Creating Online Learning Environments in Higher Education
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Abstract
Online learning in higher education continues to grow at a rapid pace while some college instructors continue to grapple with effective online instructional practices. Although students may not enroll in online or distance learning classes, they are often delegated assignments that require knowledge of online resources and the Internet. Exploring the experiences of students in online environments is important to create effective online educational arenas. This research focused on the online interaction of a group of 25 graduate students who enrolled in a teacher education course. The students collaborated and communicated via an online wiki. Data collection processes involved interviewing participants, observing the interaction of the participants, and accumulating raw data from online sources. Data analysis revealed the following two themes concerning the participants’ interaction online: (1) usability and (2) collaboration. These themes directly relate to the perceptions of the participants when submerged in an online learning environment.

Keywords: engagement; collaboration; group projects; wiki; technology
Creating Online Learning Environments in Higher Education

Online learning is at the forefront of teaching pedagogies. Institutions of Higher Education expect students to know how to access and use the Internet in order to register for classes, check email, complete forms and submit assignments. Allen and Seaman (2009) assert that even though indicators concerning Internet use in higher education reveal strategies that focus on collaboration ensure online learning processes are effective, however, faculty acceptance and training of online pedagogies has changed little since 2002. Perceptions of university students concerning technology integration in college level courses are an important aspect of research for higher education. Universities will be able to adjust and provide for all students by exploring students online experiences. Research concerning online environments is critical for instructors in higher education to gain an understanding of online collaborative software.

Effective learning strategies provide positive learning outcomes in higher education. Online programs that promote collaborative learning are essential for students engaged in the learning process. Studies conducted by Ellis and Hafner (2008) and Blau and Caspi (2009) indicate that online collaboration is beneficial for student learning outcomes. Therefore, effective online software needs to enhance scholarship, provide a basis for collaboration, promote an active learning community, and create an environment ideal for engaging students (Bruns & Humphreys, 2005; Forte & Bruckman, 2006; Elgort, 2007).

Virtual Learning

Virtual environments encourage collaboration regardless of geographic location. Although traditional classes rely on locale for communication, virtual communities focus on connections rather than locations. These characteristics allow for the creation of online environments to encourage collaboration and communication. Research studies concerning the pedagogical nature of online tools and the interactions of students when using computer technology have been conducted with varied results (Domine, 2006; Bhati, Mercer, Rankin, & Thomas, 2010; Lee & Tsai, 2010; Ng & Cheung, 2007). Hill, Song, and West (2009) conclude “Internet technologies are an integral component of the learning process in formal and informal contexts” (p. 100). Lonsdale, Deery, White, and Skyring (2009) assert that essential to understanding online learning is the tenet that online participants believe that knowledge sharing is virtuous. Online networking is the primary venue for creating Internet based learning arenas in institutes of higher education (Palloff & Pratt, 2005).

Communication

College professors to promote critical thinking and problem-solving skills utilize pedagogies that encourage collaboration in college courses. Projects and assignments that involve small groups of students are effective for students to strengthen the learning process (Sener, 2007). Online tools used by students and professors involve a wide range of technology and communication including course software, electronic portfolios (e-portfolios), discussion boards, e-mail, chat rooms, online whiteboards, social software and wikis among others.
Online course management tools include programs such as WebCT and Blackboard to display class content while the instructors and students communicate through the Internet software. E-portfolios, a virtual environment for students to assemble assignments, collages, or other artifacts, are becoming increasingly useful in many colleges. While e-mail is the most common form of communication in higher education, social software programs, which include Facebook, Twitter, and tumblr, are all making an impact on communication. These types of social software enable users to communicate through sending or posting messages, photos, documents, or emoticons on the Internet either instantaneously or through a personal Web page. Similarly, wiki software enables users to communicate, collaborate, share files, and edit the content of their own and possibly other user’s writings through website access.

A wiki is a type of social software that encourages group interactions and collaboration. Wikis were developed by computer engineers to facilitate discussions focusing on computer programming (Chawner & Lewis, 2006). Users from novice to expert are able to navigate most aspects of wiki pages while contributing their own thoughts and adding other valuable resources.

Typically, wiki use in higher education involves student organizations, university happenings, and conferences (Farabaugh, 2007). More recently, university wikis serve as collaborative tools for undergraduate and graduate students to introduce themselves (Augar, Raitman, & Zhou, 2004). Professors distribute coursework to student through wikis as a separate, but inclusive part of the class or as an entity upon itself. Using wiki technology, students generate encyclopedias, textbooks, and annotate bibliographies. Often these online wiki pages become repositories of information that students create, use and publish online (Bruns & Humphreys, 2005; Augar, Raitman, & Zhou, 2004). Students may continually gain access to wikis therefore appending old content and adding new content to the existing assemblage of knowledge (Augar et al., 2004).

