

The Wiki as a Collaborative Educational Tool

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Q. How many Wiki people does it take to change a lightbulb?

A. One, but anyone can change it back.

—langreiter.com

Abstract

A wiki is a powerful and flexible collaborative communication tool for creating and developing content-specific web sites. As, by definition, a wiki can be viewed and edited by most anyone with a web browser and access to the Internet, it can also be an easy and effective online collaboration tool in education, allowing students to engage in collaborative activities that might not be possible in a classroom setting.

This paper begins with a brief introduction on wikis and how they work, followed by a short discussion on their general applications to education in terms of content, design, use, and potential risks. The presentation will then showcase a wiki project carried out at Dokkyo University by the author. In this project, a wiki host was used to provide multiple group wiki websites for a class of students working in groups and carrying out research into a variety of topics dealing with language education. The rationale behind incorporating wikis into this course will be discussed, along with an examination of what elements of the wikis used proved to be the most valuable towards successfully meeting the specific needs and goals of the course.

Introduction

What is a wiki? Simply said, a wiki is a small piece of software (little more than five lines of computer code) that you can download for free and use to make a website that can be edited by anyone you like. But most people would probably recognize a wiki as a fully editable website, a sort of web site and Word document combined, where any user can read or add content, thus making it an excellent tool for collaboration in an online environment.

The most recognized wiki, and possibly the most important site on the web today, is Wikipedia (Fig. 1). Started in 2001, it currently contains over several million articles.

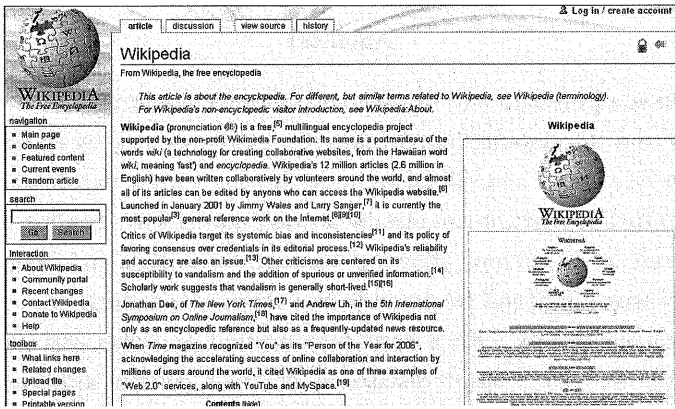


Figure 1: Wikipedia

Using the term “wiki” (after the Hawaiian term for “quick”) to name the collaborative tool he developed for use on the Internet in 1994, Ward Cunningham was looking to create an easy authoring tool that might encourage people to publish (Richardson, 2006). He believed that users of any given product were like the proverbial blind men feeling an elephant.¹⁾ Their knowledge was far greater than the sum of the parts—if only you could piece it together in the right way (Taylor, 2005).

How a wiki works

A wiki is a powerful and flexible collaborative communication tool for creating and developing content-specific web sites. Wikis are fully editable websites. The users of a wiki can visit, read, re-organize, and update the structure and content (text and pictures) of the wiki as they see fit. This functionality is referred to as *open editing* (Leuf & Cunningham, 2001). As all a user needs to view and edit a wiki is a web browser and Internet access, wikis can be an easy and effective online collaboration tool in education, allowing students to engage in collaborative activities that might not be possible in a classroom setting.

A wiki will basically have two states, view and edit. The default state of a wiki is the *view state*. In view state, a wiki page looks just like a normal web page (Fig. 2). When a user wishes to edit a wiki page, they click on the edit button on the wiki page to bring the wiki to its *edit state* (Fig. 3), make the necessary changes, and then click on the save button to bring the wiki page back to its view state, incorporating the changes made to the page.

