

**The Challenges and Successes of Wikibookian Experts and Wikibook Novices:  
Classroom and Community Collaborative Experiences**

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## **The Challenges and Successes of Wikibookian Experts and Wikibook Novices: Classroom and Community Collaborative Experiences**

### **Abstract:**

The present study explored the creation of Wikibooks in both classroom (i.e., Wikibook Novices) and general community (i.e., Wikibookian Experts) contexts. Observations, surveys, and follow-up email interviews were the primary means of data collection. This study analyzed various demographic data of Wikibookians as well as motivational factors involved in Wikibook creation. Other variables explored included Wikibook ownership, challenges, frustrations, perceptions of success and completion, and norms for collaboration in the Wikibook community. The results indicate that Wikibookians were young males with varying educational backgrounds; fewer than half without a four year college degree. Wikibookian Experts were more likely to perceive that a Wikibook could be completed than Wikibook Novices in a classroom project. And compared to the novices, the Wikibookians Experts were also more likely to indicate that no one owns a Wikibook. Still there were similarities across the populations in this survey. For instance, they both tended to see a Wikibook environment as informal, exploratory, collaborative, and somewhat independent, though in varying degrees. They also recognized that there are multiple roles involved in the completion of a Wikibook—contributor, author, reader, etc.—as well as multiple owners or no owner of the final Wikibook product; assuming that there is a final product. Importantly, they perceive at a Wikibook project as a way to share knowledge, obtain personal growth, publish their work, learn new technologies, and make a contribution to society. However, the Wikibook Novices favored the publishing avenues it provided as well as the technology experimentation whereas the Wikibook experts focused on sharing knowledge and looking for personal growth and enrichment. Many research avenues are noted to follow-up some of these similarities and differences.

### **Introduction:**

The notion of a wiki is an interesting concept that has taken off in both formal and informal learning settings. Imagine a Web page that anyone with an Internet access cannot only read but can also edit (Evans, 2006). Now imagine if that editing process extended well beyond that page to an entire chapter or book. If successful, you have envisioned the birth of the Wikibook. A Wikibook is a community developed book or document with contributions from anywhere on planet Earth. Given existing Wikibooks are presently available in more than 110 different languages already (Wikibooks, 2007c), there is no doubt that authorship and collaboration potential here is enormous! If password protected, however, such a community can be restricted to a particular classroom or group of students or organization where ideas might incubate before sharing with the greater world community for feedback.

The present study explored both classroom and community Wikibook situations. It was a two-part study that was designed to help determine the potential to use Wikibooks as an educational technology and potential instructional strategy that promotes learning collaboration and social interaction. Phase One of this study involved a Wikibook class project with graduate students in two different universities. In contrast, Phase Two of this study involved Wikibookian experts who had been previously active in the Wikibook Website.

There are serious concerns and issues with both community as well as classroom developed resources such as online books and Web pages. For one, there is no guarantee that the

individuals involved will be professional editors. The most common complaint charged against resources such as the highly popular Wikipedia site (Wikipedia, 2007a), for instance, is that they lack expert panels and reviews. Second, what will drive students to complete a wiki-related assignment? Where are the motivational factors that will drive the project? In a classroom or cross-institutionally developed Wikibook, what will engage the students to perform at a high level? Questions and issues surrounding Wikibooks developed by the general community are even more cloudy. And what happens when a wiki-related project lacks momentum or interest? How are Wikibook project ideas modified, reshaped, or eventually discarded?

### **What is a Wiki?**

Before we can explore such issues, we must clarify what a wiki actually is. According to Brandon Hall (2006), "A wiki is a collection of Web pages that can be easily viewed and modified by anyone providing a means for sharing and collaboration." Hall further points out that Wikis can be used to record information as it is thought of and can serve as a repository for such knowledge and information. In addition to archiving events, the benefits of a wiki naturally include the speed of adding to, updating, and accessing information as well as the sense of joint rights and ownership or no ownership over the material.

Wikis are open or free spaces for writing and collaboration. These writing spaces result in publications which are online, not on paper. A wiki is a highly generative space which carries with it the possibility and the hope for creativity and spontaneity. But unlike other writing spaces and products, there is no particular claim to ownership over those ideas. They have a distinct advantage over other writing spaces since they require no previous HTML or computer programming skills. Importantly, unlike many other forms of collaborative writing and online tools, edits within a wiki can be tracked since wikis provide a history. Anyone can visit and revisit that history which details contributions and dates of such contributions, and, unless such text has been marked for no changes, can revert the currently shared text to that version.

Basically, wikis provide simple, free, and unstructured environments for communication (Honegger, 2005; Leuf & Cunningham, 2001; Lio, Fraboni, Leo, 2005) where anyone can access and modify the content of the texts. There are many types of wiki tools and resources. Wiki projects can run on software one can download on a server or on a Wikifarm which hosts the wiki project. Some have features to control access (password or open access to the public), editing controls (various levels), pricing differences (free or licensed), and other advanced features (e.g., spell checking, polling, blogging, emoticons, and calendars). As this form of technology grows in acceptability, there will be increasing tools and resources available for wiki-related formal and informal learning activities.

### **Wikis in the Classroom**

In terms of formal classroom situations, you might use a wiki to have a class create a community product. One such product might be a class glossary that future classes might update. Another possibility is for a class or group of students to create a report or white paper. You might require a class essay, joint chapter summary, or outline. Or perhaps the class task might be to interconnect students' papers into chapters of a book on a particular topic as in the recent emergence of Wikibooks. Other possibilities for your wiki project include debating course topics and readings, maintaining group progress journals, and sharing resources (e.g., conference information, Websites, and writing samples). And, of course, an instructor might have his students edit pages of Wikipedia or some other wiki resource.

As an example of Wikibooks in a college classroom, Richard Watson at the University of Georgia had the students in his XML class create a Wikibook textbook. In this project, he was

attempting to teach collaboration, trust, creativity, and negotiation skills since those are the skills his students needed when they entered the business world (Evans, 2006). Each student was charged with drafting one chapter of the book. However, anyone could edit or modify it in the wiki. In such a project, the role of the instructor shifts from transmitter of context to planner of the course. While the project started off slowly with various technology glitches and text errors, the project was ultimately a success.

In a similar project de Pedro, Rieradevall, López, Sant, Piñol, Núñez, and Llobera (2006a, 2006b) explored wiki-related projects over a two year period using both qualitative as well as quantitative measures. De Pedro et al. explored eight wiki projects in areas such as biology, environmental sciences, and nursery involving information gathering, group synthesis, critical thinking, and writing class summary reports. While here too, some initial technology problems were revealed, instructors found many positive aspects of the wiki environments including ease of use, speed of access, version control, and a history of who made changes in the document. Students seemed to prefer wiki activities over traditional ones, though they also were hesitant and reluctant to allow others to view and modify their work in progress. Across their studies, de Pedro et al. found that the "Editor-in-Chief" role was vital for higher quality work.

#### **Wikis at the Wikimedia Foundation: Wikipedia and Wikibooks**

There are many wiki-related sites sponsored by the Wikimedia Foundation. Wikipedia, the free online community-generated encyclopedia started in 2001, is undoubtedly the most well known. In fact, an annual survey of by brandchannel.com found that Wikipedia was the fourth most influential brand impacting the lives of professionals and students in 2006 (Reuters, 2007b). Amazingly, in this particular survey, it ranked only below Google, Apple Computer, and YouTube. As of October 23, 2006, Wikipedia had more than 4.6 million articles in over 250 different languages. Not surprisingly, the largest assembly of such languages was the more 1.6 million articles in English (Wikipedia, 2007b). Of course, it does not hurt any when a major study of the quality of its scientific contents finds its factual accuracy to be similar to Encyclopedia Britannica (Giles, 2005).

