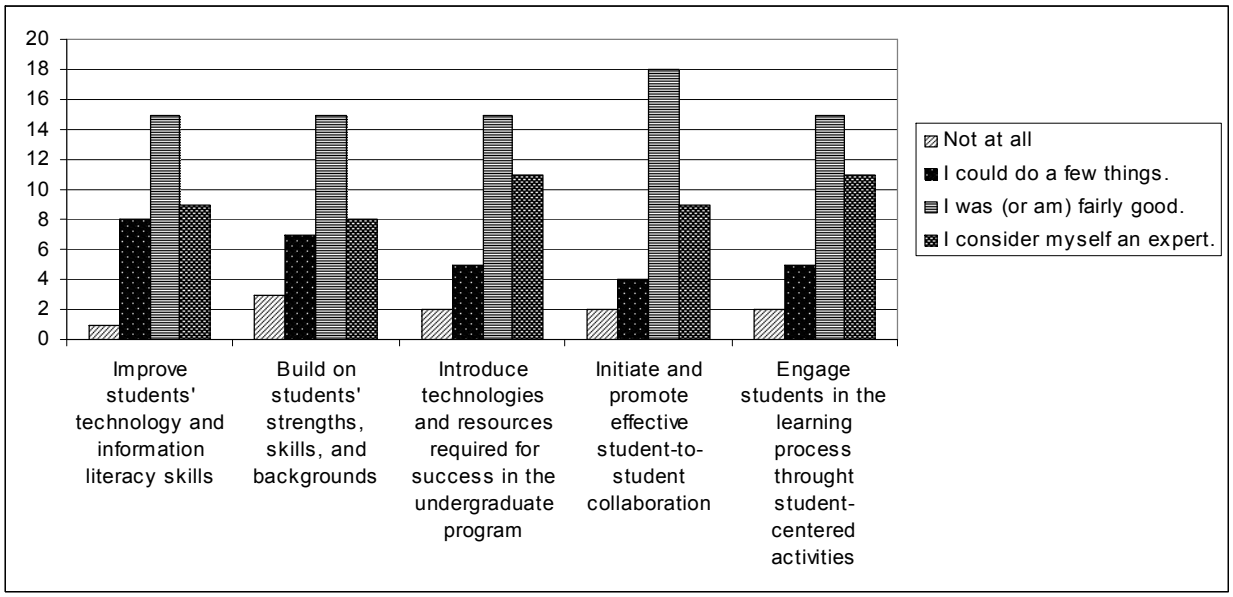
When asked what role the WebQuest played in their ability to access, evaluate, and use information available online, the majority of students indicated that the WebQuest played an adequate role or helped them a great deal; however, there were some who still did not feel the WebQuest played a large role. Of the 33 students who completed the survey, 9 indicated that the WebQuest helped "a little" (n=8) to "not at all" (n=1) in effectively and efficiently accessing information technology, while 8 students indicated the same for skills in using the information obtained. On the contrary, 24 of the students responding felt WebQuests played an adequate role (n=16) or helped them a great deal (n=8) in preparing them for accessing and evaluating data and information, while 25 students perceived the WebQuests played an adequate role (n=14) or helped them a great deal (n=11) in using retrieved data and information (see Figure 2).

Figure 2: Students' perceptions of how the role of WebQuests in helping them access, evaluate, and use online information (n = 33)