In addition to this ease of editing, another powerful side of a wiki is its ability to keep track of the history of a document as it is revised. As

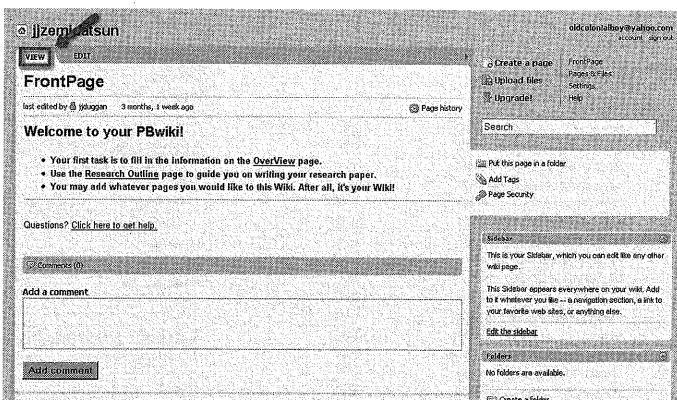


Figure 2: A wiki in its view state

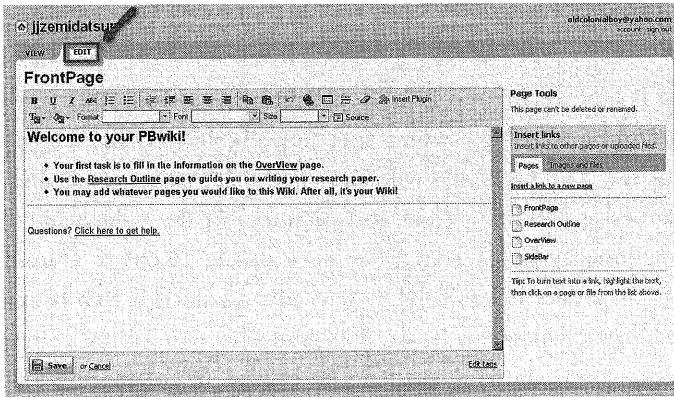


Figure 3: A wiki in its edit state

wiki users come to one place to edit and make changes to the document, the need to keep track of text files and edits is no longer necessary. A wiki will keep track of any changes made to its pages. Each time a change is made to a wiki page, that revision of the document by default becomes the current version, and the older version is stored by the wiki (Fig. 4). This allows wiki users to compare versions side-by-side and even “reinstate” older versions if necessary.

As such, wikis require a group to work collaboratively, rather than

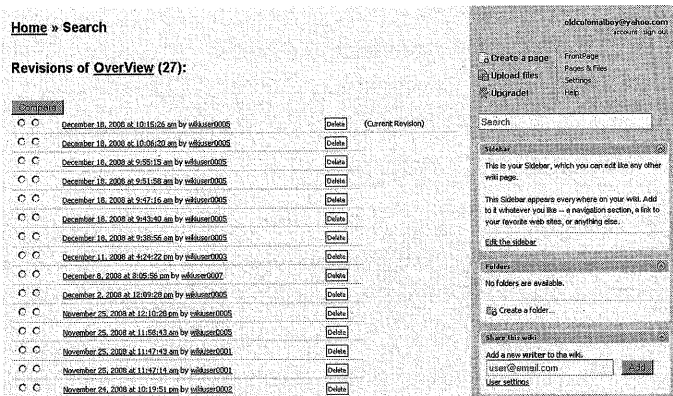


Figure 4: The history of a wiki page

cooperatively. In a cooperative group, users work together in a highly structured way, each taking on a different role. These roles are usually well defined and do not overlap, the goal being to produce a joint outcome. In contrast, in a cooperative group, users may be working towards a similar goal as in a cooperative group, but the process is different. Users produce a joint product through shared understanding.

Applications to education: Motivating factors and advantages

“It has been recognized that CALL (Computer Assisted Language Learning) can positively influence language learner motivation” (Alm, 2006). Alm explains that Internet-based language learning environments can be motivating because of their potential to support basic human psychological needs of competence, relatedness, and autonomy to develop a sense of self. As working with a wiki will “empower students with authority to construct their own knowledge” and “by having all the necessary resources and help available in the wiki, students will no longer have to depend exclusively on the teachers but will be responsible for creating their own knowledge” (Zorko, 2007), wikis appear to meet the definition of a motivation-enhancing language learning environment. As further motivation, Zorko (2007) submits that students are more apt to carry out their class assignments if they know that their work will be seen by a wider audience. “Displaying group products in the wiki will generate greater effort and consequently better products” (Zorko, 2007).