Prevailing concerns regarding the quality of Wikipedia are buffeted by the number of co-authors; more than 3 million registered Wikipedian user accounts and a huge, though unknown, number of unregistered individuals have contributed to and are members of this community (Wikipedia, 2007d). Naturally, some Wikipedians are more active than others. Stunningly, more than 50,000 people have already made at least 10 postings to Wikipedia (Rosenzweig, 2006). That is a huge army of regular supporters and site editors.

There is always power in the sheer number of eyeballs protecting a Website or compiling software code. Rosenzweig, however, argues that while the factual accuracy of content may favor sources such as Wikipedia, there is also a need for engaging and clear text, a sense of command of the scholarly literature, and insightful and persuasive interpretations. As he notes, "committees rarely write well." Furthermore, he accurately points out that truly gifted writers will find other avenues for their publishing efforts. In fact, Rosenzweig maintains that many Wikipedia entries have a "choppy quality" to them due to the assortment of people working together at the sentence or paragraph level; they can see the sticks and branches, but perhaps not the trees and definitely not the forest. At the same time, he insightfully points out that "Wikipedia offers a first draft of history, but unlike journalism's draft, it is subject to continuous revision."

Sister projects to Wikipedia coordinated by the Wikimedia Foundation include Wikibooks, mentioned above, as well as Wikispecies, Wikiquote, Wikinews, Wikiversity,

Wiktionary, Wikisource, Commons, and Meta-Wiki In terms of resources specifically intended for educational audiences, Wikimedia Commons is a free online repository of over 1,000,000 media files to which anyone can contribute or learn from (Wikicommons, 2007). The objects found at Wikimedia commons are searchable by topic, type, license, author, and source. Free drawings, animations, maps, photos, painting, music, speeches, and much other content can be found there. In addition to Wikimedia Commons, Wikiversity seems somewhat similar with its goal of providing free learning materials and activities as well as being a social organization “that is dedicated to learning, teaching, research and service” (Wikiversity, 2007). Given it was approved by the Wikimedia Foundation in August 2006, Wikiversity is a recent phenomenon, and, hence, it is difficult to predict its’ ultimate growth and outcome. The research possibilities, however, are conceivably enormous and link to those currently underway such as that exploring MIT’s OpenCourseWare project and learning objects at MERLOT and Connexions (Lorenzo, 2006).

In this particular research endeavor, we explored Wikibooks. The Wikibooks project site was created on July 10, 2003 as a website for free online textbooks and was originally named the Wikimedia Free Textbook Project and Wikimedia Textbooks (Wikibooks, 2007a). Quickly the site spawned hundreds of free and open source modules, books, and other resources. It presently contains more than 1,000 books and 23,000 modules and chapters (Wikibooks, 2007b). The contributors to such online books and modules are titled Wikibookians. As of February, 2007, there were more than 50,000 registered users of Wikibooks (Wikibooks, 2007c). The Wikibook project site indexes collaboratively written textbooks, nonfiction books, study guides, information booklets, and other reference materials. And it is growing! As an example of such expansion, the Wikimedia Foundation recently sanctioned the development of junior Wikibooks for learners ages 8 to 11 (Wikibooks, 2007d). Such trends are bound to continue to broaden the resources and scope of Wikibooks in the future.

While such environments offer hope for someday providing access to educational books, study guides, and other documents to every connected learner and in any language, there are myriad issues, questions, and problems related to online collaboratively authored books such as those found at the Wikibooks site that need to be better understood and resolved. Among the prominent criticisms of Wikibooks that are self-admitted by the Wikimedia Foundation (Wikipedia, 2007c), include the plethora of incomplete texts and the fact that many of the more comprehensive Wikibook texts are of poor quality. Part of the problem lies in the fact that the Wikibook software tools were not intentionally developed for a professional polished book development environment. In addition, HTML coding of pages does not equate to fixed page-length and page-width books. And the Wiki-based style of editing is in stark contrast to a hierarchical style of editing common to professional books.

### **Expert-Novice Wikipedia Research**

Perhaps, as alluded to earlier, a more important and interesting area to explore is the sociocultural aspects of wiki-related phenomena. Bryant, Forte, and Bruckman (2005) found that there were marked differences between expert and novice contributors in the Wikipedia Website. Novices focused their attention on individual articles where they fixed omissions and weaknesses in them. They viewed themselves as consumers of information provided at the Wikipedia Website. For them the most important technology tool or feature was the search box. They were also drawn into Wikipedia by the ease of editing, the removal of barriers for participation, and the chance to make a contribution. From a sociocultural standpoint, such individuals were novices or legitimate participants (LPP).

According to Bryant et al., novices tended to view themselves as readers of Wikipedia who focused on the technical quality of it and the edits that are required on individual articles. They viewed the Wikipedia site as a collection of articles with random individuals adding information to it. They did not perceive the Wikipedia site to be a strong community of practice. For them, there was no division of labor among the human talents at this Website.

In sharp contrast to these novices, were experts or “Wikipedians” at the Wikipedia site. The research from Bryant et al. revealed that for a true Wikipedian, Wikipedia is not a random or loosely strung collection of articles. Instead there is an important corpus being developed here. In their minds, they are part of a community of co-authors who each contribute their distinct roles and talents to build a resource that is usable by a global community. Accordingly, the quality and reputation of Wikipedia as a whole is more important than any article or set of articles.

As Bryant et al. found, once one shifts to the role of Wikipedian, the goals naturally expand. Wikipedians feel that their work is contributing to the greater good. They perceive themselves not simply as readers or editors of an individual article, but as managers and creators of the Wikipedia site and supervisors of a personal “watch list.” Wikipedian experts believe in the product that is created by the community. They also take pride in abiding by a set of rules and guidelines. Such rules might include avoiding deletions and reverting back text, maintaining rules of etiquette, including their names in discussions or talk pages but not in the articles produced, initially assuming good faith efforts of others, and working toward compromise and agreement. And when there are problems, Wikipedia now has a system of arbitration as well as designated arbitrators and system administrators to deal with such issues.

One of the most crucial responsibilities of an expert Wikipedian is having a “watchlist” of pages to maintain control over and protect in case hackers and trolls arise (see Viegas, Wattenberg, & Dave, 2004). For instance, when Professor Alexander Halavais intentionally inserted 13 errors in Wikipedia back in 2004 in an attempt to undermine the site since few had tested the credibility of it, all were corrected within a mere three hours (Read, 2006). Similarly, Viegas et al. (2004) found that mass deletions and problems with vulgar language are modified or corrected within a couple of minutes. Expert Wikipedian surveillance activities are what typically fixes errors within 5 or 10 minutes on a Web page. In effect, there is an assumption of responsibility over certain Web pages so that the corpus of Wikipedia can be deemed highly reliable, credible, and useful.

When such monitoring behaviors occur, that is a clear sign that the individual has moved from LPP status out on the periphery to a more central part of the Wikipedia system and process. They might start on the edge of this community as a lurker and gradually take on greater responsibilities within the Wikipedia site. According to Bryant et al. (2005, p. 9), for such individuals, Wikipedia is no longer just a random collection of articles, but, instead, is a “community of co-authors who play distinct roles and have distinct talents as they build a resource.”

