

Collaboration and Learning with Wikis in Post-Secondary Classrooms

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Abstract

This research examined the use of wikis used in support of collaboration and learning in two post-secondary courses in a large Midwestern university that adopted wikis in pedagogically different ways. In the first course, students used their wiki as a course content glossary for posting and editing original contributions. They perceived the wiki as positively supporting collaboration efforts and effectively supporting learning and engagement. In the second course, wikis were used to develop, share, and edit project assignments. These students perceived the wiki as not supporting collaboration, and they reported modest perceptions of the wiki supporting their learning and engagement and supporting the development of high-quality assignment products. Technical aspects of the wiki tools impacted the two group's respective perceptions.

Introduction

The word *wiki* is Hawaiian for *quick* and was first used by Ward Cunningham to name the collaborative tool he developed for use on the Internet in 1994 (Augar, Raitman, & Zhou, 2004). Technically, a wiki has come to mean a wiki-web site page any user on the Internet can change, even anonymously (Lih, 2004). Users can link keywords within a document to existing or new documents, allowing for a natural hyper-textual growth of the wiki. It is not surprising that wikis have been defined as simple-to-use, asynchronous, web-based collaborative hypertext authoring systems (Désilets & Paquet, 2005; Rick & Guzdial, 2006). Wikis are considered a prominent Web 2.0 technology, a conceptual category for Internet tools that include emergent technological tools, such as blogs, podcasts, and RSS feeds (Moore, 2007; Schrum & Solomon, 2007), that enable users to develop web content collaboratively in an open, public, and participatory manner (Alexander, 2006; Jenkins, 2006).

Wikipedia, located at <http://www.wikipedia.org>, is an internet-based, user-generated encyclopedia and has emerged as a large and well-known form of participatory journalism by facilitating collaborative development of the wiki's content (Lih, 2004; Solomon & Schrum, 2007). While the "open" contributor community in Wikipedia fosters rapid content development, it does not safeguard or establish the content's accuracy nor does a formal process of validation exist in Wikipedia. Thus, growing concern for accuracy in the Wikipedia content exists (Peacock, Fellows, & Eustace, 2007). However, research indicates Wikipedia content is as

accurate and inaccurate as *Encyclopedia Britannica*. Giles (2005) examined 42 reviews of entries chosen from the websites of Wikipedia and *Encyclopedia Britannica* on a broad range of scientific topics. Reviewers were not told the location from which articles were chosen and were instructed to examine the entry on a single subject from both sources. Four serious errors were identified in both sources; they also found 162 factual errors, omissions, or misleading statements in Wikipedia and 123 similar errors in *Encyclopedia Britannica*. Giles concluded the accuracy of the science-related entries were similar, lending some confidence that contributors and experts work together to maintain accurate information in Wikipedia.

As Wikipedia exploded with entries collaboratively developed, reviewed, and edited, learners of all ages have begun to consider it a learning resource. While the controversy regarding Wikipedia referencing and veracity is beyond the scope of this article, the fact that learners began to consult, reference, and even contribute to Wikipedia has brought the underlying technology—the wiki—into focus as a general technology tool available for use in learning and disseminating content. Free, accessible wiki sites such as sites.google.com, which acquired the former JotSpot.com, and PBWiki.com provide a user-friendly interface to enable instructors to create and modify their wiki pages without learning any special markup tags or HTML (West, Sample, & West, 2007). There are also a host of wiki engines, such as Twiki or MediaWiki that can be customized and hosted on servers internal to an organization (see <http://www.wikimatrix.org/>). Wiki sites such as Wikispaces have been used to develop K-12 teacher-led wiki communities (Grant, 2006). Researchers are only beginning to empirically investigate the potential of wikis to contribute to learning and academic achievement (Beldarrain, 2006; Hsu, 2007). Forte (2006) suggests research should lead to identification of a set of target wiki practices and associated social environment(s) in which collaborative wiki writing practices may have meaning and value.

Mackey (2007) argued that wikis may function as communities of practice if the online wiki activity is interconnected and balanced with face-to-face activity. Mackey asserted that wikis provided the opportunity to reflect on learning topics, but students did not necessarily learn better by means of the wiki. According to Mackey, a virtual community of practice can be created using a wiki but is limited by the extent to which the authorship of content is a cooperative enterprise.

Indeed, computer-supported collaborative learning (CSCL) promotes peer interaction and facilitates the sharing, building, and distribution of knowledge and expertise among a group of learners (Koschman, 1996; Lipponen, 2002). Socio-constructivist perspectives on learning (e.g., Lave & Wenger, 1991) indicate that promoting personal agency, communication, and social construction of learning, such as what occurs in CSCL activity, can result in increased engagement in and motivation towards learning among learners (Lipponen, 2002). The wiki technology may be used as a form of CSCL (e.g., Désilets & Paquet, 2005; Hsu, 2007; Rick & Guzdial, 2005) and for cooperative learning (e.g., Bold, 2006; Parker & Chao, 2007; Schaffert et al., 2006), ultimately helping students engage in collaborative learning, a process in which learners build new skills and knowledge through interactions with other members of a group, some of which might be more knowledgeable others (Dillenbourg, 1999; Skiba, 2005; Vygotsky, 1978). Collaboration, in this context, includes more than two people communicating with one another online to co-construct knowledge by contributing information on the wiki site and editing or changing posted information.

