Using Wiki Technologies as an Adjunct to Computer Conferencing in a Graduate Teacher Education Course

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Abstract: The current study examines an online course in which a Wiki environment was used in conjunction with computer conferencing to facilitate the collaborative investigations. The course was comprised of 15 teachers who worked together to develop Wiki pages that explored educational issues relating to the topic of knowledge building. Data were collected from three sources: the contents of the Wiki and computer conference, an online questionnaire that the students completed anonymously, and student interviews. Preliminary results suggest that Wikis may be superior to traditional computer conferencing in terms of focusing learner discourse and promoting deeper learner investigations. It is argued that the design of the Wiki interface is conducive to progressive, collaborative knowledge advancement.

Introduction and Theoretical Framework

In recent years, asynchronous computer conferencing has emerged as a popular means of engaging students in discourse-related activities in distance education courses. For the online learner, this typically involves contributing textual messages to a shared electronic discussion area and responding to the messages that other people in the class have posted. This allows students to participate in ongoing course discussions about a wide variety of educational problems and issues. For the course participants, computer conferencing offers a way of fostering communication between geographically-separated members of the class while also allowing people the convenience of participating from home, and at times of their own choosing (Kaye, 1989; Harasim, 1987, 1989).

Despite the success and increasing popularity of computer conferencing courses, online discourse is not without its problems. Researchers are now beginning to identify some of the limitations associated with asynchronous electronic interaction. These include:

1. Information overload: Online participants often complain about lack of time and the large number of messages that they have to read each week.
2. Lack of discourse synthesis / Lack of discourse resolution: Hewitt (2001) found that students tend to take the easier path of adding on to existing discussions, rather than engaging in cognitively more complex processes, such as summarizing and synthesizing. “Adding on” is simpler and requires less intellectual effort than summarizing, which requires the analysis of many notes. Consequently, discussions tend not be resolved or reach a satisfactory conclusion.
3. Discussions often lack direction and go off-topic: Herring (1999) observes that both asynchronous and synchronous online interaction is often disjointed. Hewitt (2003) proposes that this phenomenon is largely a product of situations in which contributors focus primarily on the last few messages in a threaded discussion without taking into account earlier contributions.

Because of these problems, some researchers are now exploring the educational potential of other kinds of collaborative online environments, such as Blogs and Wikis. The current paper focuses on Wikis and their usefulness in relation to computer conferencing and the aforementioned problems. A Wiki environment is a set of web pages that any member of the class can edit. A behind-the-scenes discussion area is associated with each Wiki web page so that the contributors to the web page can discuss the page’s contents and plan its development. Perhaps the most well-known and popular Wiki is the Wikipedia (http://en.wikipedia.org/wiki/Main_Page), but smaller Wikis can also be created that are only accessible to a limited group of people, such as an online class. This paper reports on how a Wiki was used in conjunction with computer conferencing in an online class to facilitate collaborative explorations.

Methods and Data Sources

The experiment with Wikis took place in a graduate distance education course at the Ontario Institute for Studies in Education at the University of Toronto. The course took place between September and December of 2005. Each week, the course participants (who were practicing teachers) engaged in online asynchronous discussions about topics related to knowledge building. Each student in the class was also responsible for developing at least one page in the class Wiki. Students selected a problem related to the central course topic (Knowledge building in classrooms and other educational contexts) and then explored that problem, in depth, on their Wiki page. For example, one student chose the problem, “How can knowledge building be implemented in the musical arts?” Another asked, “What school culture will sustain the necessary changes that promote a classroom-based knowledge building community?” Over the course of a month, the students regularly worked on refining their pages. In addition to building their wiki pages, students were also expected to review other people’s pages, as they developed, and provide comments and suggestions for their classmates. The product of this work was a series of highly interlinked webpages that explored knowledge building from over a dozen different perspectives.

The goal of the research was to explore how learners experienced their work in the Wiki environment and how the Wiki differed from that of the Computer Conference. Data were collected from three sources: the contents of the Wiki and computer conference, an online questionnaire that the students completed anonymously, and student interviews.

Results

The data are still in the process of being analyzed, but some findings have already emerged:

1. A total of 76.9% of the participants either agreed, or strongly agreed, that discussions in the Wiki were more focused (i.e., less likely to go off-track) than discussions in the regular computer conference. As one student commented, the “structure of the Wiki” is more likely to focus discussion. There is not as much opportunity for random discussions”.
2. When asked whether information overload was a bigger problem in the computer conference or in the Wiki, 23.1% chose the Wiki, and 38.5% chose computer conferencing. The remaining students either felt that the level of information overload was the same, or were unsure which environment was worse in this respect.
3. An analysis of the contents of the Wiki and tracking data associated with the Wiki revealed that the average web page was edited 28 times. In comparison, the average message in the computer conference was only edited 1.2 times.
Collectively, these results suggest that Wikis may serve as useful environments for engaging students in collaborative activities that involve in-depth analysis of particular problems.

Discussion

Computer conferencing is primarily an "add-on" medium, in which students simply respond to messages that previous students have submitted. Rarely do students attempt to rework, reorganize, synthesize, or summarize online discussions (Hewitt, 1999). Wikis, on the other hand, appear to better facilitate the constant reorganization of ideas. There is an expectation, within a Wiki environment, that each student will constantly improve his or her webpage in an attempt to create as thorough a response as possible to their chosen problem. Thus, Wikis arguably foster continual improvement and depth of investigation.

Computer conferencing, on the other hand, involves extending what has already been discussed, rather than reworking or reorganizing it.

It is hypothesized that it requires more intellectual effort to make a substantial comment on another person's Wiki page than it does to make a substantial comment in a computer conference. To make a valuable comment on a Wiki page, one must understand the contents of that page fairly well and then provide new ideas that help the author make progress on the problem-at-hand. In contrast, in a computer conference there is no central object that is being progressively refined. The goal of students in a computer conference is often one of simple participation, rather than one of making disciplined progress toward the development of an artifact (Hewitt, 2005). It is perhaps not surprising, therefore, that the online participants felt that discussions in the Wiki were more focused and purposeful than those in the computer conference.

The problem of Information Overload, which is commonly observed in computer conferencing environments (Paulo, 1999) may be less pronounced in Wiki environments, although the data is unclear on this point. One of the advantages of Wiki environments is that the ongoing discussions are largely hidden from view. Online participants must select a wiki page to work on before they can access the discussion that is associated with that page. This may reduce the learner’s perception of Information Overload because discussions are only accessed as they are needed, and they tend to be tightly focused on particular subjects. Further research on this issue is required.

Conclusions and Educational Significance

Initial findings suggest that Wikis may offer instructors a useful means of engaging students in tightly focused collaborative analyses of course materials. Wikis contain two different kinds of artifacts: web pages (which record the ideas that learners produce) and discussions (in which learners discuss how to best improve their ideas). Computer conferences, on the other hand, only contain discussions. If the educational goal is to promote in-depth collaborative analysis of a particular subject, Wikis may be useful, since each Wiki page can be used to record the student’s best current understanding of the problem, and the associated discussions can be used to try to further that understanding. This format encourages deep investigations that are supported by peer discourse. The limitation of computer conferencing is that there is no central representation of the student’s “best understanding” to be worked on and improved.

References