From a sociocultural perspective, the technology tools and resources available for expert Wikibookians should enable them to accomplish tasks that they could not complete or reach individually. Such tools and resources should support and scaffold their Wikipedian behaviors, such as in helping them assist fellow contributors, discuss issues or areas of concern, and help in the dynamic knowledge generation and evaluation processes. Interestingly, while the depth and extent of work increases as one becomes an expert Wikipedian, the context of their work, including the available technology toolset, basically remains unchanged. Experts and novices

must swim together in this sea of information. As a technology that is still emerging and being refined, there are likely many more tools that will evolve to help in that endeavor.

Interestingly, Bryant et al. found that while there is no authorship or name attached to individual Wikipedia pages, expert Wikipedians appreciate personal accolades in the talk pages as well as other designated places. Recognition in Wikipedia occurs when an article is featured as well as when an article is nominated to be featured. Wikipedians also value article recognitions since that can attract greater attention and contributions to it, thereby potentially increasing article quality and the chance that it is cited in the media. They also recognize that a diversity of authorship within an article (i.e., the number of individual editors) as well as rigor (i.e., the sheer number of edits) can help improve the appearance of the article and elevate its quality and status.

Many of these same sociocultural principles and ideas may be useful for analyzing the Wikibook Website. Is there the similar journey within the Wikibooks site from novice to expert as Bryant et al. uncovered in Wikipedia? If so, how does this play out? Is there an apprenticeship process? And how do the technology tools and resources found in the Wikibooks site scaffold Wikibookians to complete their task? These are just some of the questions that arise from a sociocultural perspective when exploring a wiki environment such as Wikibooks.

### **Wikibook Research Avenues**

In addition to expert-novice questions, Wikibook research could definitely head in many other directions. Some might explore the stages of the Wikibook development process. Or perhaps they might wish to understand creativity and the idea generation process. Other researchers might compare the forms of collaboration within a classroom-based Wikibook project and a community developed one. If interested in such sociocultural research areas, they might attempt to document how intersubjectivity or shared knowledge among Wikibook participants enhances the development process. Others might investigate the types of tools that facilitate or hinder the Wikibook development process. Equally important, the coherence and overall quality of the texts that are produced might also be studied.

Still others might push to uncover reasons why many Wikibooks are never completed and the strategies that can be embedded in the Wikibook development process to complete more of them. Does the Wikibook model of online book development encourage abortive book projects? Do existing wiki tools fail to support the goals of Wikibooks? And still others could conduct usability studies on the Wikibooks Website, including Junior Wikibooks, to determine ways in which they are presently used as well as how they might be used in the future.

So many research directions are possible. While research might explore the cognitive outcomes of helping write a Wikibook or from reading one or more of them, as apparent in many of the research questions and issues above, perhaps the most intriguing questions are sociocultural in nature. Wikibooks, and Wikis as a whole, represent a major opportunity to understand the sociocultural principles and concepts in an environment that can entail both formal as well as informal learning.

### **Purpose of the Current Study**

Wiki-technology has emerged recently as an interesting tool for both formal and informal learning collaboration. The results of previous studies suggest some criteria related to the implementation of wiki tools in classroom activities (de Pedro, 2006a, 2006b; Evans, 2006; Wagner & Bolloju, 2005) such as selecting appropriate courses for a wiki project, the teacher's role as facilitator in a wiki, the use of an editor-in-chief, and arranging topic-based knowledge. In

this study, we focus on a particular wiki-tool, i.e., the Wikibook, implemented in cross-institutional context.

We are particularly interested in student construction and sharing of knowledge in an online, collaborative writing environment called a Wikibook. Our research questions included the following:

1. What were Wikibook Experts and Wikibook Novices inspired to accomplish within their collaborative interactions in the Wikibook environment?
2. What nurtures the establishment and maintenance of an online book sharing community? In effect, what helps foster the development of a culture or community where knowledge sharing is expected?
3. Can students new to the Wikibook environment jointly develop an online class book?
4. How is success and completion of a Wikibook determined by Wikibookian Experts?

There were two phases to this study that explored and gathered information related to the above questions. In Phase One, we set up a cross-institutional collaboration between three universities to see how using Wikibooks as an instructional strategy could be realized in an academic setting. In Phase Two, we explored the success factors in the development of Wikibooks from experts who had experience participating at the popular Wikibooks web site. The results were intended to improve the implementation of Wikibook projects within academic settings. Findings from Phase One and Phase Two will also help understand the key social, technical, and psychological aspects underlying a Wikibook project within, across, and beyond academic settings.

### **Current Study and Objectives**

**Phase One: Wikibook Novices.** It is a challenge to apply and utilize the emergence of such a freewheeling and open-ended community context as wikis for pedagogical purposes. In parallel to the social constructivist context of most Wikibooks, a Wikibook project related to the uses of instructional technology from a sociocultural perspective was designed. Graduate students among classrooms in three locations, including two universities in Indiana and one in Texas were involved in this project as writers, chapter editors, or both. Most of the students never met each other before this class. Besides email communication, these students communicated with each other via a designated Wikibook website for this class (which included introductory activities) as well as in two class videoconferences. Each student, as a writer, was given the option to write one chapter in the Wikibook and to edit a chapter from someone else. All students were paired across the institutions in order to provide for peer review and feedback on each other's work.

**Phase Two: Wikibookian Experts.** In addition to investigating how Wikibook Novices in university classes attempt to create a Wikibook, we studied those who had accomplished such a task already or were self-initiated to start one; i.e., Wikibookian Experts. Wikibookians are people who have created, edited, or contributed to a Wikibook. Wikibookians create their own virtual community in each online book project, although they may not know their collaborators personally. We were particularly interested in the success of the Wikibooks web site, such as [http://en.wikibooks.org/wiki/Main\\_Page](http://en.wikibooks.org/wiki/Main_Page), because, as a sister project to Wikipedia, Wikibooks had grown rapidly during its first few years of existence both in terms of the number of books as well as the number of Wikibookians or contributors to such books. Astoundingly, the number of Wikibook modules passed the 10,000 module milestone after only two years of operation (Wikibooks, 2007a) and as of July 2006 there were more than 1,000 Wikibooks and 23,000 modules or chapters available at the Wikibooks website.



## **Inquiry Methodology and Data Collection**

Data collection in this study was separated into two parts, including: (1) data from the Wikibook class project with students from Indiana and Texas (i.e., Wikibook Novices), and (2) data from Wikibookians who had already developed a Wikibook or were in the process of doing so (i.e., Wikibookian Experts). We observed how participants communicated and shared ideas among each other. Since a key objective of this study was to explore particular attributes where Wikibookian Experts and Wikibook Novices were working in the Wikibook environment, we designed closed-ended survey questions related to Wikibook environments for each group of participants using a Web-based survey tool called SurveyShare. As a means to follow-up and extend beyond the survey items, we designed a set of open-ended email interview questions.

In this study, there were 13 participants from the cross-institutional Wikibook project and 80 participants from the expert Wikibookian group who completed the online close-ended survey. A list of 45,000 registered Wikibook users (i.e., possible Wikibookian) was available through the Wikibook Website. However, it was difficult to determine exactly how many Wikibookians from the list were contributing to the Wikibook Website. Nevertheless, Wikibookians were identifiable by their names having a blue font color which indicated that they had an active status and had updated their accounts.