In addition to being motivational, Zorko (2007) points to some of other advantages the use of wikis in educational environments can have:

- Promoting peer interaction by providing students with a virtual location for collaboration, thus encouraging equal contribution to written products and decision-making.
- Facilitating the sharing of knowledge, by enabling all the students to see how the various groups are tackling problems and sharing

ideas. Group products will therefore reflect not only the shared knowledge of one group but also of all students.

- Enabling teachers to better assess a student’s progress, as the assessment of individual contributions can sometimes be difficult. The wiki’s tracking of the history of the wiki editing process will enable a better assessment of each student’s work and participation.

As with any technological tool, applicability to the classroom is key. Instructors must ask themselves the questions of “Is there a need to be filled?” and “Is there a technology that can fill this need?” In the next section, we will look at some examples of how wikis have been used in educational settings.

Examples of wikis in education

Wikis have been shown to have various applications in educational environments.²⁾ They can be used as a tool for the dissemination of information among students and teachers, for the building of information repositories, or for the collaborative production of documents among students and/or teachers. Though freely available, reliable and relatively

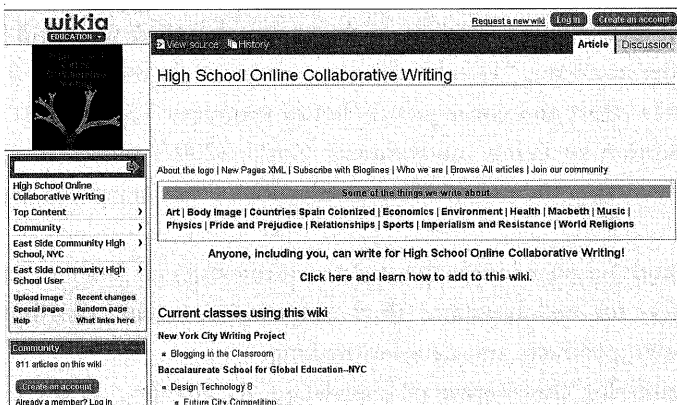


Figure 5: High School Online Collaborative Writing Wiki

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easy to use, wikis are still not widely used by the educational community.

“One of the most obvious ways is to create an online text for your curriculum that you and your students can both contribute to. A co-construction of this type could make for a much more personalized text, one specific to your particular class” (Richardson, 2006). The High School Online Collaborative Writing Wiki (http://schools.wikia.com/wiki/High_School_Online_Collaborative_Writing) (Fig. 5) created by a high school teacher for his classes is a good example of this type of use.

The class wiki CAS110B (<http://cas100b.pbwiki.com/>) (Fig. 6) is another excellent educational wiki, containing such items as class notes, project proposals, and different sections for different classes.

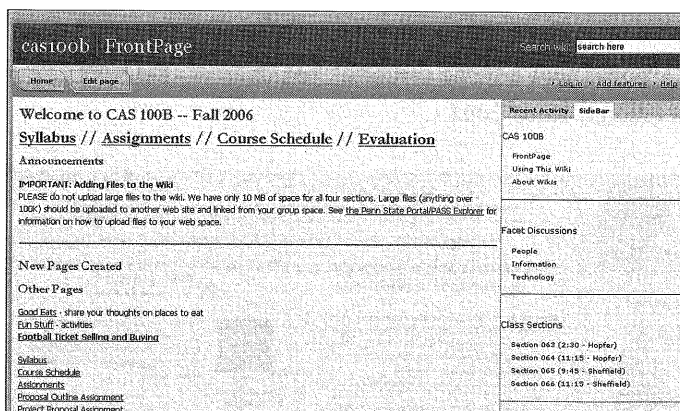


Figure 6: CAS110B class wiki

Richardson (2006), points out the feasibility of adding other students and other teachers who teach a similar class. “It could easily become a resource, a showcase for best practices, and an articulation tool as well” (Richardson, 2006). The FlatPlanetProject (<http://flatplanet.wikispaces.com/About>) (Fig. 7), a joint venture between two classes in which students worked together to explore current environmental issues, is a successful example of this.

