

Within the Wiki: Best Practices for Educators

Introduction

With the increasing emphasis in higher education to provide opportunities for students to work and collaborate in groups, enhancing problem-solving and critical-thinking skills, instructors are looking beyond traditional course management tools to emerging technologies. One technology that supports group collaboration is a wiki. However, many instructors either don't know about wikis or how to apply best practices to increase their potential for learning. Therefore, in this paper the author discusses how three faculty members at Boise State University used wikis, the challenges and opportunities they experienced, and specific best practices they developed to enhance learning with wikis.

What is a Wiki?

If you don't know what a wiki is, you're not alone. According to a 2007 Harris Online Poll, only 16% of the U.S. online population knows about wikis (Elowitz, 2007). However, it is highly likely that you have visited a wiki and did not know it. For instance, Wikipedia (<http://en.wikipedia.org>), an online encyclopedia developed and continually updated by multiple contributors, is a very popular resource and yes, a wiki. Wikis are becoming increasingly popular, as evidenced by a new search engine developed by Wikipedia just for wikis: Wikia (<http://search.wiki.com>). But what exactly is a wiki?

A wiki can be described as a set of linked web pages that can be edited by multiple users (Wagner, 2004). However, the word wiki can also refer to the software tool used to create these web pages. Wikis can be server- or web-based, with web-based wikis becoming increasingly popular. Ward Cunningham (Leuf & Cunningham, 2001) created the first wiki in 1995, the WikiWikiWeb (<http://c2.com/cgi/wiki>), also called "Ward's Wiki" or "TheOriginalWiki" (Chawner & Lewis, 2006).

The word “wiki” was derived from the Hawaiian phrase “wiki wiki” and means quick or swift. Indeed, wikis are quick to set up and easy to learn and edit. They offer valuable features such as visual editors; addition, editing, and deletion of content; page versioning; comments or discussion threads; email communication; subscription feeds; search boxes; unstructured tagging; and contributor statistics. (Viewing the contributions of each wiki members becomes a very helpful tool for contributor evaluation by the instructor.) One of the most powerful features of a wiki is its page history. As changes are made to wiki pages, new versions are created, offering the ability to revert to previous versions. For educational uses, wikis can be extremely powerful. For instance, wikis can:

1. enable and promote group collaboration, editing, and revising;
2. maintain and build a repository of content and material;
3. empower learners through a more democratic, open philosophy of learning and sharing; and
4. model and help students experience the messiness of group collaboration, problem-solving, and critical thinking.

If wikis offer unique advantages and opportunities for collaboration and if there is an increased emphasis to include collaborative activities in higher education, why aren't wikis being used more extensively? Besides not being widely understood, wikis also require additional planning for collaborative activities and assessments, student orientation to the wiki, meaningful collaborative activities, and an understanding of the different roles students and teachers play. Faculty members who are not comfortable with technology have additional hurdles to overcome. Also, the process of getting students interested in and engaged in a wiki demands an understanding of how wikis work, since wikis are also social networks, requiring certain adoptions of behaviors and ethics. This additional work and time might be one of the main obstacles to wiki adoption by faculty.

A discussion of the experiences and lessons learned from three faculty members at Boise State University who used wikis during the fall 2007 semester in three different courses is presented next, along with an overview of Boise State University, its current technology resources, and its position in emerging technologies.

Boise State University and Wiki Courses

Boise State is a mid-sized metropolitan university, located in Idaho's state capital. Enrollment continues to grow, with over 19,000 students, the highest enrollment of any institution of higher learning in the state. Technology support for faculty and staff is provided by Academic Technologies, a department of Boise State, along with hardware support and equipment services. Blackboard, the university course management system, has been in use for several years and adopted by a majority of the faculty population. Blackboard offers an easy way for faculty to create an online course site, using tools that enable collaboration, such as instructor announcements, communications for students (email, discussion forums, file sharing), gradebooks, and online quizzes.

