Putting Wikis to Work in Libraries

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ABSTRACT. Wikis are part of the suite of Web 2.0 technologies enhancing collaboration and communication. This article describes the ways in which one academic health sciences library has utilized wiki software. The Eccles Health Sciences Library has found wikis to be valuable collaboration tools. Case scenarios and software selection recommendations will be outlined. Examples of collaborations using wikis include grant writing, strategic planning, departmental documentation, and committee work. Comparisons are made between externally hosted and locally hosted wiki software.

KEYWORDS. Collaboration, libraries, Web 2.0 technology, wikis

INTRODUCTION

In this era of Web 2.0 technologies, a wide array of tools and applications can be used to facilitate collaboration, sharing of ideas, and distribution of the work load. Many exciting ideas have been generated as a result of mixing and matching these new tools. In the academic

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health sciences library setting, the wiki is one tool that has obvious advantages for creative productivity. At the Spencer S. Eccles Health Sciences Library at the University of Utah, librarians are expected to publish in the peer reviewed literature, write grant proposals to fund innovative new projects and services, serve on University Committees, and teach classes. In addition, the faculty work with the library staff to set goals, develop strategic plans, research and implement new technologies, and update and maintain the library's policies and procedures accordingly. Writing is required to accomplish most of this work, whether it is to outline the plan or to serve as the end product in disseminating knowledge gained.

Wikis have proven to be highly effective in enhancing synergy, creativity, and productivity for Eccles Library faculty and staff. The wiki has become a popular collaboration tool, providing accessible online space in which to develop and share documents, as well as to browse and search information. Wikis are designed to facilitate editing by numerous people. Originally, wikis were designed to provide open access to collaboratively built information but have become popular for use by smaller, closed groups for targeted projects in libraries, education, government, and corporations.[1-3] The collaborative nature of the wiki automatically creates joint authorship and joint ownership. Wiki groups must think outside the single author, individually owned intellectual property mode to work successfully in a wiki environment. Wikipedia is the best example of a traditional, open access wiki.

When it comes to accomplishing the writing and documentation that must be done in the normal scope of work at the Eccles Library, wikis have been a key technology. Eccles Library faculty and staff are accustomed to working with teams to accomplish projects, so wikis fit well with this collaborative work style. This paper will describe this library's use of wikis in a variety of implementations. The Eccles Library faculty and staff have used wikis to write a major grant proposal, to form the documentation basis for a University Committee, to develop goals and objectives for a library strategic plan, and as a Systems Department documentation and communication forum. Library staff are now moving the library policy and procedure manual into wiki format. This wiki will also serve as the library's collaborative workspace and shared Intranet. Specific wiki tools will be described, as well as the rationale for selecting them.

BACKGROUND

As many probably know by now, the word wiki derives from the Hawaiian term meaning "super fast" or "quick."[4] Wikis allow documents to be written collaboratively, using a simple markup language, or using a graphical user interface (GUI) in a Web browser. A "wiki" is a collection of single "wiki pages," usually interconnected via hyper-linking. Ward Cunningham developed the first wiki in the mid-1990s as a "collaboration [tool] for the masses" and saw wikis as an easy way of developing and delivering content.[5] Over the last decade, many libraries have begun to utilize wiki software. A review of the literature found that libraries increasingly see wikis as a way of collaborating across departments and providing common workspace. Some see wikis as a tool that could bring in non-users, get user-generated feedback, and make their Web site and catalogs more community-based.

One of the most popular and well-known wikis is Wikipedia. Wikipedia is not necessarily a library wiki, but it represents the potential of the software and offers an example of how wikis can be used. While there is much debate about the authority and integrity of Wikipedia, these authors are in agreement that this incredible source of shared knowledge is an ideal place to begin a search for information. As with any background source, Wikipedia can be used to gain insight into a topic and to get a sense of the issues, the controversies, and the vested interests. Clearly, this is only fodder for more serious investigation and can serve an important step in the research process. Despite highly publicized examples of non-authorities posing as experts, there are a thousand fold more examples of amazing contributions to a public resource. A pathologist recently described an experience he had upon returning from a conference where papers were presented describing the latest research on Anaplastic Large Cell Lymphoma. He searched the topic in Wikipedia and found that the entry had been meticulously updated, reflecting the information he had just received from the leading experts in the field. This is just one example of the power of the collaborative resource. Clearly, as with all research at any level, critical thinking and corroborating resources are required to create an informed understanding of any topic.