Using this information, we randomly sent survey messages to around 1,500 Wikibookians, whose status was shown as active, via the contacting function of Wikibook web site. We received 80 responses to our survey request and 4 emails from individuals who felt that they lacked enough experience to complete our survey. The level expertise likely varied significantly among the respondents as we did not determine how many books each respondent had completed or attempted to complete.

The online survey was active from May to July, 2006. When the survey was deactivated, the open-ended questions were sent out via email to 4 randomly selected people from the Wikibook class project and 15 randomly selected ones from the Wikibookian group. The quantitative data from the online survey was compared to the qualitative information from the email interview question results. Findings across these data sets were integrated.

### **Results of Study**

The survey and interview results reveal several highly interesting themes. Unfortunately, however, there were few students in the Wikibook project class who actually completed chapters within the Wikibook. As a result, it would not be deemed a success. Our research explored why that was the case.

#### **A. Demographical Variables**

Student interactions within the Wikibook-project site were not as extensive as we expected. One reason for the limited interaction was that many students at the collaborating institution in Texas were part-time graduate students, whereas most of the Indiana students were fulltime. Time to complete chapters of the book, therefore, was a factor for many of these students.

Survey results also revealed that around 57% of Wikibookians were younger than 25 years old (see Table 1) and, surprisingly, more than 97 percent were male, many without a college education (39 percent; see Figure 1).

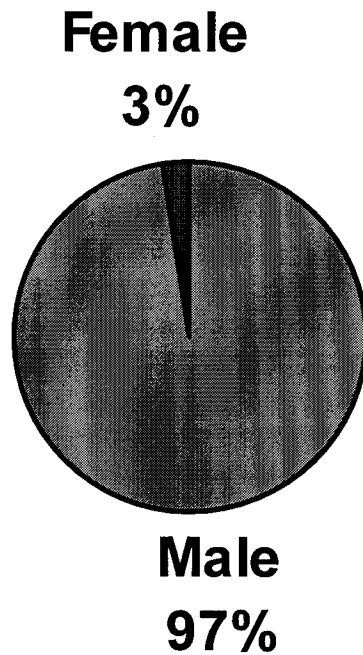


Figure 1. Gender of Wikibookians.

Other demographic data also proved interesting. As shown in Table 1, more than half (i.e., 58%) of Wikibookian experts were under age 25. Of that, 15 percent were under age 18. Only 13 percent of Wikibookians surveyed were over age 34.

Table 1: Demographical data for Wikibookians

Age	Amount	Percentage
Under 18	15	20.55
18-25	27	36.99
26-34	18	24.66
35-50	9	12.33
51-65	2	2.74
Over 65	2	2.74

As Figure 2 details, more than half did not possess a four year college degree, though many appeared to be working on one. Many, however, seemed to be working on a degree at the undergraduate or graduate level.

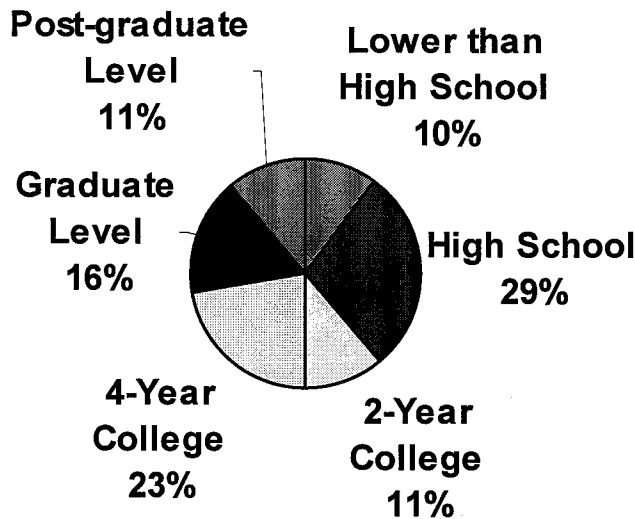


Figure 2. Level of education of Wikibookians.

Nearly three-quarters of Wikibookians had been contributing to a wiki site of some type for more than a year. In fact, only 10 percent had less than six months of experience in a wiki environment. Across these demographic data, we can conclude that many Wikibookians are young men without a four year college degree who had backgrounds or familiarity in wiki environments.

### **B. The Importance of Topic**

The first assignment in the novice Wikibook project was topic selection; we provided an opportunity for each student to choose a topic to write about. The title of the Wikibook project for the whole class was also open. In retrospect, such openness may have been a mistake. Students were asked to post their ideas about the topics within one week, but only a few students completed the task within the time required.

It seemed that students were hesitant to share their rough ideas, even at a password protected site. Why were they so hesitant to share? We suspected that there were several key reasons. For instance, they might be indoctrinated in a system wherein their work is expected to be polished and perfected before sharing. As de Pedro and his colleagues found across 8 wiki projects at the University of Barcelona (de Pedro, 2006a, 2006b), students are extremely hesitant to share messy or incomplete ideas. In addition, they might need greater familiarity and exposure to a Wikibook project before becoming involved and committed to it. They might also have wanted to protect their personal thoughts and ideas. And, perhaps most importantly, the assignment could have been made mandatory instead of optional.

Obviously, topic selection and agreement was much less of an issue in real world Wikibook projects since a Wikibookian who wants to create a Wikibook typically has a particular topic and concrete subtopic ideas in mind about what he is going to write, edit, and coordinate. In effect, when Wikibookians work as a team of contributors, they must make decisions about the modules or key topics of the books before deciding to create a Wikibook. In contrast, some Wikibookians use the Wikibooks website as a collection of their own work or as a place to solicit content for prespecified topics or chapters. In that case, there is no need to worry about topic selection.

### **C. Wikibooks Environments: Initial Expectations versus Current Perspectives**

As indicated earlier, the Wikibook Website site (Wikibooks, 2007b) was founded due to the need for a place where Wikipedians could create textbooks. Some Wikibookians found their ideas and content more suitable to this environment than to places such as Wikipedia. At the same time, some of our respondents did not find Wikibooks adequate for their book-related needs. Still others developed an interest in Wikibooks only after witnessing a few of their Wikipedian friends depart for such adventures. Of course, the expectations of newcomers to the Wikibooks Website when they first came to the site were quite varied. One Wikibookian Expert did not expect it to be very effective because it is difficult to engage people in collaborative work all the time, but another believed that Wikibooks could be a great place to maintain "free, collaborative written textbooks." Nevertheless, most people who have accessed the Wikibooks Website, including both expert and novice Wikibookians, appreciated the collaborative environment provided by Wikibooks, particularly in the ability to track the contributions and changes of each contributor.

Several unique characteristics of Wikibook environments were mentioned by participants. For example, one person claimed that Wikibooks generate an "open-source attitude" since "there is not one person in charge" of Wikibooks. For him, Wikibooks provided an opportunity to work with people whom one has never met. Interestingly, another expert Wikibookian indicated his concern about the availability of "a special area where one set group of people can take over a book for a time" so that such a group could have exclusive authority to work on that project until the release of the final version.