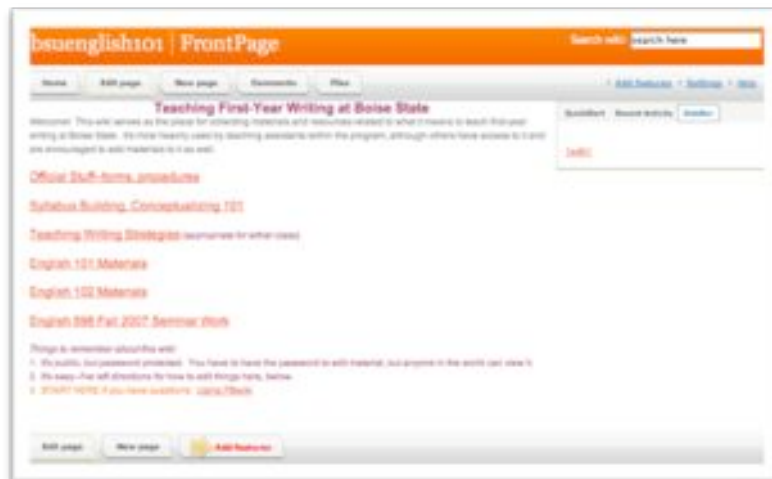
While Blackboard offers many rich tools and features, there is some dissatisfaction among faculty members about its perceived limitations. For instance, the synchronous component in Blackboard is difficult to use and does not offer a complete array of web communication tools. Only faculty members, students, and teaching assistants can be enrolled in a Blackboard course at Boise State, limiting the ability for a professor to include outside experts or other people that might enrich class discussions. Blackboard courses must be archived and transferred to a new course site at the end of each semester. Students cannot chat with each other when they are in a Blackboard course, they are limited to where they can post content, past versions of content are not saved, and pages are not feed-enabled. Compared to wikis, the Blackboard structure lacks the ability to provide

dynamic content (although now discussion forum have a subscribe feature, which sends a notice to a student's email), is less interactive, and provides less of an open-playing field, democratic feel.

Wikis and how they can enrich student learning is an area of study being undertaken by Academic Technologies, through a Technology Incentive Grant funded by the Idaho State Board of Education. The increasing awareness and promotion of wikis as effective ways to enhance student engagement and learning, coupled with the perceived limitations of Blackboard precipitated these three faculty members to try out wikis in their classes. One professor used wikis to totally replace Blackboard, and the other two used wikis as an enhancement to Blackboard.

Wikis were developed for the following courses (snapshot of wiki course home pages are also displayed below each description)

1. Face-to-face graduate-level English course for Teaching Assistants (Teaching First-Year Writing at Boise State),



2. Online graduate-level Educational Technology course (Advanced Online Teaching in the K-12 Environment), and



3. Online combination graduate/undergraduate Criminal Justice course (White Collar Crime).



Student enrollments in the EdTech course were small (seven students), with enrollments in the Criminal Justice (22 students) and English (16 students) courses larger. All of the instructors were familiar with and had used wikis before, with all three being instructors being either skilled or highly skilled users of technology. However, the need to be skilled with technology becomes less

important with the new wiki technologies now available. Being less experienced with technology should not deter an instructor from trying out and using a wiki.

Course Goals

Course goals for the three courses included similarities, such as the sharing of resources, collaboration, and the creation of a product. For instance, the goals of the EdTech course were that students share resources, create content, and produce an online guide for synchronous teaching strategies for K-12 online teachers. The goals of the Criminal Justice course were that students share their ideas about white-collar crime; experience the stages of writing, along with receiving and providing peer criticism; improve their writing; bring together and share other resources; and produce a final paper. The English course goals were that students collect materials and resources to build and support an online guide for English Teaching Assistants who would be teaching beginning undergraduate English courses, English 101 and 102. To accomplish the course goals, faculty members realized they needed to provide an easy, efficient space for students to collaborate, communicate, and create a final, authentic product—all possible through a wiki.

Wiki Implementation

Implementation of the wikis was a simple process for all of the faculty members. Each one used a free web-based wiki service, which they were familiar with, although the Criminal Justice professor switched to another web-based wiki platform due to student login difficulties with pbwiki. This professor switched to wikispaces (<http://wikispaces.com>) and is still using that platform. The other two professors used pbwiki (<http://pbwiki.com>) for their courses. The English professor had used pbwiki in a previous semester, so did not have much additional setup to do, while the EdTech and Criminal Justice professors set up their pbwikis for the fall 2007 semester. Since all courses demanded that students actually contribute to and build the wiki, the main work done by the faculty

members was in creating the wiki, setting up the navigation structure, and posting course instructions.