Wiki users can write, share, and edit content while only possessing rudimentary skills in web page creation (Matthies, Helmke & Slater, 2006). Research of wiki use in educational

settings identified students drafting submissions and regularly submitting article-length wiki contributions (Peacock et al., 2007). Peacock et al. found that user ratings of content, a wiki feature, were a more reliable indicator of accuracy in larger wikis than small wikis. Finally, the researchers indicated that development of group pages promoted collaboration and shared knowledge development among participants as opposed to other participants who use and perceive the wiki as a publishing outlet. Another university wiki project (Augar et al., 2004) discovered that usage guidelines, tracking, and authentication mechanisms were essential to maintain appropriate content in the wiki. The researchers concluded that the wiki proved to be useful for online collaboration, and all the students completed their exercises satisfactorily.

Given the technical ease of use and regular use by students, university instructors have begun to use wikis to support learning and collaboration through employing wikis for such tasks as collaborative writing, glossaries, manuals, textbooks, discussion and review, projects, reflection journals, presentations, and formal and informal assessment (Ben-Zvi, 2007; O'Shea, Baker, Allen, Curry-Corcoran, & Allen, 2007; Zeinstejer, 2008). Wikis help learners develop meaning by constructing knowledge through co-construction with peers and teachers and through on-going reflection of their text-based contributions (Ben-Zvi, 2007; Higgs & McCarthy, 2005; Watson, Boudreau, York, Greiner, & Wynn, 2008). Teachers and students can work closely together asynchronously on a wiki topic (Schaffert et al., 2006) and, in the process, increase students' reflective learning and enrich their experiences beyond the content being co-generated (Chen et al., 2005). Forte (2006) predicts that collaboration using well-designed wiki tools can help change students' writing practices to include more citations and critical evaluation of resources as well as influence individuals' knowledge and beliefs about the content.

These developing descriptive accounts and studies of wiki use in education raise possibilities for wikis to support learning and collaboration in formal education contexts, such as groups of students collaboratively generating knowledge about their course topics. However, a limited empirical research base still exists. Therefore, this research examined the following questions:

1. Do students perceive wiki use for coursework as supportive of peer and teacher collaboration?
2. Does using a wiki for coursework facilitate students' content learning?

Methods

Participants

Two university-level instructors and their respective semester-long courses offered in the 2006 spring semester participated in this study. The first course focused on interactive design, including the design of multi-media projects and an introduction to human-technology-interface design and usability. Twelve students, including nine undergraduate seniors and two graduate students¹, agreed to participate in the study. Seven students reported being female and three were male. Eight were majoring in Graphic Design; one was majoring in Web Design and Media Communication, and one reported majoring in Interactive Design. The instructor of the Interactive Design course instituted the use of a wiki within the course. Students were required to use a commercially available wiki, such as <http://PBwiki.com>, to add the important terms they were learning within their course by "formulating dictionary type descriptions of words" (Survey Respondent), ultimately yielding a key-term glossary. This group is referred to as the "Glossary" wiki group in the analysis and results.

The second course, a graduate seminar, focused on current research and perspectives in Learning Technologies. All seven enrolled students, two women and five men, consented to participate in the study and were all majoring in Curriculum and Instruction or Learning Technologies. The graduate instructor also required the use of a wiki within this course. The course used the university-sponsored, open-source TWiki platform, located at <http://twiki.org/>. All assignments within the course, including students' reviews after attending a technology-related presentation of their choice, critical annotations of 10-15 articles and the associated EndNote® library for both an individual topic and a small group topic, and a final paper were posted to the wiki, essentially creating an Assignment Archive. Students were also encouraged to add other topics and information into the wiki, including their individual biography as one of the wiki authors and topics such as "People to know in Learning Technologies." This group is referred to as the "Assignment Archive" group in the analysis and results.

Data Collection

At the end of the course, each class was administered a questionnaire of 15 questions that targeted collaboration and learning. The questionnaire was developed by a group of educational technologists at the university who taught graduate courses and helped the university establish a university-based wiki for instructional purposes. A questionnaire was used in response to course constraints and preferences (e.g., being minimally invasive) and was anticipated to be available for other evaluation purposes by anyone using or researching the wiki tool at the university. The questionnaire was designed to understand students' perceptions of collaboration and learning when using the wiki as a tool within their coursework. In order to examine the wiki's potential role in collaboration, we asked students about their frequency of contributions and editing, their comfort with others editing or seeing their contributions, and their perception of the wiki facilitating collaboration with peers and instructors. We also aimed to understand the wiki's role in supporting learning. We sought students' perception of the wiki's effectiveness in helping them to learn and engage with course material as well as produce high-quality products. Because the wiki primarily relies upon writing text to share knowledge, we asked how students perceived wiki writing in comparison to word processing. Finally, the technology itself can introduce barriers in use, so we asked about students' perceived ease of use of the wiki technologies they used. If students felt unable to use the technology, such a technical barrier would inhibit learning and collaboration at the outset.

Demographic data including the students' academic level, academic major, and gender were obtained, and two open-ended questions provided students an opportunity to describe the ways in which they used the wiki and how they approached writing in the wiki.

Data Analysis

The questionnaire items were quantified using descriptive statistics: frequencies and percentages. The open-ended comments were transcribed, read, and coded to identify the common ideas or themes voiced by participants. To understand collaboration, we examined frequency data for eight questions relating to their frequency of contributions and editing, comfort with openness of information in the wiki, and open-ended descriptions of the way(s) they described using the wiki. To examine learning, we evaluated the frequency data from two questions concerning the effectiveness of the wiki toward learning content and producing high-quality assignment products. We also evaluated the data regarding wiki ease-of-use and student perceptions of writing (both a survey question and open-ended question) to determine if/how

such factors might have impacted student perceptions of learning. The draft of the results and manuscript were shared with the participating course instructors as a form of member-checking, both of whom confirmed the results and interpretation from their instructional perspectives.