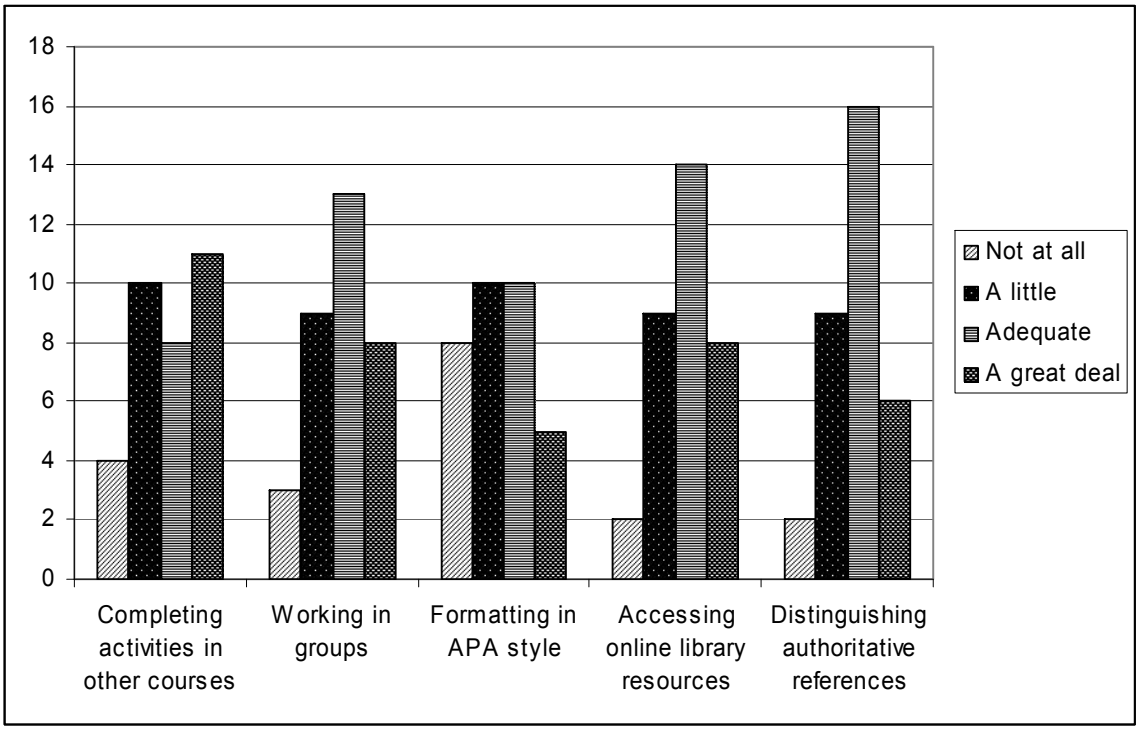
Next, students were questioned about the role WebQuests played in meeting course goals to (1) improve students' technology and information literacy skills; (2) build on students' strengths, skills, and backgrounds; (3) introduce technologies and resources required for success in the undergraduate program; (4) initiate and promote effective student-to-student collaboration; and (5) engage students in the learning process through student-centered activities. The vast majority of students identified the WebQuests as having a large role in this process (see Figure 3).

Figure 3: Students' perceptions of having achieved program goals post-WebQuest (n = 33)



Students responded to Likert-scale questions about the effects of the WebQuests on several aspects that would affect their success in future courses, including completing activities in other courses, working in groups, formatting in APA style, accessing online library resources, and distinguishing authoritative references. Their responses indicated a belief that the WebQuests had assisted them adequately or a great deal in each area, although they were less convinced that the WebQuests helped them with formatting in APA style.

Figure 4: Students' perceptions of WebQuest preparation for future course work (n = 33)



Because faculty were particularly concerned with students' perceptions regarding the role of WebQuests in preparation for future courses, open-ended questions were added to the survey to address these elements. While the Likert-scaled responses provided helpful information, the most revealing were the answers that students provided to open-ended questions.

Item 1: Please describe one thing that best illustrates how the WebQuest helped you in your other classes.

By far, the most often mentioned advantage of the WebQuest activity concerned the ability to search and retrieve resources from the university's library. Typical comments included, "*[The] WebQuest helped me learn how to access the UTHSC library and use its resources…"* and "*[The] WebQuest helped guide me to certain databases to use for my everyday class work from school.… My skills in nursing research are much better as a result of this course."*

Several students mentioned the benefit of becoming familiar with computer technology, the course management system, and software programs. Though formatting with APA style was the skill where students indicated the lowest perception of preparedness, it was also an area most acknowledged in the comments. "*The knowledge of how to write an annotated bibliography is something that began with the WebQuest…. It taught me the essentials of formatting a paper.… The WebQuest activity helped fine tune my APA skills, which turned out to be a very big help in other classes.*"

Item 2: Please describe how the WebQuest contributed to your ability to work with groups.