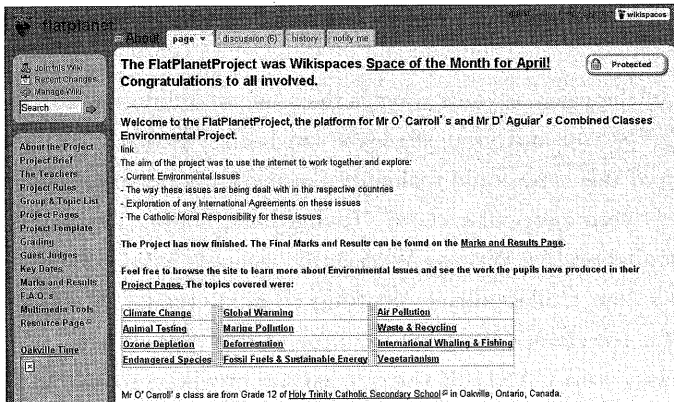


Figure 7: FlatPlanetProject Wiki

On a wider scale, Wikibooks (http://en.wikibooks.org/wiki/Main_Page) (Fig. 8), “a Wikimedia community for creating a free library of educational textbooks that anyone can edit” has over 33,000 pages in textbook modules created since 2003.

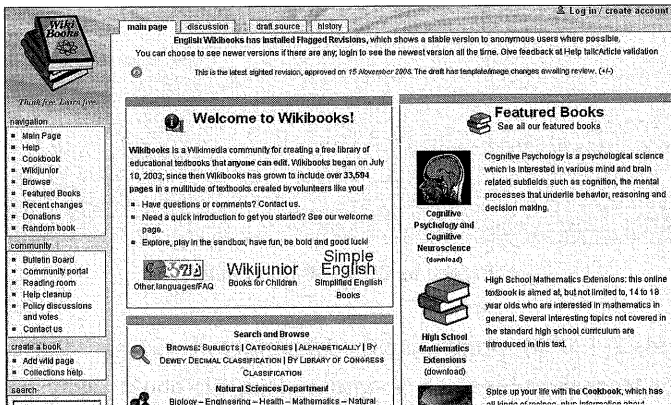


Figure 8: Wikibooks wiki

Wikis are quite often found in higher education in the form of a university-wide collaborative resource for students and staff. The Duke University Wiki (http://www.duiki.com/wiki/Main_Page) (Fig. 9) is a

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“community-website in which anyone can share, modify, change, or delete. The goal of the Duke Wiki is to create an online home for Duke students, with reviews, information, facts, flyers, gossip, and the works.”



Figure 9: Duke Wiki.com

BeavrWiki (http://www.beavr.com/Main_Page) (Fig. 10) “is a wiki creation managed by students. It is a student run resource for students. The goal is simple: provide information about campus opportunities and

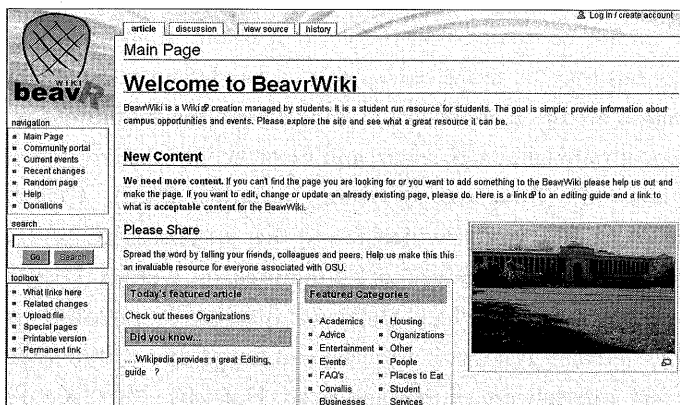


Figure 10: BeavrWiki

events.”

A lengthy list of university wikis can be found at University-wikis (The University Wiki Node Wiki) (<http://universitywikinodewiki.wikia.com/wiki/University-wikis>) (Fig. 11) a “list of wikis centered around universities or similar institutions.”