Results

In order to determine the extent to which the wikis were used as computer-supported collaborative learning, a pedagogical possibility posited within the research literature in our sample of post-secondary courses, we examined the data to determine how the students perceived the wiki activity supporting collaboration and collaborative interaction between peers and teachers. In addition, we examined the degree to which they felt the wiki activity supported their learning.

Collaboration

In order to create an environment for collaboration, there must first be contributions to the wiki. The majority ($n = 10$) of Glossary students (83%) reported contributing their own ideas or resources to the wiki 1-3 times in the semester while the majority ($n = 10$) of the Assignment Archive students (86%) posted 4-6+ times (see Figure 1).

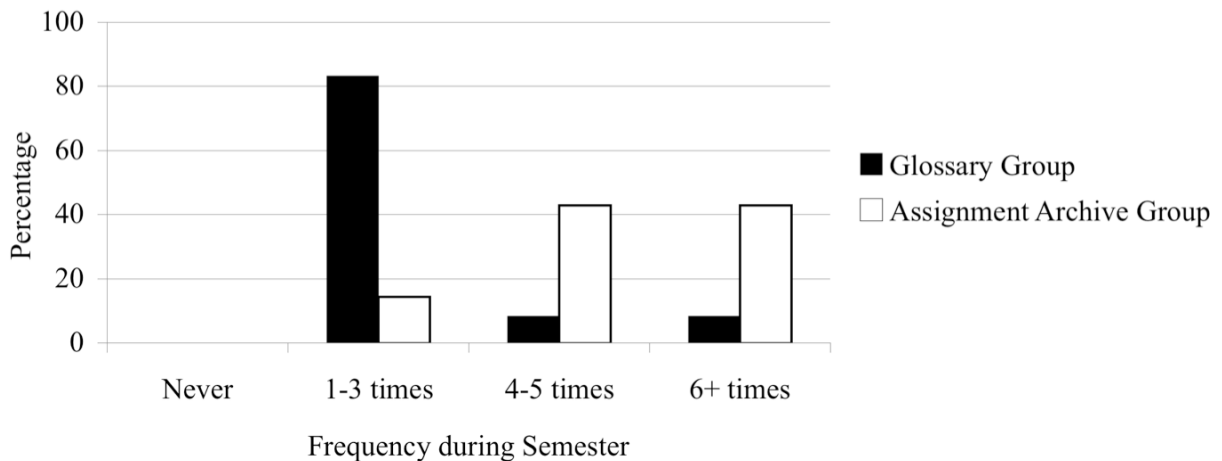


Figure 1. Students' contribution frequency of their own ideas to wiki.

Frequency of editing and changing wiki information occurred less often than posting original contributions. Two Glossary students (17%) indicated that they never edited or reviewed their peers' or the instructor's wiki contributions. Nine Glossary students (75%) and five Assignment Archive students (71%) did so 1-3 times, while one Glossary students (8%) and one Assignment Archive (14%) students did so 6+ times (see Figure 2.) The fewer changes that are made to the wiki pages, the less likely students will feel they are collaboratively working toward co-constructing knowledge and information. Rather, students would perceive the wiki as a static information collection and dissemination tool rather than a dynamic, knowledge-based learning community (Riel & Polin, 2004).

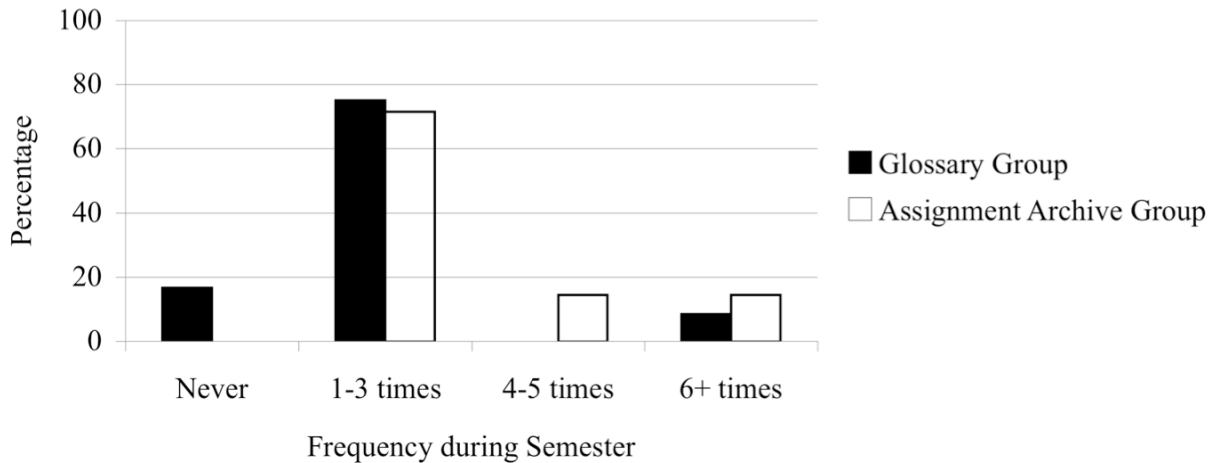


Figure 2. Students' edit/review frequency of wiki contributions.