Students addressed a number of issues in their responses. Several focused on the ability to use technology for online collaboration. Some used synchronous methods. "*We use the WebQuest chat room to share our ideals [sic] about our presentation."* Others found asynchronous methods to be most beneficial. "*I was able to communicate with groups 24 hours a day.… It was very helpful to be able to communicate information at different times."*

Some spoke to issues of group dynamics and associated issues of concern. "*I learned that in groups, you can't always expect everyone to stick to the schedule and do his/her part the way you would do it. I learned to give praises before I gave any negative or constructive criticism."* One referred to the advantages of having online documentation of activity. "*In groups you always have someone that does not work or submit; it brought those people out to the forefront."*

Particularly important, from the faculty perspective, was the insight that students developed as a result of the online collaboration. One student wrote, "*I prefer to work alone because I want to be certain that the work I submit is as good as I know it could be. The WebQuest often proved that working with groups still afforded me this assurance while at the same time lessening the individual burden."* For some, this was the first course in which they had participated in group work. "*I was a traditional student and never worked in a group before. It made me expand my thinking skills…. It helped me to understand the importance of group learning and that other classmates are an important resource due to their past experience and knowledge."* The opportunity to learn of different viewpoints was an advantage mentioned by several students. "*It was a good opportunity to work with others and recognize differences based on previous experiences…. people look at the things in all different lights; it's when everyone brings those ideas together that the group gets a good representation of the material that should be presented to the public."* It also afforded the opportunity to look at alternative approaches to working and helped students develop bonds. "*[The] WebQuest allowed me to work with other classmates and get to know them. It enabled me to see different people's working and collaborative skills."*

Item 3: Please describe what was most helpful in the WebQuest for learning about APA formatting.

APA style, the editorial style often required for formatting articles to be published in social science

and nursing literature, is explicated in the APA manual, 5th edition (2001), a 400 plus page manual of intricately detailed guidelines. For those unaccustomed to using APA style formatting, the process can be daunting, and so it was for our students. Typical comments included, "*APA format was a foreign language to me.... I had no knowledge of APA format.... APA was and is overwhelming…. I'm still not adequately comfortable using APA formatting…. I'm still in the learning stage….*" These comments are reflected in the ratings by the increased number of students who reported feeling that the WebQuest did not play an adequate role in helping them learn APA formatting when compared to the other course goals. This perception of inadequacy was reflected in student submissions, which were laden with errors ("*getting back my paper with soooooo much wrong with it made it hard to understand how to correct it*"). To help students, faculty developed a document composed of a compilation of errors accompanied by the page numbers where information could be found in the APA manual. Several students shared that this was helpful. A compilation of comments included, "*When the instructor looked at our papers and references and told us exactly what needed to be worked on." " She provided a Word document with numbers listed with specific problems assigned to each number. She then would mark on our papers exactly which topic we should read up on, referring to the Word document. That was extremely helpful because the help we received was so personalized and detailed." "The list that was compiled of our errors was so helpful. It is still saved on my computer and I refer to it when writing in APA. The APA manual is very confusing but the problem list is wonderful."*

Item 4: Please describe how the WebQuest helped prepare you to access the library, search the databases, and use library resources.

Students expressed both satisfaction ("*The library tutorial provided in the class really helped me for future classes. Directions were specific and easy to understand*") and dissatisfaction ("*Unfortunately, I still have problems using the library's database system. I did not understand - even after the tutorials - how to look up certain things. I just don't feel as if the system in the library is very user friendly*") with the tutorials provided by the library to explain how to use the library databases. For many, though, the WebQuests provided the impetus needed to master this process. "*[The WebQuest] forced me to learn how to access library resources.… I needed to take the time to work through it, and the project gave me the chance."* (On a side note, within the year following this activity, the library took steps to change the way searches are conducted for a number of the databases to a way that is more user-friendly and easier to learn.)

Item 5: Please describe how the WebQuest prepared you to distinguish reputable websites from those that are less reputable.

