

Within the Wiki: Best Practices for Educators

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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 “The Original Wiki” (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: (a) visual editors; (b) addition, editing, and deletion of content; (c) page versioning; (d) comments or discussion threads; (e) email communication; (f) subscription feeds; (g) search boxes; (h) unstructured tagging; and (i) contributor statistics. 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 and engaged in a wiki demands an understanding of how wikis work. Since wikis are also social networks, adoption of certain behaviors and ethics, such as, abiding by stated wiki conventions, adhering to writing and content guidelines, and honoring other people’s opinions are required. 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 se-

mester in three different courses is presented next, along with an overview of Boise State University, a comparison of course management systems and wikis, and how wikis are being used by faculty members.

BOISE STATE UNIVERSITY

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. Academic Technologies, a department of Boise State, provides technology support, hardware support, and equipment services for faculty and staff. Academic Technologies also supports Blackboard, a proprietary, course management system (CMS) used by a majority of faculty to host online courses and augment face-to-face and hybrid courses. This CMS offers many tools and features that facilitate the teaching of a course, such as instructor announcements, communications for students (email, discussion forums, file sharing), grade books, and online quizzes.

COURSE MANAGEMENT SYSTEMS AND WIKIS

Although course management systems offer many rich tools and features to facilitate teaching a course and foster student engagement, there are differences between these and wikis. Two of the biggest differences between a CMS and a wiki are the site setup and adding collaborators. Instructors can quickly and easily set up a wiki for a course and add students as collaborators. With a CMS, faculty members usually need to request a course site, wait for it to be set up, and for students to populate the course.

Course management systems also rarely allow students to edit pages in the course site and become active collaborators, as they can in a wiki. Only instructors are normally allowed to post announcements in a CMS. When content is changed on a CMS, it is permanently changed, unlike a wiki, which includes page versions and the ability to restore a page to any version. Additionally, wikis can take on many forms and purposes, such as continually developing course sites, repositories of content, student research projects, group brainstorming pages, collaborative problem solving projects, or simply a quick and easy place for posting and being able to access content online. Course management systems are structured for teacher-created and -directed content. Since most course management systems are password-protected, they lack dynamic Really Simple Syndication (RSS) feeds, which

allow students to subscribe to, and be notified of, new content. However, there are some features provided by course management systems that are not currently offered through wikis.

Course management systems offer sophisticated grade book features, where each student can instantly view his/her own grade. Wikis do not offer this. Course management systems also include threaded discussion board features that can be searched and archived. Wikis currently only allow participants to comment on a page, although discussion areas can easily be created within a wiki for participants to post their ideas.

WIKIS AT BOISE STATE

Wikis and how they can foster 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 the university's CMS precipitated these three faculty members to try out wikis in their classes. One professor used wikis to totally replace the CMS, and the other two used wikis as an enhancement.

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,

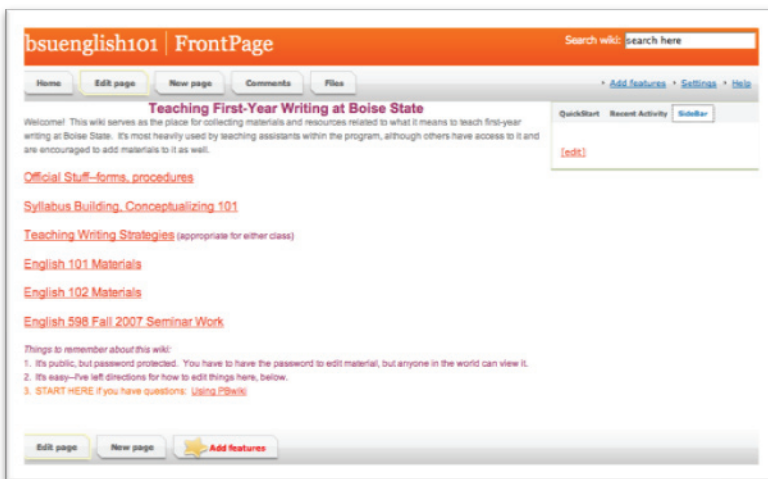


Figure 1. Teaching first-year writing at Boise State.

2. Online graduate-level Educational Technology course, and

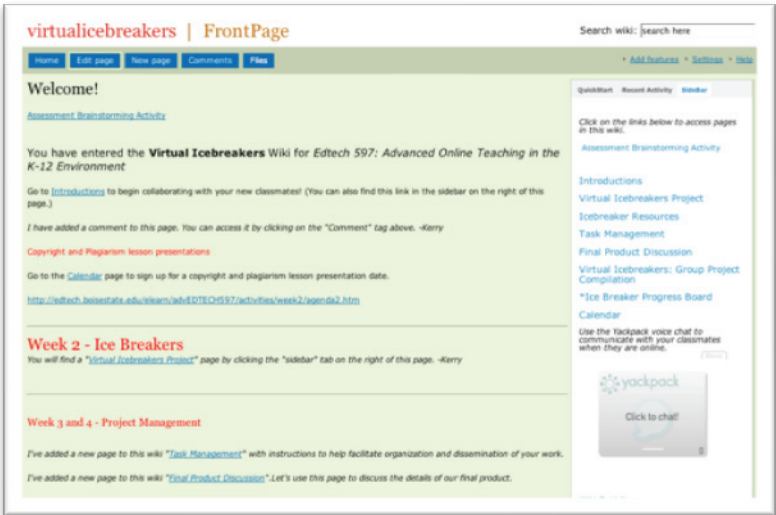


Figure 2. Advanced online teaching in the K-12 environment.

3. Online combination graduate/undergraduate Criminal Justice course.

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. 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 through 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 (Chawner & 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 (synchronous communication through online text and/or voice chat) and other forms of 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. The faculty member indicated that while a wiki encourages student freedom, instructor direction is also crucial. She noted that as students experienced more freedom, they also tended to disregard course deadlines and schedules. Therefore, creating a balance between student freedom and teacher intervention becomes an important issue in teaching with a wiki. 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 did the Blackboard course management system. Other important features of the wiki were its power as being a continuing work in progress, serving as a rich resource for subsequent classes, and providing materials for English 101 and 102 teachers to build their courses. 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

TEN BEST PRACTICES FOR SUCCESSFUL LEARNING WITH WIKIS

The author asked the three faculty members how they would advise other faculty members when planning to use a wiki for collaborative learning. From these interviews, a list of ten best practices was created, providing a helpful guide and resource for instructors when planning and implementing a wiki for teaching and learning. The best practices begin with two important initial steps in setting up a wiki and are followed by strategies that should be incorporated throughout the wiki experience. Following are these ten best practices:

1. Include detailed wiki instructions or a link on the home page 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 and be more willing to contribute.

2. Post wiki conventions and require participants to abide by them

- 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.

3. 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.

4. Create a culture of trust within the wiki

- 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.
- You might look at some of the People Anti-Patterns on the wiki-patterns.com site (<http://wikipatterns.com>) to see if any of your contributors fit these patterns and think of ways you might resolve these anti-patterns.

5. 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.

6. Assign meaningful, authentic activities

- Again, this relates to problem-based learning and should really be a part of any learning experience. Through a wiki, you can facilitate and drive authentic, relevant learning.

7. Include a common goal for collaborative activities

- Usually wikis work best in a problem-solving environment or something that requires common goals and collaboration. This will help motivate students to work together on completing the goal, tasks, or project.

8. Define and identify student roles, activities, and assessments

- 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.

9. 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.

10. 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.

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 (Appendix A).

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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://pbworks.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