Therefore, we also inquired of students' awareness of changes to the wiki in order to have indicators from students if they perceived the wiki as more than representative of their individual knowledge. Four (33%) Glossary students and three (43%) Assignment Archive students remained unaware of whether or not their own individual contributions had been changed in any way on the wiki (see Figure 3), suggesting that these students had not returned to their topic contributions to "police" them and/or just observe if changes had been made. In Wikipedia, contributors may hold strong feelings about their contributions or the topic to which they have contributed and "police" the site often to change any information perceived to be incorrect. Three Glossary students (25%) and one Assignment Archive students (14%) indicated that their contributions remained unchanged, while about half ($n = 5$) of the Glossary students (42%) and three of Assignment Archive students (43%) reported their contributions had been changed by others (see Figure 3). These results do not strongly indicate that collaborative knowledge construction was occurring in both groups.

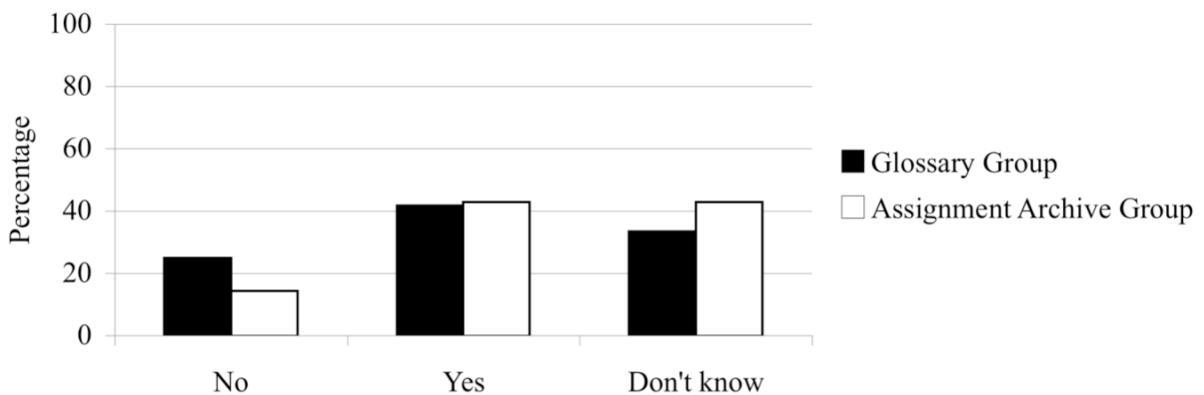


Figure 3. Students' reporting wiki contributions edited/commented by another student/instructor

However, the Assignment Archive group's wiki use appeared to be more inclined toward collaborative co-construction of knowledge due to their reported higher frequency of wiki changes (see Figure 2) and their greater degree of comfort with others editing their contributions (see Figure 4), whereas six of the Assignment Archive students (85%) indicated that they were very comfortable with the process of others editing their contributions, and none were uncomfortable at all with the editing process. The Glossary students reported more variation of comfort and discomfort with the open editing of individual contributions.

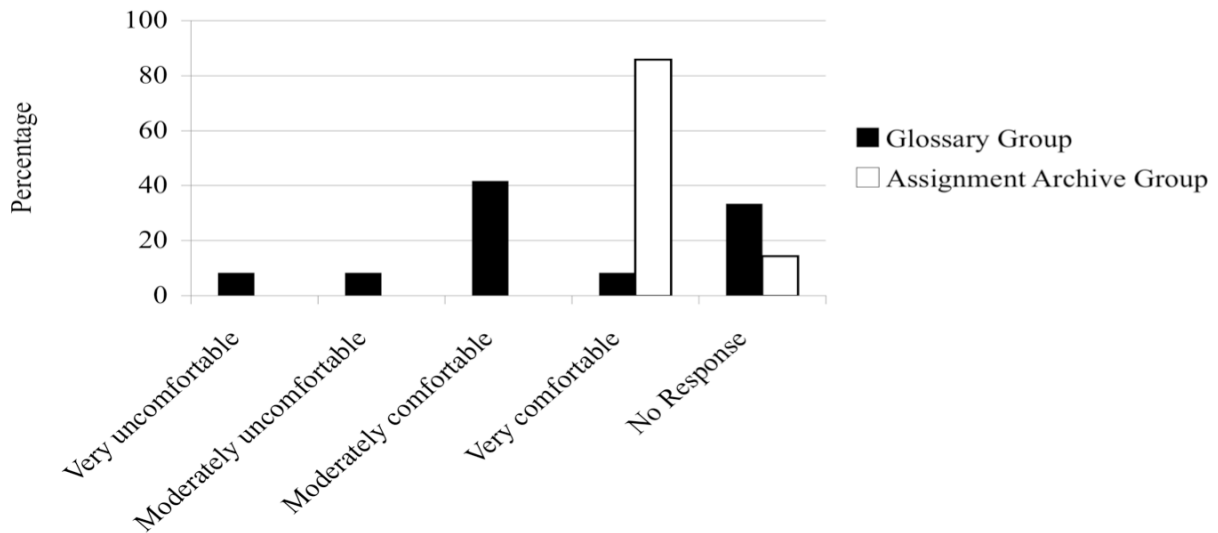


Figure 4. Students' comfort level with edits/changes by other students/instructor

Surprisingly though, the Glossary students reported perceiving the wiki as a technology that eases collaboration with peers and teachers more than the Assignment Archive students' perception, demonstrated in the visual skew in Figure 5. This is an unanticipated result given that the Glossary students reported wiki use that did not exemplify collaboration, such as infrequent editing of others' submissions and their reported discomfort with others editing their contributions despite the instructor's intent for the glossary to be co-constructed. Furthermore, the nature of the task, to create a glossary, may be disposed toward less collaboration as compared with the Assignment Archive group's task. Thus, we had expected to see Glossary students' perceive the wiki to "neither help nor prevent" or to be "more difficult." Seventy-one percent of the Assignment Archive students perceived the wiki as neither helping nor preventing collaboration.