#### **D. Inspiration to Work on Wikibooks**

As mentioned earlier, one interesting issue was what would inspire Wikibook Novices and Wikibookian Experts to create, contribute to, or co-edit Wikibooks. The results of the surveys from both groups reflect the same top three ranking. However, among these three, the highest ranked of each group was reversed in their ranks (see Figure 3). While the highest rated item that inspired Wikibook Novices was publishing their work (62 percent versus 38 percent for Wikibookian Experts), the highest rated item for Wikibookian Experts was making a learning contribution and sharing knowledge (77 percent versus 54 percent for Wikibook Novices). It was extremely interesting to see that most Wikibookian Experts felt inspired to learn to contribute and share their knowledge; no one directs them to do so. As a result, they seem to collaborate naturally. This result could be a reason why the Wikibooks website finds success in contributing and sharing knowledge among Wikibookians and their readers, while graduate students in a course-related Wikibook project may not as readily see the relevance of such a project to their studies. Wikibook Novices, however, did view it as a chance to publish their ideas (62 percent), while Wikibookian Experts were not so focused on publication opportunities (36 percent). Both groups, however, perceived a Wikibook project as a place for personal growth and enrichment (54 percent of Wikibook Novices and 56 percent of Wikibook Experts). Not too surprisingly, nearly 40 percent of students in the Wikibook project class also felt that experiencing an emerging technology as well as self-exploration and personally learning new ideas were motivators. Such issues were less important for Wikibookian Experts.

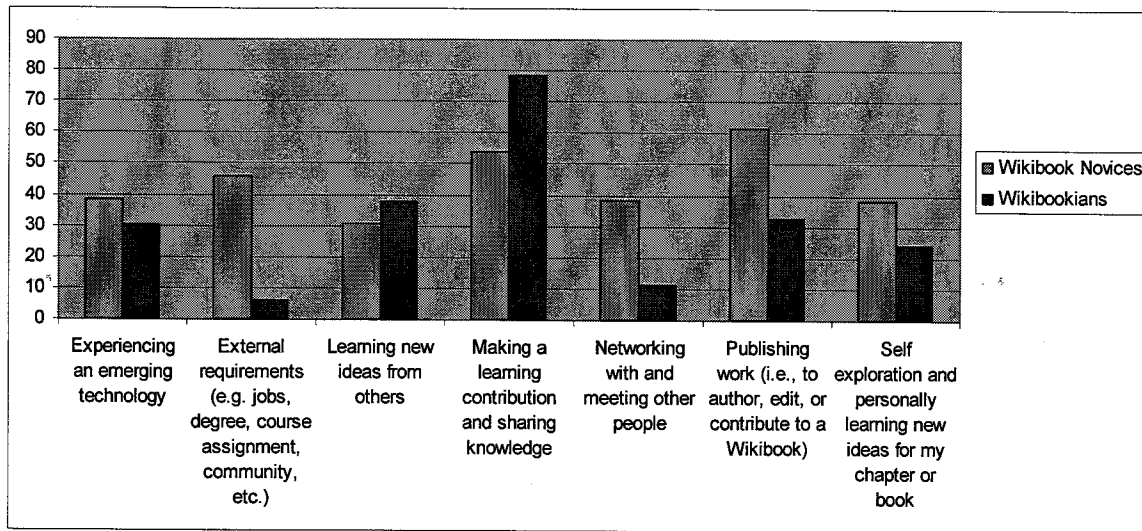


Figure 3: Reasons for creating, or contributing to, or co-editing one or more Wikibooks

Some strategies to inspire new Wikibookians to work in the Wikibook environment that were suggested by Wikibookian Experts, included to simply “start using it,” “finding help” rather than trying hard by ourselves; and working on existing Wikibooks rather than create a new one. In short, the important point is to seek interesting and relevant experiences in using Wikibook environments. In addition, it is an apprenticeship process wherein one should first start with sufficient help from others or start by helping with someone else’s book. Gradually, one might want to work on her own Wikibook project.

#### **E. Wikibook Community’s Norms of Collaboration, Control, and Ownership**

This sense of community control over the final product might be one reason why the open environment of a Wikibook has been so successful; i.e., changes in the text can always be rolled back to previous versions. But which is more important—a sense of control over the environment, a sense of membership in an online community, or the openness and flexibility of a Wikibook environment? According to the survey, Wikibookians do not seem to take ownership over Wikibooks; most of them consider themselves contributors to or editors of Wikibooks and that no one is the true owner of a Wikibook (see Figures 4). On the other hand, most students (i.e., the Wikibook Novices) participating in the Wikibook project felt that the owners of a Wikibook included themselves, the Wikibook editors, and the Wikibook contributors.

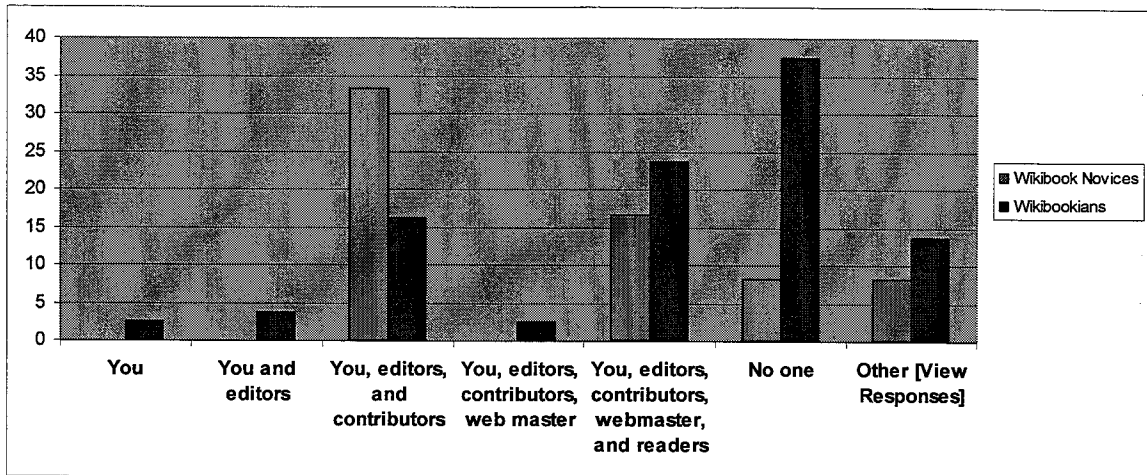


Figure 4: Owners of a Wikibook according to Wikibookians (Note: “You” = Wikibookian).

Also interesting was the role that Wikibookians and the students in the Wikibook project class took. The students were more often seen as authors, contributors, readers, and team members, while the Wikibookians indicated that they were most likely to be authors, contributors, editors, readers, and organizers. The more interesting differences were in the editor role which more than 60 percent of Wikibookian Experts took on compared to less than 20 percent of the Wikibook project students (see Figure 5). In contrast, more than 70 percent of the Wikibook project students assumed the role of reader compared to less than 50 percent of Wikibookians. As with the studies by Buns and Humphreys (2005) on Wikipedian experts and novices, it seems that there were stark differences in how the Wikibook experts and novices viewed their roles.