This has been the case with library-based wikis as well. The Curtin University Library in Australia developed a wiki in order to facilitate

internal communications within their research services unit. The team wanted to "make some of [their] daily tasks and project activities more efficient."[6] Some libraries have used wikis as tools for conducting reference as well as instructional services. Reference librarians at Butler University created a site called WikiRef where answers and links to commonly asked questions are housed and updated for librarians across campus to turn to.[7] Kille sees wikis as "conversational technology ... [that] encourage incremental knowledge creation."[7] Ohio University Library implemented "biz wiki" in order to provide information on business resources that are available through the university libraries.[8] The Oregon Library Instruction wiki offers information on instruction resources and services such as "handouts, tutorials and other resources to share."[9]

Wikis also present the possibility of library patrons becoming involved and having a say in what the library's Web space looks like and how it should be utilized. OCLC is currently working on integrating wiki functionality into WorldCat so that it can become a user-driven resource < http://www.oclc.org=productsworks=wcwiki.htm> . Users will be able to review books and add comments within the catalog.[10]

All of these projects represent exciting uses of wikis in libraries. Wikis help bring team members together in an efficient way, and there exists much potential for bringing in library users and patrons in a dynamic, direct way. Faculty and staff at Eccles Library, however, discovered that there is a learning curve. For those that feel more comfortable with new technologies, the concern is smaller, but for users who view Internet technologies with some trepidation because of "newness," training is needed as well as time to experiment and use the resource on a test basis in order to become more comfortable.

WIKI SELECTION CRITERIA

Every project requires a selection process to determine the best wiki tool for the purpose. There are major criteria to be considered for each implementation. These include:

. How much does it cost?
. Do you want external or local hosting?
. How many participants are needed?

. What access restrictions (security) are needed?
. Do you need to see the page history (revision tracking)?
. Will you want easy editing format (WYSIWYG [What-You-See-Is-What-You-Get] vs codes)?
. What volume of document storage space will you need?
. Do you need a unique domain name?

Clearly, for most libraries, free is the very best cost. Fortunately, there are many free wiki applications available. Externally hosted wikis are nice for libraries with limited technical support. An externally hosted wiki requires no installation, but rather, is accessed entirely on the Web. There are issues with the number of users, number of pages allowed, volume of storage space, and long-term reliability, which may limit the scope of the project. Still, for many projects, a free externally hosted wiki is the ideal solution for getting a library wiki up and running at very low cost and with little or no technical support. Generally, these free, externally hosted wiki sites offer expanded services for a fee, so when a wiki project develops past a proof of concept point, library faculty and staff can use the success of the project to propose a small budget to cover enhanced services. Enhanced services for a fee may include allowing more users, more space to store documents, more wiki pages per site, and so on. There is the slight risk of losing the work if the free service is discontinued, bought by another company, or simply disappears from the Web, but many well-established free wiki sites exist.

Local hosting is another matter. Local hosting requires much more technical support, but as a result offers far more control. With locally hosted wiki software, all material and information are contained on library-owned servers, providing the ability to retain the collection in the long term. With a local wiki and adequate technical support, the wiki space can be customized to the library's needs, and users can be assigned roles and privileges, allowing access to work in specific areas and on specific pages. Owning the wiki and the digital space where the information is created, maintained, and stored provides a reliable means of preserving the work through scheduled back-ups, which can work into the routine of a library IT department. Locally hosted Wiki software generally offers a great deal of flexibility. The number of users may be unlimited. Some software allows permissions to be set at the page level and offers Access Control Lists (ACLs) so users can be assigned to specific areas of the wiki. For

larger organizations or projects, this is a nice way to divide work in logical compartments, with users accessing only areas where they are responsible for documentation.

A valuable feature of most wikis is the ability to see page histories. This allows users to see who edited the page recently and usually offers users a mechanism to compare versions and revert to an earlier version as needed. This helps groups see who is actively editing the pages. WYSIWYG editing functionality is very useful if the wiki is intended for use by large groups or users with little technical background. Most wikis will offer both WYSIWYG and code-based editing. This meets the needs of both "techie" and "non-techie" users and can broaden the scope of the user base.