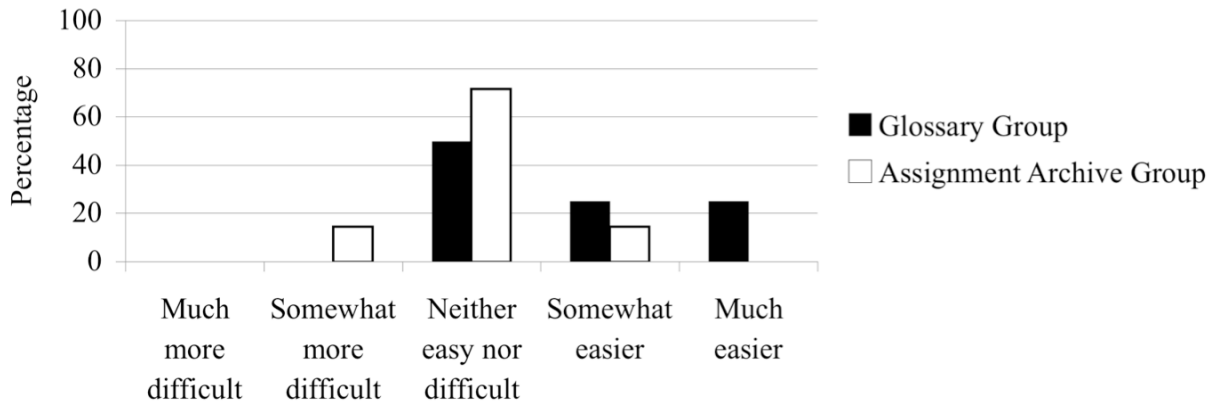


Figure 5. Students' perception of wiki's enabling collaboration with other students/instructor

The way in which the question was posed to the respondents implies a comparison to their course without the wiki, so we suspect respondents' perceptions are related to the degree of collaboration possibilities in their face-to-face courses. Therefore, it is possible the Glossary students, while they did not use the wiki in ways that might be associated with "collaboration," may still have perceived a greater opportunity for collaboration than what they were experiencing in their face-to-face class. In a similar vein, the Assignment Archive students may have been experiencing a sufficient amount of collaborative activities within their face-to-face course to make students perceive their wiki activity as neither making it more or less difficult to collaborate. The lack of face-to-face class observations limits our ability to make strong interpretations of this surprising finding, and we would encourage future research to include field-based observations as part of the procedures and measures.

Learning

Our conceptual frame did not assume the wiki use supported only collaborative activity, so there was room to understand if students perceived the wiki activities supporting their learning of course content, regardless of its ability to support collaboration. A majority ($n = 11$) of Glossary students (92%) and four Assignment Archive students (57%) felt that the wiki was moderately effective in helping them learn/engage with the course, and an additional one Assignment Archive student (15%) felt it was very effective (see Figure 6). The Glossary students' overwhelming feeling that the wiki activity helped them engage and learn is interesting given the fact that few of them reported returning and editing or elaborating on their original posts. However, the "jigsaw" approach to cataloguing definitions of key terms in the wiki may have assisted greatly in the Glossary students' developing knowledge of interface design. Clearly, co-construction of the knowledge terms is not a necessary activity for these students to feel a learning advantage from the wiki use. The Assignment Archive students' perception indicated wider variation but still skewed toward the wiki being moderately or very effective in assisting learning.

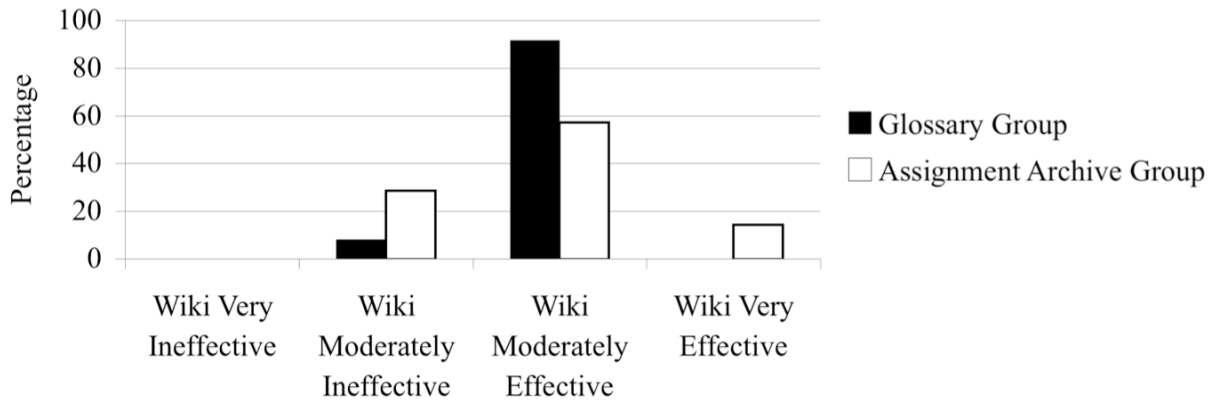


Figure 6. Students' perception of wiki's effectiveness in supporting learning and engagement with course content.