The Criminal Justice and EdTech professors decided to make their wikis private, while the English professor's was public. However, the final product produced in the EdTech class, an online synchronous teaching guide for K-12 online teachers, was available through a public website, created using Google Page Creator. In this case, the wiki was the collaboration and creative tool, with the final product being presented through a traditional website.

Challenges and Opportunities

Faculty members reported similar challenges from using wikis in their courses. All professors reported that initially students were uncomfortable with the unstructured, open nature of the wiki and editing other students' work. Faculty members felt that students' limited experience with self-directed work in an online setting required more specific directions from the instructor. Literature suggests that this is a common problem in a wiki, as teachers need to provide freedom while also supporting learner-exploration (Lund & Smordal, 2006). Not surprisingly, the teacher still plays a key role in the students' learning efforts, such as directing student activities and setting goals. Therefore, it is important to incorporate both student and teacher roles in educational wikis to support group learning.

Most students in all three courses had never used a wiki before and needed some instruction and practice using the wiki before they could start course activities. The professors, therefore, included specific instructions on their wiki home pages for editing the wiki and making contributions. They also began their courses with a basic structure in place, explicit instructions for students work, such as deadlines and required contributions, and modeled how to use the wiki through creating sample wiki pages. The EdTech instructor went one step further and started the students on a practice wiki before they work on the actual course wiki.

Some students wanted their course accessible through only one interface and disliked having to navigate to a wiki and then to their Blackboard course site. The Criminal Justice instructor also used the Blackboard course management system to record grades and use the discussion board feature, which required students to go to both sites. He resolved this by creating a link in Blackboard to the wiki, which appeared in the Blackboard course frame. Therefore, his students eventually accessed course materials just one site, the Blackboard course site. The EdTech instructor also used Blackboard, but her students did not complain about having to go to another site. The English professor used the course wiki as a replacement for Blackboard.

Wiki etiquette and conventions were another area that faculty members incorporated in their wikis. For example, the EdTech instructor included three simple statements on a page she called “Wiki Guidelines:”

1. Be polite
2. Be nice
3. Be democratic (Remember that your contribution is critical to the success of the group)

These guidelines align with wiki research about the importance of conventions to enable long-term success in collaborative groups (Godwin-Jones, 2003). Making wiki guidelines a requirement also ensures the commitment of the group and thus, enables better collaboration. When looking at large, successful wikis, guidelines and group conventions are prominently posted, with agreements to abide by these conventions required of the participants (Chaucer & Lewis, 2006).

As students began to use the wikis, supported by the structure and guidelines initially established by the professors, they assumed more ownership of the wiki. However, for all three professors, it was difficult and sometimes impossible to get students to critique and make changes to other students’ work, even when they knew that these changes could be reverted, using the revision

feature of the wiki. Both the English and Criminal Justice course goals focused on improving writing and critiquing others' work. The wiki for the English course is also a content repository, with the goals of updating and improving content. The English professor considers her wiki to be a constant work in process, following the Wikipedia model, for instance, of constant updating and contributions. As her course wiki continues to grow, with accumulated content and resources, new students reap the benefits of increased materials, improved navigation and structure, and a larger view of the wiki as a collaborative tool.

Research indicates that for successful use of wikis by collaborative groups, participants need to be able to share knowledge, invite critique, present multiple viewpoints, and attempt to change others' ideas (Wagner & Bolloju, 2005). Also, understanding the unique dynamics of a wiki and how to create and support a healthy and robust wiki environment are not always intuitive. An interesting and very helpful list of do's and don'ts for wikis is available through a wiki called WikiPatterns (<http://www.wikipatterns.com/>). This wiki presents a toolbox of patterns and anti-patterns that relates to wiki adoption and experiences. These patterns can help wiki developers understand the dynamics behind the successful adoption and operation of a wiki, which could easily be applied to wikis used for education. For wikis to be successful in the classroom, they need to be structured and promoted in ways that will encourage and maintain student interaction and collaboration, further enabling wiki success.

Wiki Philosophy

Using a wiki also requires a shift in pedagogical perspectives and theoretical frameworks, with learning being more student-centered (Beldarrain, 2006). However, there are challenges using collaborative, knowledge-sharing strategies in traditional university environments that still operate in traditional paradigms (Bruns & Humphreys, 2005; Parker & Chao, 2007).