Some other considerations when selecting a wiki would be whether unique domain names are offered and document storage needs. Check the wiki features to see if there is the option to create a unique domain name, if that measure of branding is needed. Also check to see what types of documents can be uploaded and linked. Volume of storage is important. The free, externally hosted wikis offer limited amounts of space.

With the many options available, a tool called WikiMatrix <http://www.wikimatrix.org> is invaluable. It describes and compares a huge array of wiki tools (92 when the author last counted!). Among the most useful features of the WikiMatrix site are the "Compare" and the "Wiki Choice Wizard" features. The Compare feature allows users to select from the list of wikis in the database and display a table of a large list of features for comparison. The Wiki Choice Wizard walks the user through a series of questions about the features required, then displays a list of wiki tools that will meet those specific needs. This is an outstanding service, available for free.

WIKI USE AT THE SPENCER ECCLES LIBRARY

The Eccles Library faculty and staff have selected and used free, externally hosted wikis for a number of projects. The externally hosted wikis were used primarily for short-term, team writing projects where it was not deemed necessary to preserve the work for the long term. Two of the projects were related to grant writing, and one involved brain-storming sessions for the writing of the library's strategic plan.

Externally Hosted: Grant Writing Project

The first externally hosted wiki project involved the preparation for, and the writing of, a major grant proposal. The grant writing team consisted of two librarians at the Eccles Library, a Neuro-Ophthalmologist at the University of Utah, a Neuro-Ophthalmologist at the New Jersey School of Medicine, and a consultant. Because the team was dispersed, it was decided that a Web-based wiki might assist the team in collaboration. The team had experience with sending Word documents via e-mail and that approach was deemed too complicated, slow, and tedious for this project. JotSpot < http://www.jot.com/ > , a free, externally hosted wiki, was selected for use by the team. (Since that time, Google has purchased JotSpot and it is now incorporated into the Google Sites application suite.) JotSpot met all the criteria for the project. The JotSpot wiki allowed the team to create rich, Web-based spreadsheets, calendars, and documents. The WYSIWYG editor made it as easy as using a word processor. The document storage space was limited, but the capacity was large enough for the project.

The Utah members of the team began with a series of face-to-face meetings where the mission, vision, and values of the project were determined, as well as a broad outline for the grant proposal. These were loaded onto the wiki site, along with links to the granting agency's request for proposal and other related sites. A logic model was started in a table format on the wiki (see Figure 1). All members of the team added to this, collaboratively developing a list of objectives with expected outcomes, activities that would lead to the outcomes, and indicators that could be used to measure the successful accomplishment of each outcome. The logic model informed the team as they collaboratively wrote the description of the project, based on the logic model. All of the information needed was kept in the wiki space. The wiki pages were easily navigated by team members, and all were able to participate in the writing of the proposal, despite physical separation.

One technique that was used to communicate with other members of the team was the use of colored text. JotSpot, like most wikis, allows the user to select a text color for editing. Members of the grant writing team would occasionally highlight text in a color, then add a question, or comment in another color. This would draw attention to that section of the wiki page and would alert the other team members that feedback was requested. This was a great means of soliciting

FIGURE 1. Grant Writing Wiki–Logic Model–Using JotSpot

comments or suggestions on ideas as they were described. Team members could offer suggestions, enhance the text with their own editing, or nix an idea before too much time was wasted in the writing. This kept the proposal honed to the satisfaction of all team members.

A few days before the submission deadline, the text was copied out of the wiki and into the required forms. A spell check was run on the entire document, although JotSpot does have the alert feature of color coding (in red) misspelled words. Overall, the team believed the wiki was an essential tool for the level of collaboration they desired. JotSpot offered all the collaborative tools needed to accomplish this significant writing project. All participants, regardless of location, found the wiki easy to access and edit. Part of the success of this project was due to the relatively high level of technical skill of all collaborators. All five participants were regular technology users and were willing to jump in and work with this new technology with no hesitation. In addition, all collaborators were highly committed to the project for which the proposal was requesting funding. Those factors combined to make the wiki a truly successful tool for facilitating the grant writing collaboration.