Underlying the Assignment Archive students' perception of the wiki being slightly less effective with their learning may be due to the 43% also feeling the wiki was less effective in producing quality assignments. Eight of the Glossary students (67%) tended to feel that the wiki was equally effective as other tools to produce quality assignments (see Figure 7).

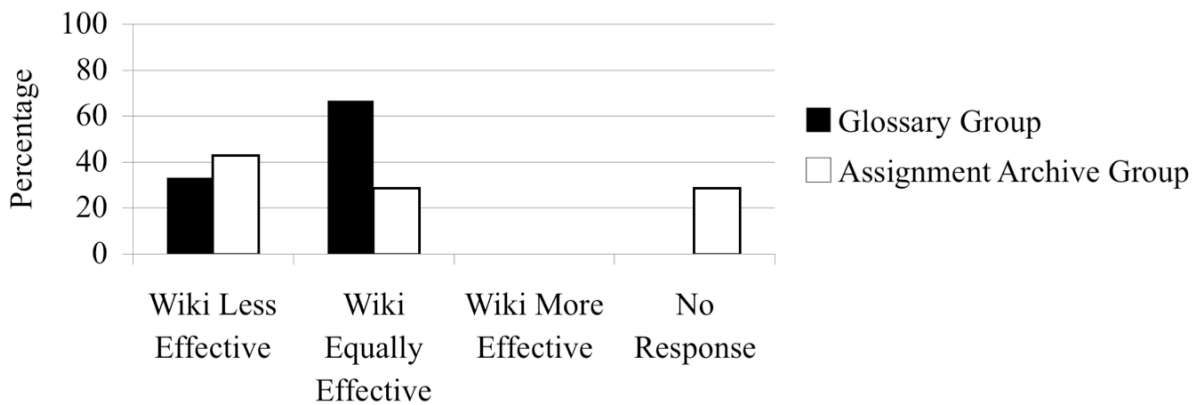


Figure 7. Wiki's role in producing quality assignments.

Overall, the Assignment Archive students used the wiki in their course in a way that could be described as more closely associated with computer-supported collaborative learning in which the students co-constructed knowledge within a community of learners using digital tools, the wiki in this case. They engaged in more original contributions as well as more edits/elaborations to others' posts, though they did perceive the wiki, overall, as not supporting collaboration in any way better than other (assumedly, face-to-face methods). Finally, they reported more modest perceptions of the wiki supporting their learning and engagement and

supporting the development of high-quality assignment products.

The Glossary students, on the other hand, used their wiki more as a knowledge storage area in which individuals would post original contributions, and there was less editing/elaborations to these posts by others in their course. Interestingly, though, they perceived a positive outlook for the wiki technology as better supporting collaboration efforts. They also perceived the wiki as more effective in helping learning and engagement.

Several technical variables may have impacted the perceptions of these two groups of students. As described earlier, the two courses used different wiki technologies, with the Glossary students using a commercially available wiki, specifically pbwiki.com, and the Assignment Archive students used an open-source wiki, twiki.org, installed and maintained by the university. One of the main differences between these technologies at the time of use was the editing features, in that pbwiki used a WSIWYG (What You See Is What You Get) editor, while twiki required the use of HTML (HyperText Markup Language) and Wiki Language. While we did not ask students about their technical backgrounds, one might assume the Assignment Archive students who were enrolled in a Learning Technologies program would be more technically-adept and may have perceived the additional challenge of HTML and Wiki Language insignificant. However, our results do not support this assumption, as we discovered the Assignment Archive student group perceived more hardship in learning and continuing to use the twiki (see Figures 8 and 9).

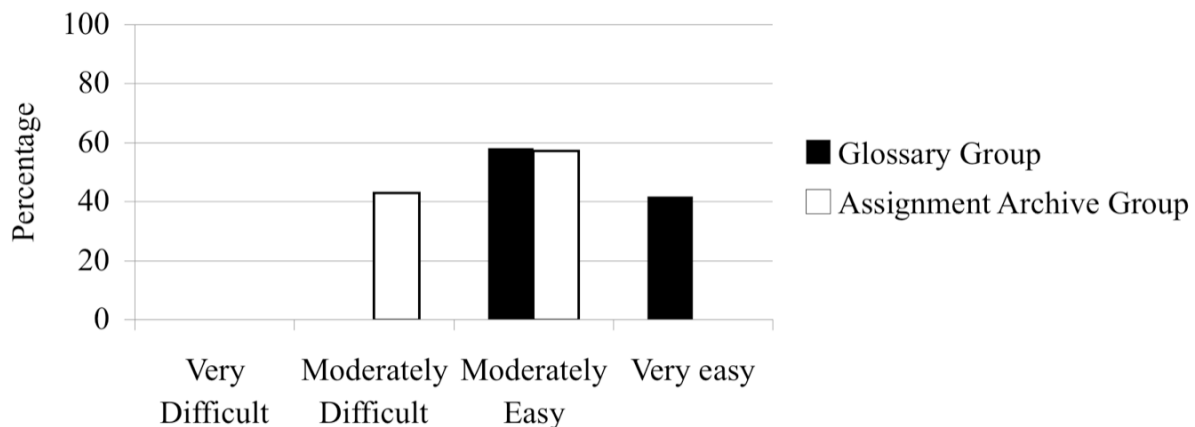


Figure 8. Difficulty in initially learning how to use wiki

All of the Glossary students felt it was moderately or very easy to initially learn to use the pbwiki, while the Assignment Archive students were split between finding twiki moderately difficult or moderately easy (see Figure 8). After their initial learning how to operate the respective wiki software, the trends were maintained (see Figure 9) with more of the Glossary students (67%) finding pbwiki very easy to use. The Assignment Archive students' perceptions of twiki ease of use remained unchanged after initially learning it with a continued three Assignment Archive students (43%) finding twiki moderately difficult and four (57%) finding it moderately easy to use.