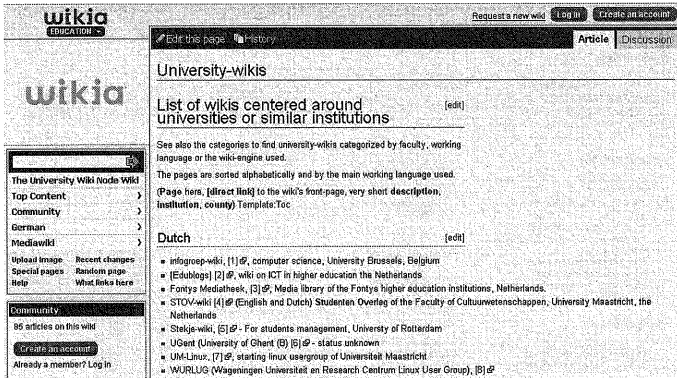


Figure 11: University-wikis Wiki

Potential wiki risks and weaknesses

One commonly perceived weakness of wikis are their susceptibility to individuals who may deface or delete parts of the wiki (Taylor, 2006). While it cannot be denied that the content found in an open wiki (such as Wikipedia) may be more susceptible to vandalism and manipulation, such changes are often short-lived. “Wikis are often monitored to ensure that inappropriate language, spam, and incorrect or inappropriate content are not allowed” (Educause Learning Initiative, 2005). Taylor (2006) points to an M.I.T. study, which found that an obscenity randomly inserted on Wikipedia is removed in 1.7 minutes, on average. Glazer (2004) refers to a test study in which Halavais³⁾ inserted 13 provably incorrect entries into various Wikipedia articles, and found that within a few hours all incorrect entries were caught and fixed. Halavais (2004) surmises that some of these errors were discovered by people looking to see what

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changes were taking place, while others were found by different editors/readers.

But while it is perhaps a fairly straightforward matter to repair a vandalized wiki due to its inherent property of allowing the reinstatement an earlier “clean” version, especially on a popular openly public wiki such as Wikipedia, with numerous viewers, readers and editors, the attention necessary to monitor (and reverse any unwanted changes) on a smaller class-run wiki would probably be an inconvenience at best for users.

A simpler and more sensible solution for a smaller wiki being primarily used within a class would be to make the wiki semi-open--readable by anyone, but only editable by those in the group. (A fully closed wiki being one readable as well as editable only by registered users.) While a semi-open wiki would still be susceptible to the actions of a disgruntled group member or the compromising of the wiki password of one of the legitimate users, we can assume that such occurrences would be limited, and if did occur, could be easily reversed by the wiki administrator/instructor.

Perhaps of more concern to users and administrators of educational wikis should be that of inappropriate content rather than incorrect content--sexual harassment, cyberbullying, and dissemination of inappropriate content (e.g., pornography). As McLeod (2006) points out, “Schools and districts are required, both legally and professionally/ethically/morally, to monitor employee and student use of technology tools when those tools are used for professional or instructional purposes.” In these cases, it is recommended that clear usage guidelines be presented to the students, and with the instructor passively involved (and actively, when necessary) in monitoring and providing feedback.

Perhaps another concern of applying wikis to the classroom is recognizing that students may be unfamiliar or hesitant with working in a new educational environment, both the social (collaborative) aspect as well as the technological (wiki editing) aspect.

As Ko et al. (2004) point out, “collaboration doesn’t just happen.

Many students have no idea how to collaborate on a task in a course.” They explain the importance of providing “detailed guidelines on the responsibilities of each member of a group, as well as explanations of how groups are to proceed with their task” and the necessity to “define clearly what the end product of each group’s project should be, what it should include, and where in the online environment it should be presented.”

Wei et al. (2005) point out that working with a wiki “can intimidate users new to the collaborative environment.” Wikis have traditionally lacked visual cues offered by word processing programs such as Word, requiring users to learn wiki syntax in order to maximize use of the formatting capabilities of the wiki (Wei et al., 2005).