As part of the WebQuest resources component, students were given criteria to be used to distinguish reputable and authoritative websites. Some expressed a newfound awareness. "*I now understand that it is important to look at the validity of the websites; not all computer sites are important in the development of evidenced based practice."* Others spoke to the criteria used to distinguish reputable sites. "*I had never known to look for those specific things.… Based on the criteria provided by the instructor, I gained a good understanding of how to distinguish appropriate websites. Again, instructor feedback was a huge help."*

Students were also asked how well they enjoyed the WebQuest activity. As would be expected with such a diversity of students, the aspects they enjoyed most were also diverse. Technological aspects were most often mentioned. Examples included references to basic skills ("*I did not have any computer skills, WebQuest gave me the basics to get started."*), to use of software ("*I feel comfortable compiling PowerPoint presentations. I was not able to do [this] prior to this course*"), to the bonding that occurred between students ("*I enjoyed getting to work with and get to know my classmates better."*)

In some instances, student comments supported that faculty decisions made were wise ones. For example, regarding the decision to form teams composed of a member from each category of student, one student wrote that her favorite part of the WebQuest involved "*Working with a student*

from the traditional group and the second degree group. I had a great group and I think the combination from each degree option helped me a lot. I had wisdom but had not been in school for 25 years. The skills that we each brought to the group were well balanced."

All was not rosy, however. Complaints, when voiced, primarily focused on problems related to inadequate participation ("*Working with the RN's was difficult because of their work schedules"*) and inadequate contribution ("*It would be comforting to know that you trust the people getting the job done… my group member sent me the finished power point… it was all wrong - misspelled words, incorrect pictures, incorrect information and formatting - so I had to basically trash it and start over. The same thing happened with the pamphlet. It really created some stress that night that could have been avoided!"*). One student felt that the WebQuest was not helpful ("*I did not gain anything from WebQuest. It appeared to be busy work. I did not enjoy it."*) These negative comments, however, were present only in a small minority of responses.

Conclusion

For faculty at The University of Tennessee Health Science Center's College of Nursing, WebQuests provided an excellent means of integrating program goals and learning outcomes within a single organized activity. For students, the WebQuests provided an authentic experience with long-lasting relevance to their future work as nurses. Perhaps it is this last idea - that this small project would have lasting implications - that make the WebQuest activities particularly ideal for nursing students. Two students in particular shared how the WebQuest had been used to help patients in the real world. One student wrote:

I loved the class, I have used what I have learned everyday, for instance, [I researched] rehab facilities to send a patient and found the best fit for my patient at [a special facility].... He is on his way to a GREAT recovery. I was able to convince the insurance carrier, corporate employer, and attorneys, through my research that he needed to be at [the facility]. Thank you Dr. __, this patient hopefully will be able to WALK off the plane when he returns and you were a part of his recovery.

Another student shared:

Because I was interested in my specific topic (SIDS), even after the WebQuest was over I continued to research information, order videos and other materials, and attempt to expand my knowledge on the subject in order to teach anyone I came in contact with. Since that time, I've talked to numerous women about precautions to take to prevent SIDS and even shared with them our group's PowerPoint and pamphlet (which they stated were great!). I found that specific internet discussion boards are a place where new moms go to ask questions about their new babies, and many times there will be questions about how they should lay their babies in the crib or if they should buy a bumper pad or not, and I feel very comfortable and confident in talking to these moms and educating them.

For those who are interested in viewing the WebQuests constructed by faculty for the Informatics for Healthcare course, they are available as open access documents at http://www.technology-escapades.net/webquests/informatics/index.htm. Additional resources for writing WebQuests, including sites for templates, are provided in Table 1.

Table 1. WebQuest Websites

The WebQuest Page Maintained by Bernie Dodge, WebQuest creator, this website provides a wealth of information on theoretical underpinnings of WebQuests, training materials, templates for creation, and examples of WebQuests used in a variety of disciplines. http://webquest.sdsu.edu
WebQuest Home Page Maintained by Tom March, WebQuest co-creator, this website provides links to several articles written about WebQuests, a selection of WebQuest examples, and helpful tips for writing WebQuests. http://www.ozline.com/learing/index.htm
WebQuest Templates A variety ranging from simple Microsoft Word documents to more complex XHTML formats http://webquest.sdsu.edu/designpatterns/all.htm http://projects.edtech.sandi.net/staffdev/tpss99/upgrades http://www.educationaltechnology.ca/resources/webquest/templates.php http://webquest.org/questgarden/author (an authoring tool and hosting site)

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Appendix

Survey: Student Evaluation of WebQuests

(Modified for Print)

As we prepare the Informatics course for delivery in the new year and as we present/publish our experiences with the WebQuest activity for an international audience, we are asking for your evaluation of the WebQuest activity as a mechanism for meeting course outcomes and goals. In addition, we are very interested in your comments about the WebQuest activity, particularly in how the WebQuest helped prepare you for work in your other courses. In addition to 4 background questions, there are 14 questions on a Likert scale that should take you no more than 1 to 2 minutes to answer. We would also very much appreciate receiving specific comments from you in answer to the open-ended questions at the end of the survey. Even brief answers to the open-ended questions will be most helpful. Thank you for the time that you are able to give to this request.