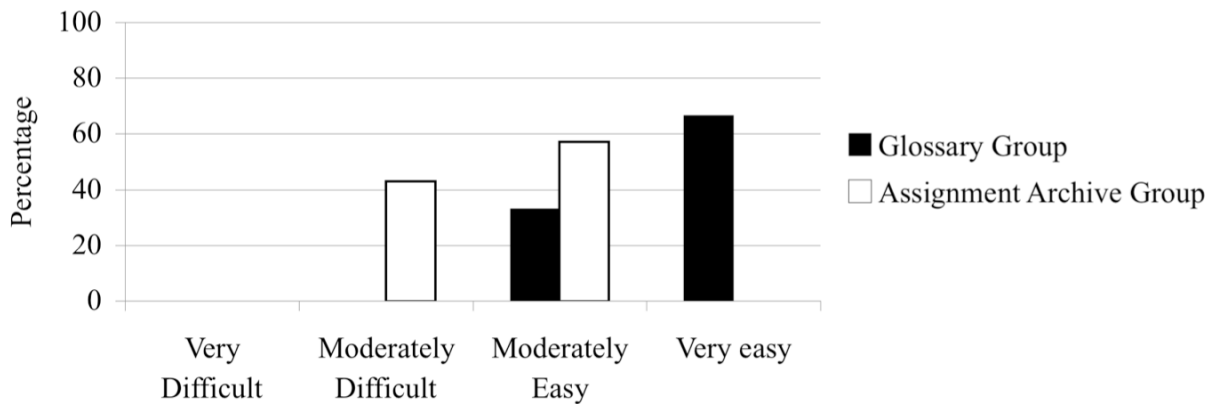


Figure 9. Difficulty in using wiki after learning how to use it.

Students' comparisons of writing in the wiki versus in a word processor, such as MS Word, further supported the wiki difficulty. Six of Assignment Archive students (85%) found using a word processor more enjoyable to write (see Figure 10.) In fact, in one of the open-ended survey questions, six of the seven Assignment Archive students reported using other technologies (MS Word, Dreamweaver, HTML) to compose their contributions, view and copy the HTML code, and then paste the HTML code into the twiki in order to avoid the Wiki Language editing. Assignment Archive students, in reference to the Wiki Language, felt "the wiki language was frustrating," "hard to use or too complicated," "Wiki markup was not very standard nor easy," and "wiki not a place to write." Seven of the Glossary students reported composing within the pbwiki, and five reported using a combination of MSWord and the wiki, mostly for spell-checking. Five of the Glossary students (42%) felt that the wiki was more enjoyable to write within, indicating a more positive ease-of-use by some. None of the Assignment Archive students felt the wiki was more enjoyable.

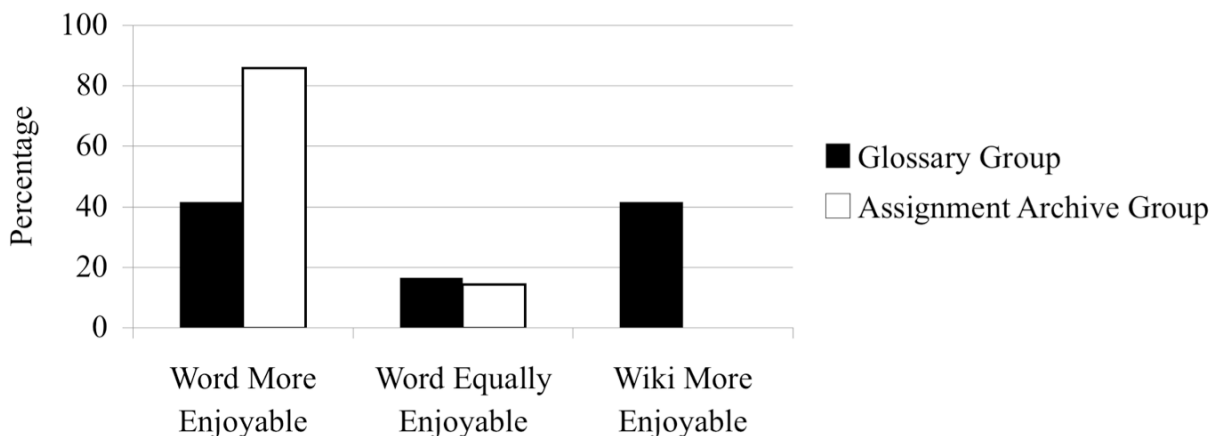


Figure 10. Comparing wiki editor with word processing (e.g., MS Word).

Conclusion and Discussion

While the theoretical and research literature posits that wiki technology supports collaborative learning (e.g., Beldarrain, 2006; Chen et al., 2005; Higgs & McCarthy, 2005), wiki use does not always have to be collaboratively enacted for it to be perceived as supportive of learning. The Glossary group of students used pbwiki to create a definitional glossary and reported less co-construction of concepts (thus, less collaboration) yet perceived the wiki technology as moderately effective in helping learning and engagement with course concepts. The Assignment Archive students held similar views of the wiki being moderately effective in helping learning and engagement with course concepts while they reported more evidence of collaborative co-construction of knowledge across the semester's course. Therefore, while the wiki technology is touted as a web 2.0 technology whose "essence" is collaborative co-construction, this study demonstrates that the wiki can be adopted for a wider range of pedagogical uses that may not involve a high degree of collaboration and still hold perceived positive learning impact. Due to the small sample size in both groups, the results cannot be extrapolated widely to contexts that are unlike the instructional situations described here, and we encourage more research on wikis' instructional and learning possibilities in order to build a larger knowledge base.