Fortunately, several wikis are now available that are aimed, at least in part, towards the educational market, including for use by individual teachers working with classroom projects. These wikis have been designed to be simple and user-friendly, requiring minimal or no knowledge of wiki syntax.

Wiki hosts

While you can set up your own wiki by running your own server and installing your choice of wiki engines, an easier option for most educators is to make use of one of the many available hosted wikis. By doing this, the technical decisions and support issues are handled by someone else. The social aspects of the wiki are left to the educator to handle.

Three recommended wikis for use in an educational setting (Benner et. al., 2008) are:

PBWiki (<http://www.pbwiki.com/>)

Wikispaces (<http://www.wikispaces.com/>)

WetPaint (<http://www.wetpaint.com/>)

PBWiki (Fig. 12) is free for basic services, including educational use. Educational users receive 2 GB of free file storage space. For a fee, PB-

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pbwiki

Business Academic Personal Features Pricing

Sign up | Log in | Help

Simple, secure, collaboration
Create your own wiki in 60 seconds

Easily share your wiki pages

Email notifications, user avatars and photo data

Set access controls for pages and folders

Quickly add others to the project

Monitor who's changed each page

Use our Solution Finder

Create a Wiki View Demo Buy Now

955.WIKI4ME or sales@pbwiki.com
International +1 (410) 955-6359

Business
Trusted by 40,000+ businesses

Academic
Used by over 250,000 educators

Personal
The world's easiest, fastest, free wiki

Figure 12: PBWiki

Wiki offers premium plans with more file storage space and extra options. One advantage of PBWiki is that there are no ads on the free educational wikis.

Like PBWiki, Wikispaces (Fig. 13) is also free for basic services, has premium plans available for a fee, and offer 2GB of free file storage space. Unlike PBWiki, Wikispaces is not ad-free on its free wikis, but will remove the ads for a fee. Neither PBWiki nor Wikispaces requires

Wikispaces

Pricing Tours Private Label Search Help

Already a member? Sign in

Wikis for Everyone

Our full-featured wikis offer **unlimited usage** and our **stellar visual editor**. Check out our plans and pricing, and see why our customers call us the best wiki out there.

Now hosting over **1,800,000 members** and **750,000 wikis!**

We have given away over 130,000 wikis for K-12 education. Learn more and create your own classroom wiki today.

Get Started

Username

Password

Email

Get Started

Private Label
Wiki Solutions for Organizations
Powerful, reliable, secure.

Business Non-Profit K-12 Higher Ed

Figure 13: Wikispaces



Figure 14: WetPaint

student email addresses to create password accounts.

WetPaint (Fig. 14) is a free, hosted wiki. It does not have paid plans. The free plan does come with unlimited storage. Ads will be removed on request on educational wikis.

Benner, et. al. (2008) find WetPaint and PBWiki to be more user friendly in comparison to Wikispaces, and offer a superior page design as well.

A side-by-side comparison of these three wikis can be found at WikiMatrix (<http://www.wikimatrix.org/compare/PBwiki+Wetpaint+Wikispaces>) and Tek Trek (<http://tektrek.wordpress.com/2008/04/03/wikis-wetpaint-pbwiki-and-wikispaces/>).

Using a Wiki at Dokkyo University

In a wiki project (<http://jddugganzemi.pbwiki.com>) (Fig. 15) carried out at Dokkyo University by the author, a wiki host (PBWiki) was used to provide multiple group wiki websites for a class of students working in groups and carrying out research into a variety of topics dealing with language education.