The “Millennial Student” is an important consideration when using wikis in education. Some of the characteristics of this student might favor the use of wikis and others may need to be addressed for successful wiki integration. For instance, Millennial Students are highly dependent and less likely than previous generations of students to venture out on their own. They demand a secure, regulated environment, and generally need a structure of social conventions and ethics. Since wikis start out as unstructured, it might be necessary to allow students time to adjust to this discomfort, modeling behaviors and solutions to unstructured problems and solutions.

Millennial Students are heavy Internet users and feel that the Internet has had a positive impact on their lives, enhancing relationships with classmates and their teachers. They use email heavily and participate in social networks, such as MySpace. These attributes should contribute positively to a student’s learning experience with a wiki, since wikis support these types of behaviors.

Millennial Students are high achievers and want to perform well. They expect instant communication and gratification, with a majority of them using phones for text messaging. Since wikis are very powerful in their group collaboration features, high achievers may experience some discomfort in participating in a dynamic and sometimes unstructured environment, especially when it concerns their final grade in the class or on a group assignment. However, Millennial Students should enjoy the synchronous aspects of most wikis, since they can include instant chat box widgets and other forms on instant online communication.

Outcomes

Wikis enabled collaboration, sharing of resources, and engaged conversations in all of the courses, with increased participation and collaboration among students. The students in the EdTech class, for example, decided they would rather use the course wiki for discussions than the threaded discussion forums in Blackboard. Students devised their own system of identifying the writer by using different colored fonts. These different colors would quickly and easily help the reader identify

a change in writer identity. The professor discovered whenever she would try to shift discussions to Blackboard there would be less interaction among the students.

EdTech students completed the final project, the main course goal, but the quality did not meet or exceed the faculty member's expectations. However, it is interesting to note that after the course ended, one student went back to the final course website to revise and improve it, perhaps wanting to use it for another purpose.

The Criminal Justice professor discovered that the wiki easily facilitated bringing other resources into the learning experience. For example, he was able to make better use of the Boise State Writing Center and the library by allowing people from those entities access to the course wiki. It is important to note that the people at the Writing Center and also the library were briefed on the course writing assignment so they could more effectively engage and help students. These collaborative processes between students and outside resources are easily facilitated through a wiki and were instrumental in developing students' writing skills.

The Criminal Justice professor experienced resistance from students in critiquing other students' writing and was disappointed in the lack of improvement in some student writing. He felt that more modeling and examples of collaborative activities and editing other work might have helped this deficiency. However, as the following post on RateMyProfessor.com shows, educational values and substandard student expectations may have been the cause of this resistance, not the wiki:

This professor must have nothing else to do in his whole life. The workload is VERY heavy as is (sp.) the reading assignments. He expects all papers uploaded to a WIKI where he expects you to read and edit other papers in the class - this professor assigns more work than I've ever experienced and I'm a senior!

The English professor enjoyed using the wiki and experienced success in getting students to post their writing in a public space. She used the wiki because it was quick and easy to learn and use and felt her students used it for the same reasons. She indicated that the wiki seemed to require less “clicks” in getting to places than her experiences with the Blackboard course management system. The power of a wiki as being a continuing work in process, serving as a rich resource for subsequent classes as well as providing materials for English 101 and 102 teachers to build their courses were other important features of the wiki. Finally, the public nature of the wiki, the increased interaction among students, and the authentic nature of the course activities all contributed to students doing their best work.

Future Research

Although much was learned from interviews with faculty members, it is apparent that more data are needed to evaluate the learning outcomes of students using wikis for learning as well as student feedback and protocols for using the wiki. Unfortunately, these professors do not teach the same course in different formats, so it would not be possible to compare final scores of courses using wikis with courses that do not use wikis. However, much data can be analyzed from the wiki itself, such as the number of contributions, the types of contributions, and other numbers that could be compared to student data, such as attendance, test scores, final grades, student evaluations. Since assessment of collaborative learning requires multiple types of formative evaluations (self, peer, and group), these might be incorporated in a study on the effectiveness of wikis in enabling and strengthening collaborative and communication skills among students. Evaluating the process of collaboration, as well as a final product, are two interrelated elements that need to be considered when assessing student learning.