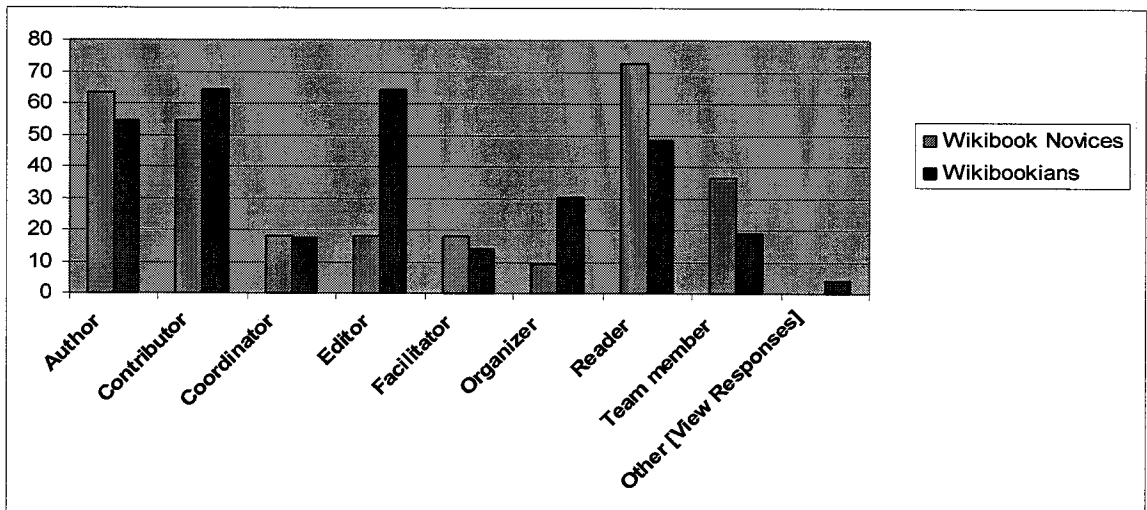


Figure 5: Primary roles of Wikibookians in developing a Wikibook

From an ownership perspective of Wikibookian Experts, the results of our survey questions were corroborated by our follow-up email interviews. In situations wherein someone edits or changes a section of a Wikibook, our interview results indicated that most Wikibookian

Experts would discuss the issue with that person in a talk or discussion page. Reverting the content back and forth could be done but, from most perspectives, it would be pointless and never ending unless one had first discussed the issue with the contributor and attempted to reach a sense of consensus. Note that although Wikibook Novices had limited experience in such situations, they also agreed with this approach.

#### **F. Wikibook Success and Completion**

Most Wikibookians felt that their Wikibook was a success (see Figure 6). Still more than one-third did not believe that a Wikibook can ever be completed. According to the interview data, Wikibookians thought that completion of the book would naturally be indicated by participant interest in the topic or the scope of the project. If there was waning interest, it might never be completed. A Wikibookian Novice explained that “I think a Wikibook becomes complete when the participants loose interest in the topic.” On the other hand, an expert Wikibookian indicated that “theoretically, a wikibook could be complete, depending on the subject.” Another Wikibookian suggested that a Wikibook could be complete if all the relevant information on a topic was included or known such as the Iran-Contra scandal of the early to mid 1980s. Overall, however, there was some agreement that a Wikibook is not as a product but a process because a Wikibook is always evolving and “allowing others to improve them makes the work alive.”

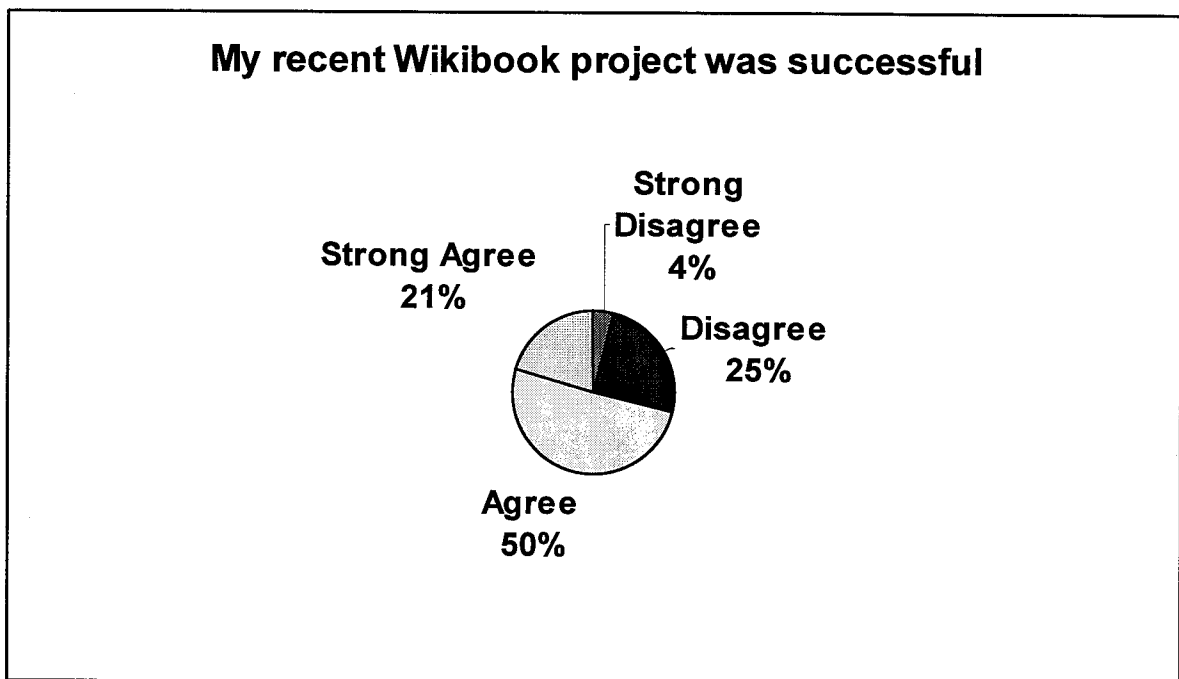


Figure 6. Wikibookians perceptions of Wikibook success.

Completion of a Wikibook was also an area of interest. Most Wikibookian Experts (58 percent) believed that a Wikibook could be completed (see Figure 7). However, only 33 percent of Wikibook Novice students responded that it could be completed. Such stark differences in responses may reflect their levels of success with the students in the Wikibook project classes generally not completing a chapter in the Wikibook but choosing other final project options instead. It might also indicate differences in levels of education with graduate students in courses related to social constructivism truly believing that no text is ever complete.