A group of students in a computer language course worked together to create an online textbook that facilitated deeper understandings of the material and may be used as a resource for future students (Evans, 2006). Lamb (2004), Schaffert et al. (2006) and Tonkin (2005) advocate using wikis to assist in writing instruction, support collaborative writing, and generate e-portfolios. Some instructors introduce and teach the writing process through “wiki authoring” providing guidance and instructor support (Duffy & Bruns, 2006). In addition, wikis are used as “interactive writing books” allowing students to work together to construct stories or essays (Schaffert et al., 2006).

This study explores the perceptions and experiences of graduate students concerning the effectiveness and utility of the course wiki as an online learning tool. Specifically addressed in this research are the following questions: (1) What are the perceptions of the students concerning the navigation and functionality of the course wiki? (2) How do student experience collaboration though the use of the online tool?
Method

This research employed qualitative case study methods to explore the experiences of graduate students in a wiki-based collaborative learning environment. Symbolic interactionism was the theoretical framework that guided the current study and aided the interpretation of the data. Embedded within symbolic interactionism is the idea that interactions between people create meanings (Patton, 2002). Online environments establish arenas for social reality and social interactions that are essential concepts underlying social interactionism. Plummer (1996) advocates symbolic interactionism as a structure for understanding group interaction.

Participants

Purposeful sampling facilitated selection based on the supposition to gain insight pertaining to a particular object or phenomena (Merriam, 2009). Such sampling established the criteria that were crucial when selecting the participants because the sampling criteria guided the purpose of the study (Merriam, 2009). Criteria for study participation included acceptance to the program, enrollment in the required course and a willingness to participate in the study. All conditions for admission to both the graduate school and the master’s program were prerequisites for student participants. Students agreed to participate in the study by signing a consent form.

Research Case

An urban university located in the mid-south served as the physical location for the research whereas the course wiki supplied the virtual location. The Masters of Arts in Teaching (MAT) course used in this study was a typical teacher education course that required students to contribute to class discussions and involve themselves in an active learning environment. Virtually, the environment for this research project was the online course wiki accessed through the Internet. Several free wiki software sites exist that provide space for anyone to create wikis. The creator of the wiki controls the permissions of the users. In other words, the creator controls view the material on the wiki. Wiki software allows the user the ability create and format text, insert images and files, add widgets, and link pages together through the use of a toolbar similar to that used in a word-processing program. All users can create links to pages within the wiki as well as to other Web pages considered valuable. In addition, the research project wiki permits an unlimited number of pages and discussion posts.

The monitoring program allows the wiki creator to view the progress of the wiki and provide valuable input concerning its use. When participants make changes, the administrator and creator of the course can monitor and oversee wiki activity, track changes, keep original pages as well as new pages resulting from changes, and send e-mail updates. The first page of the wiki contained instructions and a link to a tutorial on the right side of the screen that was accessible from all pages of the wiki site (Figure 1). A link to the instructors’ personal pages appeared within this content, along with a hyperlink to the instructors’ e-mail. Each student had a self-designed personal page decorated with his or her own photos and links (Figure 2) of the main page of the wiki course site.
Figure 1. Main page of the wiki course site.

Figure 2. Group one wiki page.
Materials and Procedures

Dividing participants into groups of five facilitated the creation of collaborative online communities. Within each assigned group, participants decided who would function in the roles required for completing class assignments and links to outside resources. The students were essentially in charge of their own groups, and each group created a group page together. Rough drafts and collaboration took place on any of the students’ pages on the discussion boards, and in chat rooms, but final posting the completed assignments appeared on the group page. The wiki also included a tab in which students could discuss topics and share ideas.

Data collection processes focused on student generated wiki websites, synchronous chats, asynchronous discussion board posts and individual interviews. As recommended by LeCompte (2000), researchers’ continuous reflection upon data continuously ensures authentic understandings and conclusions concerning interpretation. Peer debriefing, negative case analysis, triangulation, and member checking served as validation tools (Creswell, 2007, pp. 24-26). Triangulation of the data occurred using several data sources including interviews, online observations, and participant-created documents. Participants reviewed the data to authenticate research findings (Lincoln & Guba, 1985). Data analysis exposed two primary themes that describe specifically the interaction of the participants when using the online program—usability and collaboration.

Results

Students described using the course wiki as an easy and effective arena to provide feedback. The navigational aspects of wiki included the layout, the ease of finding links, and the overall look of the course wiki. When referring directly to the navigational aspects of the wiki, participants mentioned specific aspects: “it’s easy to navigate and free of unnecessary features”, and “I liked having the wiki to use”; “I think Wiki was pretty easy and straightforward”. Other participants referred to the wiki project “…I really enjoyed the simplicity and flexibility of this assignment”. In addition, many simply responded by saying things such as: “I liked using wiki” and “I think it’s an exciting and inventive tool”.