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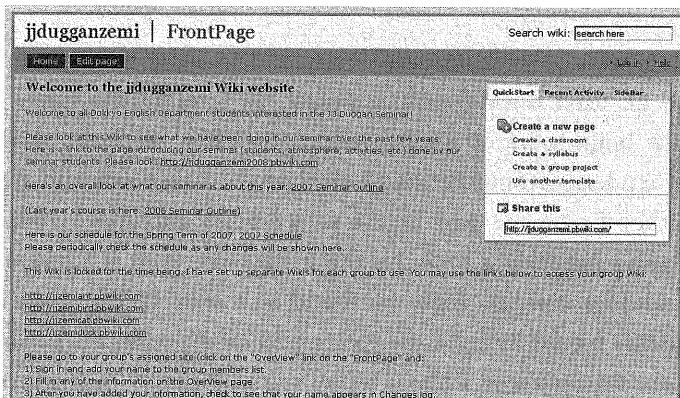


Figure 15: jidugganzemi Wiki

The Course Context

The course was a two-semester university seminar (*seminar*) made up of roughly equal parts juniors and seniors for a total of approximately 25–30 students per class. The recurrent theme of this seminar class centered on research and discussion into topics relevant to English education, with an emphasis on Japan.

Class Goals

The stated goals of the class were to give students the chance to learn by researching into English education topics of their own choosing, and sharing their findings, insights, opinions and ideas on their chosen topics with their classmates, as well as to gain insight into other areas of English education by listening to and discussing the topics presented by other groups.

Each group was expected to choose and carry out research into a topic each semester, therefore twice per academic year. In addition to carrying out research into their respective topics, each group was also expected to present their findings to the class in a 90-minute presentation in the latter half of each semester, as well as turn in a written research paper at the end of each semester.

Topics

Students were given considerable say and freedom in the selection of topics to be used during each semester, as long as the topics stayed within the boundaries of English education. The rationale behind this was that students would be more motivated to research and discuss a topic if they had some part in the selection of said topic, rather than simply being assigned a topic by the instructor, even if from among a limited number such as might be found in a text. It was also expected that students would be more receptive and attentive to the other topics selected for the semester, if those topics were chosen by their peers, again rather than by the instructor.

“Generally speaking, it’s best for the instructor to play a role in dividing students into groups. It’s difficult, confusing, and irritating for students when they are simply left to their own devices to form groups. Nonetheless, you may want to include some measure of student volition in the process of setting up groups. Student choice may be desirable in particular if the group activity involves a diversity of choices, and you would like as many students as possible to choose the area that truly interests them.” (Ko & Rossen, 2004).

In the process of topic selection, seniors were given first chance to present the topics of their choosing. These topics were then presented to the class as a whole, discussed, and narrowed down to a workable number (usually 5 to 6) core topics. Seniors would then form the core of each group based around a topic. Juniors would then join that group with the topic most appealing to them. After some fine-tuning, the topic groups were finalized. Carrying out the selection process in this way would ensure not just that everyone had some personal decision in the choice of topic that they would be carrying out research into, but also ensured that each group had a core of seniors who could “lead” the juniors in the preparation and completion of research, the presentation of their research to the class, and the writing the final paper.

**The rationale behind incorporating wikis
into this course (or Why a wiki?)**

Wikis are found to substantially improve the teaching/learning process (Augar et al., 2004). It was expected that introducing wikis into our course would:

- 1) Allow students to work together more efficiently within the constraints of time and space. On an individual basis, missing a class or two may have minimal impact on a student's learning. But in groups where students work together sharing and developing ideas, organizing and preparing for presentations and papers, having members of one's group absent, even occasionally, can have a profound impact on the collaborative work of the group. The introduction of a wiki would allow students to continue to work collaboratively independent of the formal class setting.
- 2) Require students to take responsibility for their own education. Beyond just student involvement in the selection of topics, by being involved with organizing and researching their selected research topics, students would no longer be dependent solely on the instructor for their learning. The instructor would provide instruction on the research process and guidance during the process, but students would be responsible for creating their own knowledge.
- 3) Increase motivation through the second point (above) as well as the display of the students' work, both during the research process as well as the finished product. Realization that their research would be displayed to the public on a wiki was expected to generate greater effort and therefore better work from the students.
- 4) Allow students to see (but not edit) what their classmates were doing.

By enabling all the students to see how the various groups were approaching their research and paper writing, students could learn from other groups other than their own. Furthermore, having access to the other group wikis would allow students to familiarize themselves with the topics of the other groups, especially useful prior to the presentations given by each respective group.

5) As a tool to help students to better organize and write their finished research papers. This was carried out by providing a guided research outline on the wiki for the students to follow. Using the wiki would also allow guidance from the instructor in the form of feedback during both the research and paper writing stages.

