

Wikis—Collaborative Learning for CS Education

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SUMMARY

Wikis may be on track to take the academic world by storm. Though researchers have used them as collaborative tools for more than a decade, it is only in the past year or two that they have become widespread in education. Of the articles published by SIGCSE on wikis, nearly two-thirds (30 out of 46) of them gave appeared since the beginning of 2006. References to wikis in the educational database ERIC are approximately doubling each year.¹ What is it about wikis that has suddenly made them so attractive? Among other things, it is the fact that collaboration becomes so easy. Students have the opportunity to revise each other's work without the need to send documents back and forth. Because an edit history is kept, it is easy to see how much work each student has done—and to verify that it has not been downloaded from a third-party source on the eve of the due date. Wikis have been used for a wide variety of assignments, from discussion boards to writing a textbook from student contributions. This panel will present several collaborative-learning exercises that have been carried out with wikis, and give advice to instructors who want to use wikis in their classes.

Categories and Subject Descriptors

K.3.2 [Computers and Education]: Computer and information science education, Curriculum. K.3.1 [Computer Uses in Education]: Collaborative learning.

General Terms

Measurement, Documentation.

¹ In both databases, the count is of articles that mention “wiki” in the abstract. Since 2003, ERIC has indexed 1, 2, 6, and 13 articles in successive years; there were 9 in the first 5 months of 2007.

Keywords

Cooperative learning, wiki, active learning

1. ED GEHRINGER

I was drawn to wikis by my interest in collaborative strategies that would allow students to produce reusable learning objects for the benefit of students in subsequent classes. In my Ethics in Computing class, students analyzed ethical issues, such as “biometrics and privacy of genetic data” and “software safety: accident models.” My experience was that this class did a much more thorough job collaborating in groups of two or three than previous classes had done submitting individual assignments without collaboration in writing. The completed assignments were posted on our Ethics Web site, ethics.csc.ncsu.edu.

Currently, I am using a wiki to have a class update a 9-year-old text on parallel computer architecture [1] (which, though dated, is still the best text in its field). In my o-o design class, students are using a wiki to develop an annotated index to Web-based resources for learning a host of design patterns and design principles.

I am interested in various strategies for assessing wiki contributions, especially peer review. Our Expertiza peer-review system [2] spiders a wiki, presenting each student with a fixed number of other students' work to review. We are comparing peer review with other strategies for assessing student work contributed to wikis. In my presentation, I will present the results of surveys evaluating how much the students learned through their collaborative wiki assignments. I will compare my classes with others that have used wikis, and show how peer review helps such collaboration by giving the students timely feedback on how to improve their work.

2. LILLIAN CASSEL

The Web offers a wealth of material that could supplement a student's learning resources and virtually unlimited sources of poorly presented or even wrong information. While students are learning to search for supplementary material, it is important for them to develop the habit of evaluating what they find and sorting the good from the bad.

Over several semesters teaching a course in Computer Networks, I found it useful to require students to find relevant supplementary material on the Web, post a link to the resource, and submit it for review by their fellow students. Each student was required to find materials and also to review materials found by their classmates. I used a Wiki page to support the student effort. Each student used the Wiki to post a link along with a brief summary of the site found. Each student then followed links posted by others and supplemented the original posting with a review of the resource. Each student was required to find at least one resource and to review at least two resources found by others. The requirement was modest, but I offered extra credit for extra resources found or reviewed. The result was an incredible list of resources to supplement the materials I had for the course. The activity on the site in one semester exceeded the capacity of the Wiki and I had to make a supplemental site.

The sites that the students found included reviews of products, tutorial introductions to supplementary material, articles proposing new protocols or touting the benefits of products. Student reviews of resources considered the usefulness of the material found, and also evaluated accuracy and possible bias. The students learned more about networking, but also about critical evaluation of what they find.

Sadly, the site was spammed after the class was over and all the resources there were lost.

The lesson: Wikis offer opportunities for collaborative and shared work for a class. Unfortunately, care must be taken to protect the materials recorded in a Wiki. The idea of an open and freely editable resource is not realistic if it is found by unscrupulous invaders. Wikis are valuable tools, but care must be taken in their deployment.

3. KATHERINE DEIBEL

Wikis can be a powerful tool for supporting ongoing student discussions even in the face of challenges due to time and physicality. In Autumn 2006, I was the graduate teaching assistant for a masters-level course on the history of computing [3]. This course met one evening a week and was distributed through real-time video to three other sites: Microsoft Campus at Redmond, University of California, Berkeley, and University of California, San Diego. Because the course goals were to teach more than just facts but to also encourage ongoing discussion and analysis about the history of computing, we opted to use a wiki [4] to allow and promote ongoing communication between the students at the different campuses. The wiki helped to connect the geographically separated students as well as to provide continuity between the weekly lectures.

For each week, a wiki page was created for that lecture with students contributing to the wiki in one of two ways. Usually 5-10 students were chosen to be experts for that week and wrote short essays on the lecture's topic and prepared discussions questions for in class and on the wiki. Secondly, all students were expected to contribute to wiki discussions for each week: asking questions, answering questions, elaborating on previous

comments, etc. To spur discussion, I (as the TA) would seed the talk page with a few questions or topic points. Invariably, the students would create new threads of discussion beyond my initial suggestions. The three instructors would also contribute to the talk pages, even mentioning the wiki discussions in lectures at times.

The students were allowed to use the wiki for other purposes as well. Some students created pages for topics not covered in the course, such as the role of science fiction media in the development of computer technologies. Several student groups wrote their project papers collectively on the wiki. This was particularly helpful for groups composed of students from different campuses.

Overall, the wiki was a success at fostering rich discussions in this distributed course. In this panel, I will discuss how the course wiki was used to support these discussions. I will also discuss the logistic, practices, and challenges associated with managing a course wiki. This discussion will include keeping track of student participation, wiki security, and what I would do differently next time.

4. WILLIAM JOEL

Wikis can be used as an alternative tool for student presentations. For example, as part of a course I taught, Living in a Digital World, students were required to create a display concerning the stories surrounding selected "antique" personal computers. But not everything they found in their research could fit into the display case. Therefore, they were also required to create a wiki to expand on what the display contained. This use of a wiki provided the students the opportunity to not only put more of their work into a final product, but to also be able to present their findings via multiple modalities. In addition, the wiki itself can have a longer "shelf life" than a simple display, which may exist for no more than a few years.

5. REFERENCES

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