Participants indicated overall satisfaction with wiki software. One student indicated that she not only appreciated the instant gratification of viewing the group’s attempts, but also liked the ease of use in the online environment, “I also think wiki makes the assignment easier in the long run because you can automatically see your group’s effort”. Other students responded; “Overall it is a great tool with numerous things that a college student, a business group, teacher, or any professional could take advantage of …” and “I think Wiki is an easy way to do a project. I think I might prefer this to a PowerPoint”. Another participant stated, “Well, all in all I liked using wiki. I learned a lot from the program”.

Participants described their conversations online as substantial and significant as revealed by several comments: “But when we thought of an idea we got the ball rolling and then more meaningful conversations arose” and “I think our conversations were more meaningful”. Many of the participants described the social aspects of the wiki as a way to bond by saying things like, “It also was a good way for us to get to know our other classmates, and communicate with them” and “You get to know classmates better”. Transcripts also disclosed a discussion heading
entitled “My teaching experience,” therefore encouraging the group to talk about their previous experiences therefore adding these experiences to their knowledge repertoire.

Students were willing to share their inexperience as well as their experiences. One student posted the following on her personal page describing her limited teaching experience while illuminating what she could add to the project:

Okay, I have a very limited amount of exposure to classrooms and teaching scenarios. However, I can add frequent student issues from a school psychologist perspective: Specifically, when teachers want to have a child tested but paperwork hasn't been filled out entirely, several interventions have not been attempted or progress monitoring data (AIMS Web DIBELS) hasn't been completed with the child on a regular basis.

A section of group one’s wiki page (see Table 1) is another example of participants using the wiki page to introduce themselves and contribute as a group to the assignment. Therefore, each of the groups contributed to the knowledge by providing researched resources concerning the assigned subject matter. Students communicated what they saw as benefits of wiki in relation to learning by saying, “I enjoyed working in the group. It made learning kind of fun just because you got to share experiences, understandings of the subject matter, and learn how to work with other teachers on what could be a shared issue in a student”. Some students described wiki as motivating, saying, “It encouraged collaboration among students of different educational backgrounds and helped to expose some us to different perspectives (i.e. practical educational and school psychological”). Others talked about how the projects were actually completed, “then we worked together to embellish it, edit it, and write the questions”.

Group 4 explained how the group worked together to collaborate on the assignments: “we worked together to do the editing and embellishing of the assignment”. Some actually mentioned the procedures for assigning tasks, as illustrated by the following: “My group discussed what could be written, and one of us wrote it. Then it was posted and modified. We essentially just did what was needed as we went. There were no formal discussions (excluding one member who needed to be given tasks”). One participant reiterated the process saying,

“Once the general guidelines/goals for the project were established I think the freedom to develop our story from our own perspective was cool”. Another participant summed up his experience using wikis as “interactive so people are given the opportunity to learn from others and hopefully develop a system for self-motivation and the enhancement of creativity”. 
### Table 1

**Examples of Findings and Implications**

<table>
<thead>
<tr>
<th>Examples of Findings</th>
<th>Interpretations</th>
</tr>
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<tbody>
<tr>
<td>We worked well together as a group. Each person offered something different. Each person has a different personality in our group. I liked that. I learned from each group member. I think it is hard once you get to know them and then you have to say goodbye.</td>
<td>Online collaboration connected students to content through active participation</td>
</tr>
<tr>
<td>We decided from the beginning that the best way to facilitate a truly collective effort was to enable each person to contribute individual ideas and then to discuss then pros and cons of each person's suggestion in order to derive the ultimate solution.</td>
<td>Students actively collaborated to complete group assignments</td>
</tr>
<tr>
<td>That is where the chatroom came in handy.</td>
<td>Synchronous chat session were beneficial for information exchange</td>
</tr>
<tr>
<td>We are going to describe what the child is doing and how we are going to correct them. We are also going to discuss how to get them on the path of focusing on the subject. We will look at ways to get the attention of all of the students. We will look at ways to distract them from the bad behavior and help them focus or get goal oriented toward the subject matter (beginning of posting on discussion board for group 1).</td>
<td>Students oriented themselves to the assignment</td>
</tr>
<tr>
<td>Feedback was automatic (if your group mate was online at the same time as you) and that helped speed the process along</td>
<td>Students participated within each assigned grouped</td>
</tr>
<tr>
<td>It encouraged collaboration among students of different educational backgrounds and has helped to expose some us to different perspectives (i.e. practical educational and school psychological).</td>
<td>Students appreciated exposure to various view points</td>
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Discussion
Findings from this study indicate that a major influence concerning the students’ experiences when participating in online collaborative learning was the virtual environment. The online project facilitated meaningful dialogs and therefore knowledge construction. Students interacted and collaborated online by using wiki software tools. Data drawn from the experiences of the participants demonstrated that the environmental structure of the wiki was conducive for encouraging online learning. Validating the importance of the online structure were the patterns of responses concerning the usability of the wiki when related to the literature and to Preece’s (2001).