In future research, we recommend including field observations of the courses in which the wikis are used in order to understand the nature of pedagogy (including nature and degree of collaboration) which occurs within the face-to-face instruction. This expanded view would provide a useful frame for understanding the respondents' views of how the wiki may or may not be playing a role in collaboration among students and instructors. Rick and Guzdial (2005) found that the culture of the classroom or discipline impact the effectiveness of CSCL, such as a wiki. This practical suggestion for in-class observations reflects the study's finding that the Glossary group, who used the wiki in less collaborative ways, still held very positive perceptions of wiki technology's ability to enable more collaboration between peers and teacher(s). We wondered if the Glossary students' modest co-construction and reading of others' posts might have been perceived as much more collaborative than what they experienced in their face-to-face course. It is also possible that students collaborated face-to-face on their glossary entries and then posted but did not engage in review or editing of peers' entries. Similarly, the Assignment Archive group who reported more collaborative use of the wiki, overall, perceived the wiki as neither helping nor preventing collaboration, again introducing the question about the nature of their face-to-face experiences.

The study's findings indicate that technical aspects of wiki technology may have a strong influence on the students' perceptions of the wiki for learning and collaboration. The Assignment Archive group's slightly less positive perceptions of the wiki's effectiveness for learning and collaboration, as compared with the Glossary group's more positive perceptions, may have been tempered by the Assignment Archive students' use of twiki which had a more difficult editor. Assignment Archive students reported more difficult learning and continued use of twiki in comparison to the Glossary students' use of pbwiki with a WSIWYG editor.

In future research of wiki use, we encourage collecting data and tracking individuals' contributions so that research might correlate individuals' frequency and type(s) of wiki activity with individuals' perceptions of the wiki's role in supporting collaboration and learning. In that way, the research might identify specific profiles of use that lead to greater gains in learning.

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Appendix A
Student Survey

Students' Experiences with Wikis

Instructions

Please answer the following survey questions considering your experiences using a wiki in your class during spring semester 2006.

I. Perceptions of Wiki Use

1. How easy or difficult did you find it to **learn** to use the wiki initially?

- Very easy
 Moderately easy
 Moderately difficult
 Very difficult

2. Once you initially learned to use the wiki, how **easy** or **difficult** did you find it to use the wiki from that point on?

- Very easy
 Moderately easy
 Moderately difficult
 Very difficult

3. Compared to composing class assignments using word processing software like Microsoft Word, how **enjoyable** is the writing process using the wiki?

- Writing using the wiki is more enjoyable
 The two are similarly enjoyable
 Writing using a word processor is more enjoyable

4. How **effective** or **ineffective** was using the wiki in helping you to learn or engage with the course material?

- Very effective
 Moderately effective
 Moderately ineffective
 Very ineffective

5. Compared to other products/assignments you have created for courses, how **effective** is using the wiki at producing high-quality products/assignments?

- Using the wiki is more effective
 The wiki is similarly effective to other tools
 Writing using other tools is more effective

II. Collaboration in the Wiki

6. During the entire semester, how **frequently** did you contribute your own ideas or resources to the wiki?

- More than six times
 Four to six times
 One to three times
 Never

7. During the entire semester, how **frequently** did you edit or comment on the contributions of other students or instructor to the wiki?

- More than six times
 Four to six times
 One to three times
 Never

8. During the entire semester, were your own contributions to the wiki edited or commented on by another student or instructor?

- Don't Know
 Yes
 No

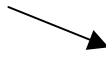
—————▶ **If no, please skip to question #10.**

9. If your contributions to the wiki were edited or commented upon by another student or instructor, how **comfortable** or **uncomfortable** were you with this process?

- Very comfortable
 Moderately comfortable
 Moderately uncomfortable
 Very uncomfortable

10. How **public** was your work in the wiki?

- Completely public (viewable by anyone in the world)
- Somewhat public (viewable only by a large group, such as anyone at the University)
- Minimally public (viewable only by your classmates and instructor)
- Not at all public (viewable only by you)
- Don't know



If you don't know, please skip to #13.

11. How **comfortable** or **uncomfortable** were you with this degree of publicity?

- Very comfortable
- Moderately comfortable
- Moderately uncomfortable
- Very uncomfortable

12. Would you have preferred a different degree of **publicity** for your work in the wiki?

- Yes, I would have preferred **more** publicity
- Yes, I would have preferred **less** publicity
- No, the level of publicity was fine

13. To what degree of **ease** did using the wiki enable collaboration with other students or your instructor?

- Much easier
- Somewhat easier
- Neither easier nor more difficult
- Somewhat more difficult
- Much more difficult
- Not applicable

14. Please describe the ways in which you used the wiki in your class. For instance, did you collaborate with other students on class projects? Did you use it in the project-planning process (e.g., to maintain task lists, timelines, outlines, or other process documents)?

15. Describe how you approached writing in the wiki. Did you learn and use the wiki language? Or did you use another method, such as writing in Microsoft Word first?

III. Background Information

16. What is your academic level at the [University]?

- Graduate student
 Senior
 Junior
 Sophomore
 First-year
 Other _____

17. What is your academic major? _____

18. What is your gender?

- Female
 Male

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ⁱ Some students did not complete demographic items and thus, there are some non-responses within the participant pools.