Please answer the following four questions to tell us a little bit about yourself. For the following four questions, please select the answer that best represents you.

1. What degree option are you in?
    a. Traditional BSN
    b. Second Degree
    c. RN-BSN
2. How “tech savvy” would you say you were prior to entering the program?
    a. Not at all
    b. I could do a few things
    c. I was fairly good
    d. I consider myself an expert
3. How “tech savvy” would you say you are now?
    a. Not at all
    b. I could do a few things
    c. I am fairly good
    d. I consider myself an expert
4. Prior to starting the UTHSC College of Nursing program, what was your experience with online courses?
    a. I had not taken any online courses at all
    b. I had taken a course that was partially online
    c. I had taken more than one course that was partially online
    d. I had taken a course that was fully online
    e. I had taken more than one course that was fully online

For each of the following questions, please select the option that best represents your response.

5. Effectively and efficiently access information technology.
    a. Not at all
    b. A little
    c. Adequate
    d. A great deal
6. Use established criteria to critically and competently evaluate data and information obtained through the use of information technology.
    a. Not at all
    b. A little
    c. Adequate
    d. A great deal
7. Accurately and creatively use information technology and the data and information obtained.
    a. Not at all
    b. A little
    c. Adequate
    d. A great deal

Please indicate how much of a role the WebQuest played in your meeting these course goals.

8. Improve students' technology and information literacy skills.
    a. Not at all
    b. A little
    c. Adequate
    d. A great deal
9. Build on students' strengths, skills, and backgrounds.

a. Not at all
b. A little
c. Adequate
d. A great deal

10. Introduce technologies and resources required for success in the undergraduate program.
    a. Not at all
    b. A little
    c. Adequate
    d. A great deal
11. Initiate and promote effective student-to-student collaboration.
    a. Not at all
    b. A little
    c. Adequate
    d. A great deal
12. Engage students in the learning process by designing student-centered activities.
    a. Not at all
    b. A little
    c. Adequate
    d. A great deal

Please indicate your answers to the following specific questions.

13. How much did you enjoy the WebQuest activity?
    a. Not at all
    b. A little
    c. Adequate
    d. A great deal
14. How helpful was the WebQuest activity in preparing you for the type of activities that you did in other classes?
    a. Not at all
    b. A little
    c. Adequate
    d. A great deal
15. How much did the WebQuest activity contribute to your ability to work with face-to-face or online groups?
    a. Not at all
    b. A little
    c. Adequate
    d. A great deal
16. How much did the WebQuest assist you in learning APA formatting?
    a. Not at all
    b. A little
    c. Adequate
    d. A great deal
17. How much did the WebQuest assist you in learning how to access UTHSC library resources?
    a. Not at all
    b. A little
    c. Adequate
    d. A great deal
18. How much did the WebQuest assist you in learning to distinguish reputable, authoritative websites and/or other references from those which are less reliable?
    a. Not at all
    b. A little

c. Adequate
d. A great deal

Open-ended questions.

19. Please describe one thing that you most enjoyed about the WebQuest activity.
20. Please describe one thing that best illustrates how the WebQuest helped you in your other classes.
21. Please describe how the WebQuest contributed to your ability to work with groups.
22. Please describe what was most helpful in the WebQuest for learning about APA formatting.
23. Please describe how the WebQuest helped prepare you to access the library, search the databases, and use library resources.
24. Please describe how the WebQuest prepared you to distinguish reputable websites from those that are less reputable.
25. Please describe other ways that you have applied what you learned from the WebQuests in other courses or in your personal life. Please give examples whenever possible.
26. Please write any other comments you have about the WebQuests.

End of Survey

Thank you for taking your time to answer questions about the WebQuests. Make sure to click "send survey" to submit your answers! Please let Dr. Burchum or Dr. Russell know if you have questions.

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