Ideas encompassing optimal online environments for online collaboration include software use and access, the layout and design of the wiki pages, as well as the participants’ access to the technology. Tonkin (2005) investigated wiki use, found that the environment was user-friendly, and allowed students to interact effectively.

Participant dialog validated that the wiki created a communal arena for disclosing information and an arena for knowledge synthesis and critical thinking (Lundvall, & Borrás, 1999; MacDonald & Gabriel, 1998). Group synchronous chat sessions demonstrated that chats were a collaborative interactive tool utilized by the group (Anderson, 2008; Tonkin, 2005). Students worked together utilizing group wiki pages for short discussions, to develop ideas, and to establish meaningful discourse. Several participants reported that wiki collaboration was useful for disseminating information about education topics and sharing resources and information.

Construction of collaborative writing assignments directly on the course wiki were essential to understanding the educational aspect of the course wiki and the student learning processes (Hill et al., 2009). As mentioned earlier, students communicated through Internet communication tools to collaborate and complete their group assignments. These assignments included information and links to other web sites containing information about their particular topic. Group one included six photos, animated clip-art, and two links to outside sources concerning their topic. Group 4 created nine hyperlinks to readings and information concerning their topic. The writing element for group four was more important than in the other groups, as evidenced by their final project. The final project for Group 5 was extensive and contained web links leading to fact sheets and teaching strategies as well as two imbedded videos.

Findings verify participants were able to collaborate and participate in meaningful conversations through wiki interaction, which confirms both synchronous and asynchronous exchanges through chatting, postings, and discussions were crucial for communicating and providing feedback. Some participants actually reported they were forlorn to have the class wiki end. This data suggests that the social relationships were formed by communal collaboration on the wiki were meaningful (Gray, 2004; Hunter, 2002; Moore & Barab, 2002; Zibit & Gibson, 2004).

Data indicated that communication through all online methods were generally easy and painless. Participation in the wiki assignment was consistent in each group, although some groups communicated more often through discussion board forums and/or directly through their wiki pages or online chats. Online group conversations concerning the students’ own
experiences with relation to the subject matter helped to facilitate critical discourse. Students had the ability to collaborate about teaching methods while discussing personal experiences. Data analyzed from research transcripts support online collaboration through the wiki website.

Several participants utilized their own personal student pages as the venue for posts and discussions employed the discussion board as the primary means of communication. Each group designed their own discussion board that was available under the main group page. Although all groups participated in individual group discussion boards concerning many aspects of the course, groups three and four used the wiki discussion board primarily to discuss the assignments.

Collaboration within the groups was evident (Hill et al., 2009). The groups worked collectively to problem-solve while each group member brought their own individual experiences and skills to assist in completing the group project. Involvement in group interaction does not only encourage contribution to the knowledge of the community, but this interaction also helped participants engage with the subject matter (Palincsar, Magnusson, Marano, Ford, & Brown, 1998; Ramondt & Chapman, 2004).

Postings and interaction transpired on the wiki had a recorded history. These records confirmed the collaborative properties of the online software, validating the shared experiences of the participants. The participants in groups one and two edited the group project as well as participated in their own group’s discussion board more often than groups three and four. Group 2 was extremely active from the beginning of the project. Data supporting participant interaction substantiate the interactive and collaborative characteristics of wiki software.

**Recommendations**

As technology continues to infiltrate higher education, university professors and instructors need to find arenas to encourage online student interactions. The interactive properties of wikis support collaboration for various assignments and group projects. Wiki encouraged active engagement in the learning process and facilitated meaningful interactions. The ease of online collaboration tools assisted learning in a virtual environments and students stated that learning using wiki was beneficial for the course and beneficial for learning the new technology. Online software allowed significant communication between students in a virtual environment that was essential to the execution of the course. The communication properties of wiki were useful for collaboration and egalitarian.

Issues concerning the course wiki revolved around the wiki assignments. Some students were not comfortable assigning roles within their groups and were not accustomed to managing their own learning. Although few participants reported frustrations, mainly at the self-directed aspect of the group projects, future projects will provide more structure for the wiki assignments. Clear goals and more support for online learning could help challenge students to benefit from wiki collaboration. The successful integration of wikis into graduate courses requires the implementation of comprehensive training sessions for future participants.
References