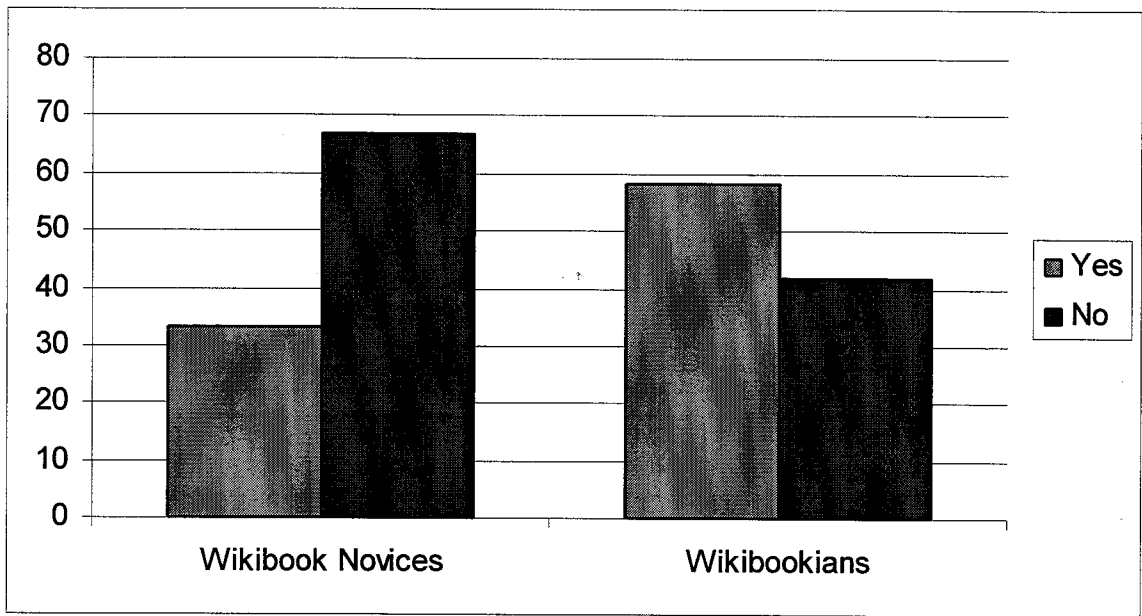


Figure 7. Perceptions of whether a Wikibook could ever be completed

We were also interested in the types of learning that a Wikibook environment fostered. As shown in Figure 8, more than 40 percent of Wikibookians found that these environments were more informal, collaborative, socially interactive, and exploratory. In addition, inquiry learning approached 30 percent. However, the highest rated response was for self-initiated or independent learning at over 80 percent. In contrast, fewer than one in five found them to foster formal reflective, rote, or strategic types of learning. This is not surprising given that previous studies of online learning indicate a trend away from traditional forms of instruction such as lecturing and modeling, toward more interactive, collaborative, and problem-based forms of instruction (Kim & Bonk, 2006).

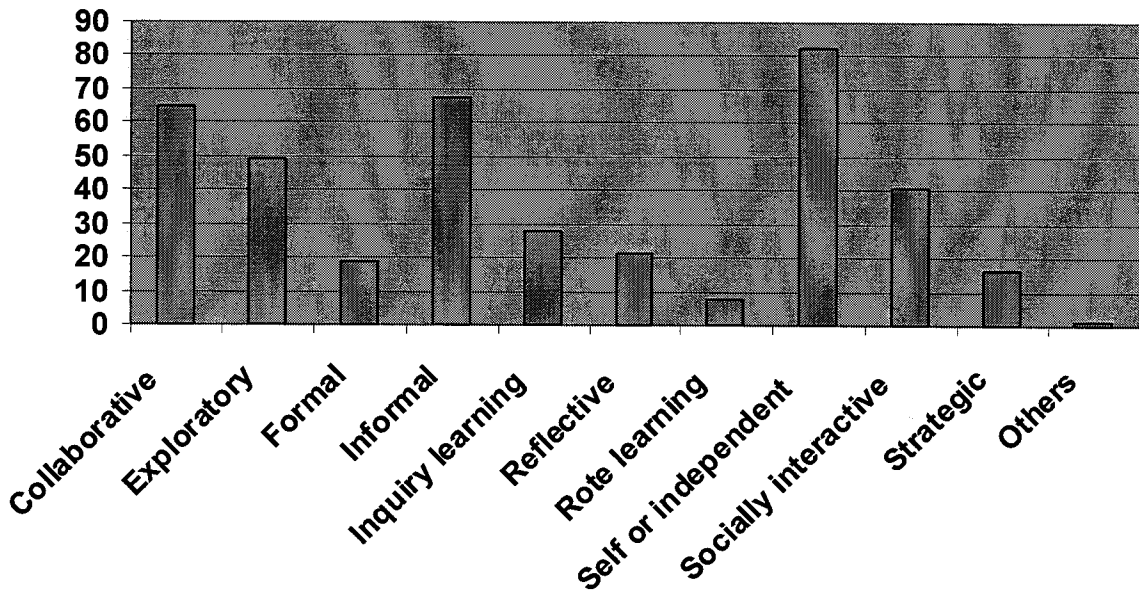


Figure 8. Types of learning fostered in a Wikibook environment.



## G. Wikibook Collaboration, Fun, Challenge, and Frustration

**Collaboration.** We asked a series of survey questions of both Wikibookian Experts and the Wikibook Novices including issues of whether Wikibooks promote collaboration, personal productivity, individual accountability, communication between readers and writers, social skills among authors and editors, and opportunities to work with different types of individuals. Collaboration was a key variable of interest. Interestingly, as shown in Figure 9, nearly 99 percent of Wikibookian Experts and 80 percent of Wikibook Novices agreed that Wikibooks is an environment that promotes online collaboration.

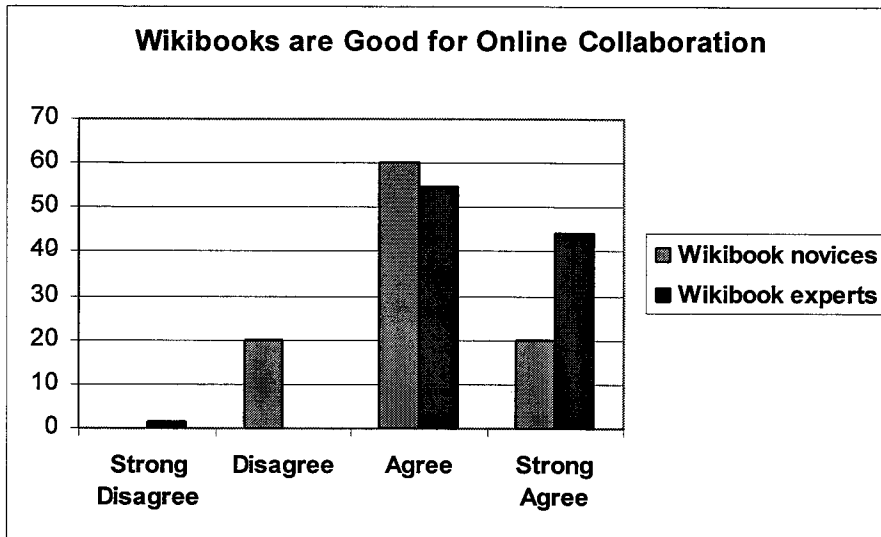


Figure 9. Wikibook expert and novice perceptions of online collaboration in Wikibooks.

**Fun.** In our surveys, we also asked questions related to whether their Wikibook projects were engaging and motivational, challenging, frustrating, personally rewarding, and successful, and encouraged them to write a book or a chapter that they would not have completed otherwise. In terms of whether these individuals found the tools and resources at Wikibooks fun to use, 94 percent of Wikibookian Experts agreed or strongly agreed, as did 80 percent of the Wikibook Novices. However, more than 30 percent of Wikibookian Experts indicated strong agreement but none of those in the Wikibook class project indicated strong agreement; perhaps this is reflective of their lack of success.

**Frustration and Challenge.** In contrast, half of the novices found the Wikibook project frustrating, while only about one in four of the Wikibookian Experts found it frustrating (see Figure 10). Still roughly similar percentages found their Wikibook project challenging (80 percent of Wikibook Novices and 75 percent of Wikibookian Experts).