A quick self-reporting survey with a five-point Likert scale could also be administered at the end of each semester to obtain student feedback on how they used the wiki. Following are suggestions for questions for this survey:

1. How easy was the wiki to use for changing and updating information?
Very easy, Easy, Not that easy, Difficult, Impossible
2. How much did you enjoy sharing your wiki contributions and receiving comments?
Enjoyed very much, Enjoyed somewhat, Enjoyed a little, Did not enjoy, Hated it
3. How many times did you revert to a previous version of a wiki page?
Over 10, 6– 10, 2– 6, Once, Never
4. How many times did you edit or delete another student's writing?
Over 10, 6– 10, 2– 6, Once, Never
5. How many times did you ever use the comment feature in the wiki, to discuss possible changes or other ideas?
Over 10, 6– 10, 2– 6, Once, Never
6. How often did reading other people's writing affect or change your opinions?
Always, Often, Sometimes, Never, Didn't care
7. How easy was it to find information on the wiki?
Very easy, Fairly Easy, Easy, Not Easy, Impossible
8. Should the course wiki be a living document or end at the conclusion of the semester?
Living document, Conclude at end at the semester, No opinion, Don't care
9. How often did you use the search box to find content?
Always, Often, Sometimes, Never, Didn't know about it

10. How much did you enjoy how the wiki allows other group members to add, comment on, and edit the group information?

Enjoyed very much, Enjoyed somewhat, Enjoyed a little, Did not enjoy, Hated it

Best Practices for Successful Learning with Wikis

These faculty members are continuing their efforts to include wikis successfully in their courses. The following best practices were identified by the faculty members, along with referenced research included in this paper. In order for wikis to provide and promote successful learning environments, instructors should:

1. create a culture of trust;
 - You will need to help your students feel comfortable within the wiki, by creating a culture of trust among all participants. You may want to include some icebreaker activities, to get students to know each other better before they start their “real” activities. You may want to more closely monitor activity at first to engage shy students and to intervene when needed if potentially explosive or harmful interactions occur. In other words, you need to set up and continue to maintain a culture of trust so that students feel safe in the environment while also encouraging them to experiment and take risks. This is not entirely easy to do, but your attitude and leadership can play a huge role in how students perceive their roles and responsibilities toward each other.
2. construct and require participants to abide by wiki conventions;
 - Conventions are a huge part of a wiki’s success. If all students abide by the rules, the wiki community is strong and vibrant. If some are not abiding by the rules, it can become a disruptive and less attractive learning environment. Tell students up front

what the expectations are for the wiki and put it on the home page. You may want them to acknowledge and sign a web form, for instance.

- You might look at some of the People Anti-Patterns on the wikipatterns.com site (<http://wikipatterns.com>) to see if any of your contributors fit these patterns and think of ways you might revolve these anti-patterns.
3. have a common goal for all participants;
 - Usually wikis work best in a problem-solving environment or something that requires common goals and collaboration. You should have some sort of learning outcome or goal that requires the participation of all students. This is the power of the wiki.
 4. assign meaningful, authentic activities;
 - Again, this relates to problem-based learning and should really be a part of any learning experience. Wikis demand authentic, relevant learning and offer an easy way to accomplish this through a public arena for reading, writing, and learning.
 5. include wiki instructions and provide time for practice;
 - Most students have never used a wiki before and will need instructions and practice on how to actually use the software. By providing time and instructions for how to use the wiki, students will feel more comfortable in this environment. You might provide a sandbox or a practice wiki before your students actually use the real wiki.
 6. remind students of course deadlines and schedules;
 - The very nature of a wiki allows and encourages a lot of freedom and self-direction. However, sometimes students need to be reminded of course requirements and deadlines. Staying on top of student activities within the wiki is important.
 7. define and identify roles for collaborative activities;

- This is important for any collaborative activity. Defining roles and clearly defining the activity, along with assessments are crucial to the success of collaborative learning.
8. provide clear and explicit course expectations;
 - Again, this is an essential part of good pedagogy, but is an important part of working within a wiki. Students should have a clear understanding of course expectations and how they are to use the wiki to achieve the course goals.
 9. model examples of collaborative activities;
 - Since many students have never worked in a collaborative environment before, you will need to model these behaviors and show them what they look like.
 10. be patient with students and realize they may require technical assistance as they learn how to participate in a wiki environment.
 - Remember, not all students are technologically savvy and may need some initial help with the wiki. However, once they get going and see how easy and quick a wiki is, they should start feeling more comfortable and eager to use the wiki for its powerful collaborative features.