6) Allow the instructor to better assess all students more fairly. Prior to the introduction of a wiki in this course, though each group of students would hand in a satisfactory final research paper at the end of the semester, it was difficult to assess to what degree each individual contributed to the final product. By requiring students to carry out their work on the wiki, a clear record was kept of individual contributions.

Pedagogical Approach

By incorporating wikis into this course, over the course of the two semesters, learning basically took place in the following three environments:

1) In a traditional face-to-face classroom environment. Here students received weekly input and instruction from the instructor on such items as establishing and editing a wiki, research techniques, and research writing. It also served as a weekly base for students working in their respective groups to plan and carry out their assigned tasks.

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- 2) In face-to-face group meetings outside of the formal classroom environment. Here students met to work on or complete tasks started on in class, or to plan and prepare continuing research.
- 3) In the virtual environment of the wiki. Here students met when unable to meet face-to-face due to time or space constraints. In the wiki they wrote, edited and published their research, as well as communicated on their assigned tasks. The instructor observed their work online, and offered guidance or corrections as necessary.

Links to the individual student group wikis can be found on the Front Page of the main seminar wiki (<http://jldugganzemi.pbwiki.com>).

What elements of the wikis used proved to be the most valuable towards successfully meeting the specific needs and goals of the course

The stated goals of the class were to give students the chance to learn by researching into English education topics of their own choosing and sharing their findings, insights, opinions and ideas on their chosen topics with their classmates, as well as to gain insight into other areas of English education by listening to and discussing the topics presented by other groups.

There is little doubt that the incorporation of a wiki into this course has done much to improve the learning of the students and to reach greater attainment of the course goals stated.

From my observations, having a wiki allowed the groups to work collaboratively on their research, presentation, and paper. It helped in the organization of the research, presentation, and paper as it provided a working space where the students could collaboratively work together on their tasks.

In using a wiki, students stated that they were better able to share their

findings, insights, opinions and ideas on their chosen topics with not just their group members, but their classmates as well. Being able to observe the work of their classmates on the wiki allowed them to compare the work with their own, thus improving the quality of their own research, presentation, and paper. Being able to get a working preview of each group's research by observing the wiki was advantageous in helping to better understand and be prepared for the presentations of each respective group.

Students felt that their group members shared the work in each group more or less equally. Having a wiki made it easier for those constrained by factors of time and space (e.g. absence due to sickness) to still be able to add constructively to the group work. This was appreciated by not just those constrained, but by the fellow members of the group.

Students were impressed by the realization that their work has a purpose beyond their own personal learning. It extended to their classmates and beyond to the online world at large. As administrator of the wiki, the author has, using one of the tools provided by the wiki, observed that readers have come to view the wiki from many parts of the world. Some even have contacted the class to offer their comments on the research.

An unintended benefit of having a wiki open to the public was that it allowed second-year students looking to join a seminar to observe exactly what happens in our class, and in doing so allows them to make a more informed decision on whether or not the seminar is an appropriate one to join.

Final Comments

This paper has introduced wikis and how they work, explored some of their applications to education, and showcased a wiki project carried out at Dokkyo University by the author. It has shown that the use of a wiki can have many positive effects on the students' learning experience. Wikis are an excellent tool for introducing group collaboration, improv-

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Figure 16: An opportunity for creativity

ing motivation, promoting knowledge sharing, and empowering the students with the responsibility for their own learning.

“The possibilities for using wikis as the platform for collaborative projects are limited only by one’s imagination and time” (Educause Learning Initiative, 2005).

Notes

- 1) See *The Blind Men and the Elephant*
http://www.noogenesis.com/pineapple/blind_men_elephant.html
- 2) Further ideas on how wikis can be used in the classroom can be found at Smart Teaching.org (<http://www.smartteaching.org/blog/2008/08/50-ways-to-use-wikis-for-a-more-collaborative-and-interactive-classroom/>).
- 3) See Wikipedia (2009). Alexander Halavais [viewed 12 Jan 2009]
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