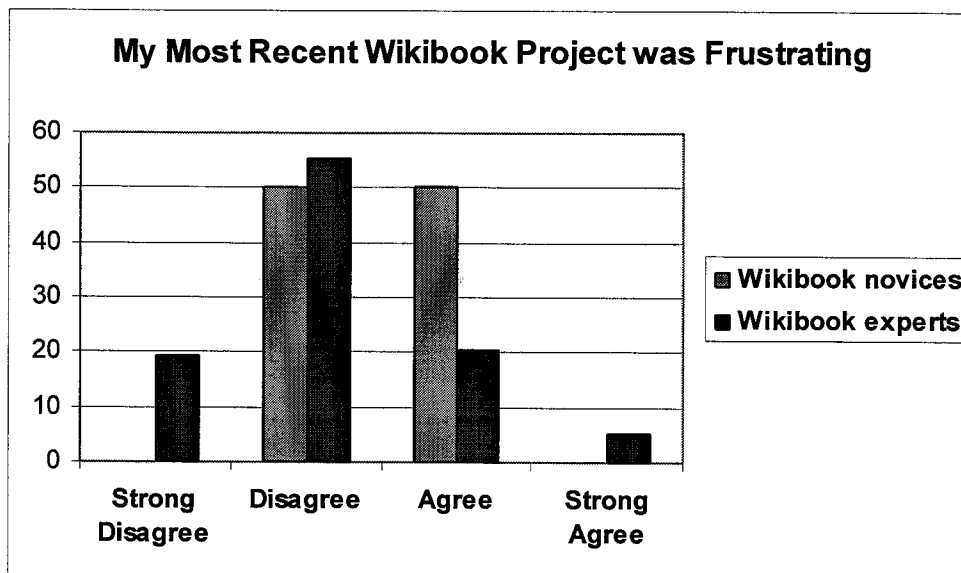


Figure 10. Wikibook expert and novice perceptions of frustration with their Wikibook project.

### Limitations

Given that this study was an initial exploration into the value and effectiveness of Wikibooks, it is not too surprising that there were an assortment of limitations. First of all, we do not know the level of expertise among the Wikibookians, since, as indicated, we did not determine the number of Wikibooks each respondent had completed or even attempted nor did we review their individual products. Those responding to our surveys and interview questions undoubtedly vary widely in the number and quality of completed Wikibooks. And while there were 80 Wikibookian Expert survey respondents, we only received 13 responses from those in the Wikibook project class. As a result, any survey result comparisons between community and classroom Wikibook projects made here are highly speculative.

Some might also perceive a limitation from email-based interviews rather than phone or face-to-face ones. However, Wikibookians are typically communicating with each other via the Wikibooks Website; hence, they should be comfortable with such an approach. Other constraints here revolve around the exploratory nature of the research.

It is important to point out some of our limitations directly relate to the lack of success within the Wikibook class project. We simply had too few students who contributed to it. A key problem was making this assignment an optional task since it was a first time class experiment. In retrospect, a better decision would have been to require the Wikibook assignment to the entire class and have a book topic or title and set of subtopics already in mind. Or perhaps, given our respective students were interested in sociocultural theory in K-12 or adult education, we could have created two Wikibooks; one for each audience. We will continue to experiment here.

### Future Studies

Admittedly, this was our initial foray into Wikibook research. As such, we attempted to cast a fairly wide net in this particular research project. Future studies may specifically address issues such as the development of a community of practice within a particular Wikibook, set of Wikibooks, or the Wikibook Website as a whole. How does one get involved in Wikibooks? How do people find out about it? Along these same lines, we might also explore the self-efficacy and confidence of Wikibookians and the overall Wikibook community.

Other areas of interest include the types of online scaffolding available in the Wikibook Website, cultural differences in the creation and use of Wikibooks, and differences between regular Wikibooks and junior ones. Also, research might explore knowledge sharing and collaboration across different cultures or communities. How does sharing within Wikipedia and Wikibooks become an established part of a culture? In addition to such sharing optimism, there are negative factors that could be explored. For instance, trolling and hacker behavior within Wikibooks might also be investigated and compared to that found in other wiki sites such as Wikipedia. If trolling does arise here as well, research might explore how it is handled, the motivational factors behind such destructive events, and whether it is more dominant in different subject areas, genres, or cultures. Clearly, as alluded to earlier in this paper, there are many directions for our research.

### **Summary of Findings**

In Phase One of this two-part study (Wikibook Novice Phase), we explored the collaborative building of a Wikibook by students attending a similar class in different universities in more than one state. We have attempted to document some of their challenges, successes, and failures. Perhaps the most significant aspect of this phase of the study was the pedagogical challenges for the instructors which included video conferencing between sites, the pairing of students for feedback, the need to consider password-protecting the site to preserve the privacy of the students, the need to persuade the students to contribute to the Wikibook since the task was optional, student continued concerns about ownership, and the full-time versus part-time status of the students. In the end, it was not too surprising that the Wikibook Novices were also more likely to find Wikibook environments to be frustrating than the Wikibookian Experts.

The more interesting and significant part of this study was our exploration of the experiences of Wikibookians in Phase Two (Wikibookian Expert Phase). Somewhat surprisingly, nearly all the Wikibookians were men who were under age 35 with varied educational backgrounds. Similarly, Rosenzweig (2006) noted the male dominance of Wikipedia contributors. Not only are Wikipedia contributors male, but as Schachaf and Hara (2006) noted, the trolls and hackers in Wikipedia that they found were entirely male. The Wikibook environment certainly seems to be a technology for young adult males.

In addition to such demographic factors of interest, in the second phase of the study, we focused on issues related to knowledge sharing, the development of communities of practice, and virtual teaming or online collaboration within a Wikibook. We collected both qualitative and quantitative data from those who have edited, written, or contributed to one or more Wikibooks. Their knowledge and experiences should prove highly interesting and perhaps lead to the next generation of Wikibook technology and associated pedagogy.

Remarkably, although one group was considered “Wikibookian Experts” and the other “Wikibook Novices,” a majority of both groups defined Wikibooks as a community of writers, a learning environment, and a set of learning tools. In effect, they understood the collaborative value of an online Wikibook project. When further exploring the instructional values and approaches which such environments foster, they agreed that Wikibooks facilitate collaborative learning, informal learning, and reflective learning, though in different degrees. Additionally, participants from both groups indicated that their primary roles when working on Wikibooks was as a(n) author, contributor, editor, or reader, though the Wikibookian Experts were much more likely to assume an editor role, whereas Wikibook Novices were more likely to be readers or team members. The Wikibook Novices were more frustrated with their Wikibook projects than

the experts and less likely to perceive that a Wikibook could ever be completed. Finally, they each viewed Wikibook resources and tools as fun to use but challenging at the same time.

### **Final Reflections**

Clearly this study points to the huge gap between the usefulness of the Wikibook as an inter-institutional collaboration tool and classroom project in academia and the value of the Wikibook as the Wikibookian perceives it in the general online community. Forced or even optional classroom activities involving Wikibook creation are much different in terms of incentives or motivational factors, collaboration structures, and final products than when someone in the community decides a particular Wikibook is needed and uses the Wikibook structure and collaborative community to build one. It may be the case that academic structures to publish or perish outweigh the general knowledge sharing opportunities that exist within the Wikibook community. And perhaps a Wikibook project cannot be designed but can only be formed voluntarily.

There are vast opportunities that await Wiki researchers today. Some of these same issues parallel those that faced collaborative writing researchers in the 1980s and 1990s. However, the Web has elevated this research into a fascinating new area for the exploration of many crucial and continually unfolding sociocultural learning issues. As Rosenzweig (2005, p. B20) notes,

“The Web has given us a great gift—an unparalleled global digital library and archive that is growing bigger every day. Our task now is to make sure that it remains accessible to all, and to turn the novices we have admitted to it into experts who can use it with intelligence and thoughtfulness. If we can succeed not just in democratizing access to materials like online historical evidence but also in helping students make sense of that evidence, that will be a very big deal.”

With the millions of Web pages in Wikipedia, the thousands of book chapters or modules being developed in Wikibooks, and the emergence of still other open educational resources tools and resources such as Wiktionary, Wikicommons, Wikiquotes, and Wikiversity, this is a very big deal indeed! And understanding how one becomes a successful expert within such sites is definitely worthy of much more research and experimentation.

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