Externally Hosted: Strategic Planning

The second use of an externally hosted wiki at the Eccles Library was focused on allowing all faculty and staff to submit ideas as the library began to prepare its strategic plan. Faculty and staff began by meeting regularly and jointly editing an MS Word document during the meetings. The initial goal was to gather as many ideas as possible, and the pace of the weekly meetings was causing the project to go painfully slow. After several months with very little progress, a wiki site on JotSpot was established for the project, and teams were formed to represent education, research, and outreach efforts in the library. All faculty and staff were invited to join the team of their choosing. Each team was provided a shared username and password to the JotSpot Wiki. The team members were asked to enter their suggestions online in a modified logic model format, using the wiki. Work done in the face-to-face meetings was loaded into the wiki to seed the pages with ideas and formatting examples. Teams also continued to meet in person and edited the wiki pages as groups. The team usernames helped track which ideas were related to the three major focus areas of the library.

Using the wiki for this project allowed all staff and faculty to participate in the process of strategic planning. Team leaders helped guide the groups, and an enormous number of ideas were generated. Ultimately, the strategic plan centered on the broader goals and objectives, but the list of ideas will be great fodder for future projects and can be used to inspire the staff to fulfill their goals. While all faculty and staff did not contribute to the wiki pages, many did. All wiki projects at this library have shown that it is important to have team leaders who can motivate their colleagues to participate. There is also a level of technical comfort with trying new technologies that must be built for the wiki to succeed. More training for staff and more time to experiment would have enhanced participation in this wiki project.

Externally Hosted: Other Projects

Another example of a grant writing project that was not as successful involved an interdisciplinary team from a variety of colleges and public health agencies. This group had the need to collaboratively assemble a grant in a very short period of time. The library

representative selected a free, externally hosted wiki to meet their needs. ClearWiki < http://clearwiki.com/> was chosen to provide the service. It allows for 10 unique users at the free level. Document storage is limited to 512Mb, but the needs of the group were not large. The editing functionality was very simple, so it was hoped that all participants would be able to navigate the site.

In fact, the group used the site primarily to post and share documents. Because many of the documents came with pre-formatted information, including tables and charts, the coordinator did not find the simple editing functionality of the wiki itself to be very useful in collating all the disparate documents. It was too difficult to maintain formatting. Pasting formatted text from a word processor is generally not a good idea, as the formatting codes within the word processor make for very messy display in many of the free wiki applications.

This is a common drawback of wikis in general. Sophisticated formatting is not the intent of a wiki and some users have difficulty lowering formatting expectations. In some cases, as with this grant project, the individual participants were submitting documents that were not easily assimilated by the wiki. Additionally, most of the participants were not accustomed to collaborative technology and found the entire concept confusing. This points out once again the need for training and time for participants to become familiar with the tool for wikis to be truly successful.

The writing of this article is another example of the use of an external free wiki. The three participants shared access to a page within the JotSpot Wiki site originally established for the grant project described above. This provided easy access to the shared document and allowed the three authors to quickly access the page and edit at their convenience from their desks, or from off site or at home. For final submission to the journal, the content was again copied out and formatted at the end of the writing process.

Locally Hosted: MediaWiki and TWiki

Staff at Eccles Library installed two wiki software programs: MediaWiki < http://www.mediawiki.org> and TWiki < http://www.twiki.org/>. MediaWiki provides collaborators with a robust database, an unlimited number of users, and limitless storage.

MediaWiki allows for many file types to be uploaded and offers local control of the data. In addition, the software navigation is quite sophisticated. For some users, the navigation became cumbersome especially when editing pages. Another potential drawback is the fact that MediaWiki and TWiki require local technical support. For institutions with limited IT staff, this can represent an additional responsibility.