As wikis continue to become more widely understood and accepted, they may become more common in higher education, especially when student communication, engagement, and collaboration are common course goals. Will wikis be as common as PowerPoint, for instance? One of the faculty members in this study predicts that this will be a reality five years from now.

These faculty members will be using wikis again for the same courses and insist they are having fun with them. They are not deterred! The challenges they face are those of any educator: designing an engaging course that helps students achieve instructional goals. While using wikis for learning presents additional challenges, it also offers many opportunities. For instance, wikis are

unique, “democratic” environments, a place where all participants have an equal voice. Learning within a wiki is active and dynamic, with participants being held accountable for their work, since their contributions are essential to successful collaboration. Wikis can be “messy” and a bit disorienting, especially when the wiki is first developing. The relationships between freedom and control, student autonomy and traditional teacher roles may need to be adjusted and rebalanced, as students and teachers discern and appreciate their new participation and responsibilities in an open, trusting environment.

Wikis provide a powerful tool for collaboration and active learning, adaptable to many educational purposes. Use the power within the wiki and the experiences of others to help you plan and implement the best possible learning environments for your students.

Resources

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Appendix A: Wiki Resources

Following are three web-based wiki sites where you can quickly and easily set up a wiki, along with their advantages and downsides:

Wetpaint: <http://wetpaint.com>

Advantages:

- Beautiful, professional-looking templates
- Intuitive navigation structure that adds pages automatically as you create them
- Step by step process to create the wiki and invite users
- Basic, easy to use
- Can export HTML
- Discussion threads on each page
- Can attach files to pages
- Quick analysis of user participation
- Unlimited file storage

Downsides:

- Cannot edit source code
- Need to write company to request advertisement-free site for educators (but it is available)
- No file upload feature, just page file attachments

Wikispaces: <http://wikispaces.com>

Advantages:

- Great-looking interface
- Easy email collaboration with participants
- Floating visual editor
- Can view and edit source code
- Handy tabs at the top of each page

Downsides:

- No free sites without advertisements
- Limited number of themes

Pbwiki: <http://pbwiki.com>

Advantages:

- Advertisement-free sites for educators
- Can view and edit source code
- Some additional theme templates to choose from
- Click and view editor
- File upload feature
- Will print pages in pdf format

Downsides:

- Right hand box should default to sidebar navigation view when opening site

Appendix B: Ten Instructional Strategies for Successful Learning with Wikis

In order for wikis to provide and promote successful learning environments, instructors should:

1. create a culture of trust;
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2. construct and require participants to abide by wiki conventions;
 - Conventions are a huge part of a wiki’s success. If all students abide by the rules, the wiki community is strong and vibrant. If some are not abiding by the rules, it can become a disruptive and less attractive learning environment. Tell students up front what the expectations are for the wiki and put it on the home page. You may want them to acknowledge and sign a web form, for instance.
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 - Again, this relates to problem-based learning and should really be a part of any learning experience. Wikis demand authentic, relevant learning and offer an easy way to accomplish this through a public arena for reading, writing, and learning.
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 - Most students have never used a wiki before and will need instructions and practice on how to actually use the software. By providing time and instructions for how to use the wiki, students will feel more comfortable in this environment. You might provide a sandbox or a practice wiki before your students actually use the real wiki.
 6. remind students of course deadlines and schedules;
 - The very nature of a wiki allows and encourages a lot of freedom and self-direction. However, sometimes students need to be reminded of course requirements and deadlines. Staying on top of student activities within the wiki is important.
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 - This is important for any collaborative activity. Defining roles and clearly defining the activity, along with assessments are crucial to the success of collaborative learning.
 8. provide clear and explicit course expectations;

- Again, this is an essential part of good pedagogy, but is an important part of working within a wiki. Students should have a clear understanding of course expectations and how they are to use the wiki to achieve the course goals.
9. model examples of collaborative activities;
- Since many students have never worked in a collaborative environment before, you will need to model these behaviors and show them what they look like.
10. be patient with students and realize they may require technical assistance as they learn how to participate in a wiki environment.
- Remember, not all students are technologically savvy and may need some initial help with the wiki. However, once they get going and see how easy and quick a wiki is, they should start feeling more comfortable and eager to use the wiki for its powerful collaborative features.