MediaWiki was installed and permissions set by the MediaWiki administrator, a member of the Systems Department's IT staff. First, Systems staff established a wiki page for documentation for the IT department. Then a wiki page was established for library staff to use as collaboration space for creating the online policy manual for the Public Services department (see Figure 2). The manual existed in print within a binder that sat on the supervisor's desk, for the most part, untouched. It was also available electronically and stored on a shared drive. Library participants began building the wiki by simply copying and pasting the contents from the WordPerfect document. A table of contents was created for quick browsing. Once the manual was in the wiki, supervisors began reviewing it and collaborating on what changes needed to be made. However, it was realized at this point that the table of contents for the manual was now the table of contents for the Public Services wiki and that making changes may not be as easy as expected for those who felt that the technology

FIGURE 2. Library Policy Manual Using MediaWiki

was new and unfamiliar. The supervisors who were making changes felt more comfortable working in word processing software such as Microsoft Word, but did not think that doing work in the wiki was similar to working in a program like MS Word. MediaWiki codes were required to do some of the formatting. Even with some training, there were additional hurdles to overcome such as trying to remember the Web address of the wiki and how to log in. Moreover, it seems that there were search problems as well. Since a single page was not created for each section of the policy manual (it essentially became one page with the table of contents used for browsing), searching would not take a user directly to that section. The table of contents seemed to be the best way for staff to navigate the system. In retrospect, it seems that it may have been more effective to create new pages for smaller subsets of information, which would have provided more effective searching.

MediaWiki was also used for campus-wide committee work. The committee, Media On Demand, used the wiki in a very comprehensive way. A single manager was selected to assign sections to committee members. This manager was a highly competent multimedia and technology specialist, and he made it his task to figure out the workings of the wiki and share them with the group. He determined how to break the information into chunks and then assigned the chunks of information to the appropriate committee members. Committee members are responsible for developing and maintaining their particular section and building the site into a service manual for the entire campus community to access. Many committee members see it as a form of open access publication making their work visible to the entire campus.

Before fully investing in MediaWiki as the internal wiki of choice, library staff decided to investigate other locally hosted wiki software. Although the Systems staff found MediaWiki to be intuitive and easy to use, the required use of tagging was confusing for many of the non-technical library staff. The WYSIWYG editor in the installed version of MediaWiki did not provide true graphical user interface (GUI) editing. Tagging (or coding) was still required to format text in the wiki pages.

Open source software, a robust database, and an unlimited number of users and storage, all features of MediaWiki, were criteria for a second locally hosted wiki. The initial goal of the Eccles Library wiki was to provide an easy way to collaborate, communicate, and train staff. Wiki software was originally developed for open access and collaboration. But as an internal workspace, the "intra-wiki" would

be restricted to library staff and reflect the work flow of the library—non-hierarchical and inter-departmental. Many library tasks and jobs are not tied to a particular department. Staff are cross-trained in multiple areas and perform jobs as required. Public Services staff help in processing the physical and electronic collections. Technical Services staff help cover service desks and monitor online services. The collective ownership functionality of wikis meshed with the library's work flow and vision for a greater custodial community.

The process of selecting another library wiki began with faculty and staff identifying and selecting criteria for an internal workspace that reflected the multi-user and multi-dimensional needs for digital collaboration. The staff-identified needs drove the choice of wiki software that the Systems (IT) staff considered for technical and hardware specifications. Essential criteria included security and anti-spam capabilities, connection and access from home as well as from within the library, robust searching by title as well as within full text, and a WYSIWYG editor. Also important was stability and active development of the wiki software. In other words, the wiki software would have a proven track record by users and contributors, and its own wiki and support forums would reflect activity with current content. TWiki <http://twiki.org> became the wiki of choice.

User permissions for read=write access were essential to library faculty and Systems staff. TWiki and other wikis use "Access Control Lists" (ACL), a "feature...[that] gives...fine-grained permission control....[One] can set up lists of users (perhaps in groups or roles) who are allowed...access to certain parts of...[a] wiki, for operations such as viewing, editing, creating new pages, etc."[11] Access Control Lists are an efficient mode of security. Individuals are assigned to user roles which define who can view, edit, or create pages, thereby streamlining access permissions for the Systems staff or wiki administrator. Anti-spam or prevention of comment spam is another essential element to consider. TWiki allows for the CAPTCHA plug-in <http://www.captcha.net/>, which prevents automated spam by requiring a human to read and type in distorted text. CAPTCHA (Completely Automated Turing Test To Tell Computers and Humans Apart) is part of the reCAPTCHA project, which helps digitize old books as all the distorted words come from old texts. By typing in the distorted word, it is automatically added to a digitized recognition archive. TWiki provides two editor views, a tag view editor which requires the use of TWiki codes or tags for formatting, and a WYSIWYG editor. Not all library staff adding

content are comfortable with coding or script tags, so a graphical interface, the WYSIWYG editor, is fundamental for all staff participation. For staff familiar with html editing, TWiki recognizes all html coding.

While library departments and teams identified at least one "collective knowledge" archive to transfer and grow in the wiki, all were encouraged to develop a schema or model on which to build wiki pages.[12] Much of the library's digital knowledgebase resides on a network drive; but unlike the hierarchical organization of the network drive with nested folders and files, a wiki is just a collection of wiki pages (flat and non-hierarchical). The organization grows from how the wiki pages are linked. Content linking drives organization. Staff were encouraged to throw out the traditional table of contents hierarchy, and, instead, focus on the "gallery" page that directs users to browse into content.[13] Or alternatively, use the "search" function to find content. In planning for the wiki, faculty and staff were encouraged to consider what worked and did not work (the pros and cons of) with the organization of the network drive. As mentioned earlier, pre-planning the skeletal structure of the library wiki proved beneficial. Learning from library staff "growing" the Public Services policy and procedures manual in MediaWiki, the library TWiki was initially organized in the "Sand box"—the play area for new content. Faculty and staff then met to discuss the Main Web (see Figure 3) organization for the library and the top tier or gallery pages that would direct users to content. (Please note that MediaWiki also has a Sandbox, but in eagerness to populate MediaWiki, library staff worked directly in the Main Page. Instead of re-creating the MediaWiki Public Services Main Page, library faculty and staff decided to try another locally hosted wiki.)

In choosing the TWiki software, the staff-identified criteria as well as the library's practice of supporting open source software were met. In addition to building the library's intra-wiki, TWiki and MediaWiki have opened opportunities for other library-sponsored wikis, such as a wiki version of the library's FAQs.

CONCLUSION

Wikis represent a means for storing pertinent information and for collaborating with others on particular projects, large and small. When determining whether to use externally or internally hosted

FIGURE 3. Library Main Page Using TWiki

wikis, the criteria outlined earlier should be kept in mind. In particular, externally hosted wikis are very easy to use, not much building is required to link various documents and=or spreadsheets, and there is no need for local IT support. External wikis have limited storage space as well as a limited number of users for free. On the other hand, locally hosted wikis are much more robust and have unlimited storage space and users. Internal wikis have more file type options, more sophisticated navigation, and also allow for local control of data, users, and access. However, locally installed wikis are not as intuitive to edit, and they require local IT support.

In order to determine whether to use external or internal wikis, the scope and purpose of the project should be considered. The number of users, the extent of time the wiki will be utilized, as well as the amount and type of files that will need to be stored must be determined. The experience gained at Eccles Library has shown that externally hosted wikis successfully served small group projects such as article, grant, or presentation writing. For larger projects such as intranets, Web sites, or policy manuals, locally hosted wiki software provided the appropriate resources. Chunking or mashing up of information and how the user will be directed to content also need

to be considered. Some wiki participants at Eccles Library had difficulty with the new structure of organization, relying on chunked information and searching rather than hierarchical menus. Another challenge for some users is the limited formatting options, relative to word processors such as MS Word, in the WYSIWYG editors. Of no small significance is staff participation in planning, populating, and utilizing wiki content. Allowance for training and play time in the Sand Box and the Main Web are essential to a successful wiki.

Wikis are intended to create a collaborative working environment. As more emphasis is placed on teams working collaboratively, these social networking tools will be instrumental in facilitating this work environment. As Quiggin states in his recent study, "Blogs, Wikis and Creative Innovation," technology innovation will be driven by the use and performance of these new Web 2.0 tools.[1] It is his belief that the tools allow for more and better cooperative innovation and creativity. Libraries have long been organizations based on the principle of cooperation and partnerships. When Quiggan states that policy makers need to "de-emphasize competition and emphasize creativity and cooperation," it seems that libraries are ahead of other social institutions and are ideally positioned to take advantage of these Web 2.0 technologies.

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