A Window on Wikibookians: Surveying their Statuses, Successes, Satisfactions, and Sociocultural Experiences

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Abstract

The present study explored the experiences of 80 Wikibookians who had developed or were in the process of developing Wikibooks; including their statuses, successes, satisfactions, and sociocultural experiences. Both online surveys and email interviews were employed. Demographic data as well as information about the process of developing Wikibooks, the Wikibook tools and overall environment, and sociocultural aspects of Wikibooks are reported. Our data indicated that the majority of these Wikibookians were young males with varying educational backgrounds; half of them were without a four-year college degree. Most respondents deemed their most recent Wikibook activity as successful and few were frustrated with the Wikibooks environment. They also recognized that there were multiple roles involved in the development of a Wikibook—contributor, author, reader, etc.—as well as multiple owners or no owner of the final Wikibook product. Wikibookians were likely to perceive that a Wikibook could be completed, though their opinions varied. In terms of inspiration to create a Wikibook, they more often viewed a Wikibook as a way to make a learning contribution and share knowledge, obtain personal growth and enrichment, and learn new ideas from others, than to publish their work and learn new technologies. They perceived that a Wikibook environment more often fostered self, informal exploratory, collaborative, and socially interactive learning than more formal and rote learning. Several viable research avenues are suggested.

Introduction

The notion of a wiki initially took off in informal environments, but has, more recently, gained attention as a student-empowering academic task; especially in higher education (Allen, O'Shea, Curry-Corcoran, & Baker, 2007; de Pedro, Rieradevall, López, Sant, Piñol, Núñez, & Llobera, 2006a, 2006b; Evans, 2006; Sajjapanroj, Bonk, Lee, & Lin, 2006; Xiao, Baker, O'Shea, & Allen 2007). A key purpose of this particular research project was to understand the process and working environment related to the development of a Wikibook, especially as it relates to a more person-centered, participatory learning environment—one rich in socioculturally-relevant activities and experiences. Greater insights into the Wikibook development process should fuel interest in this emerging technology and lead to innovative instructor training workshops and programs, unique collaborations, and exciting student learning.

A Wikibook is a community-developed book or document with contributions from anywhere on planet Earth. Given that the Wikibooks listed at the Wikimedia Foundation Website are presently available in more than 110 different languages (Wikibooks, 2007c), the authorship and collaboration potential of a Wikibook is enormous. Nevertheless, the potential of Wikibooks as an instructional strategy to promote collaborative learning and social interaction has received scant attention; therefore, the birth of the present study.

In late 2005, our research team decided to embark on a series of studies related to wikis and Wikibooks; most of which would take place in higher education settings. This research team soon evolved into the Wiki-RIKI (Wikis for Research on Intercultural Knowledge and Interactivity) research team (see http://wiki-riki.wikispaces.com/). We realized that there were serious concerns and issues with community developed resources such as online books and Web pages. In particular, we were drawn into four issues that became the focus of this study. First,

the most common complaint against resources such as Wikipedia (Wikipedia, 2007a) and Wikibooks, is the lack of expert reviewers. But who are the individuals who contribute to, edit, or coordinate a Wikibook (i.e., Wikibookians)? What are their backgrounds? Are they savvy with Wiki environments? Do they possess advanced degrees? In response, we explored the different statuses of Wikibookians, including their ages, gender, wiki-related experiences, occupations, and educational levels.

Secondly, what processes do these Wikibookians engage in to successfully develop a Wikibook or to begin the development process? How do they coordinate a Wikibook project? Just what are their Wikibook successes, completions, frustrations, and challenges? Greater insight into effective role exchange within a Wikibook should enable more effective development of Wikibooks in classrooms as well as more informal settings. In addition to role, the motivational factors in creating and maintaining a wiki resource remain unclear and debatable. If this could be determined, then perhaps aspects of it could help instructors develop highly motivational Wikibook projects in higher education and other academic settings. What drives students to complete a wiki-related assignment and perform at a high level? In addition, what happens when a wiki-related project lacks momentum or interest? How are Wikibooks modified, reshaped, discarded, or promoted? Ultimately, we were interested in the processes of successful Wikibook development.

Third, we were interested in what tools are actually used and proven effective in Wikibook environments as well as how the Wikibook toolset could be enhanced. Just how satisfied were Wikibookians with the suite of tools and resources available to them? In addition, what features are needed to enhance the quality of their Wikibook products? Results here can help those developing as well as implementing Wikibook types of tools and products.

Finally, there are debates about whether technology too often leads theory and pedagogical approaches. Bruns and Humphreys (2005) argue that wikis are an interesting social constructivist phenomenon. For them, such tools are non-linear and constantly evolving, while involving multiple authors and editors. Wikis also provide more flexible and authentic learning outlets where controversy, compromise, and consensus building are valued and often required. Therefore, we were curious about the effectiveness of Wikibook environments for nurturing online collaboration and teaming. Are the technology tools and resources found in the Wikibooks site effective in scaffolding Wikibookians to complete their task? In addition, we wanted to understand the types of approaches to learning that Wikibooks nurtured. If a Wikibook environment can help support sociocultural approaches to teaching and learning—not force such an approach—then the tools and resources might lead to innovative pedagogical experimentations, exciting possibilities for student learning, and the development of still other technology tools that foster student participatory learning.

What is a Wiki?

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 shared learning and collaboration." Hall further points out that Wikis can serve as a repository for such knowledge and information. In addition to archiving events, the benefits of a wiki include efficiency for adding, updating, and accessing information as well as the sense of joint rights and shared ownership over the materials. Wikis are open or free spaces for online writing and collaboration, but unlike other writing spaces and products, there are no particular claims to ownership over ideas placed there. 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. Wikis have a distinct advantage over other writing spaces since they require no previous HTML or computer programming skills. Importantly, edits within a wiki can be tracked since wikis provide a history. Anyone can visit and revisit that history which details the time and the content of contributions, and, unless such text has been marked for no changes, can revert the currently shared text to the previous version.

There are many types of wiki tools and resources. Wiki projects can run on software downloadable on a server or on a Wikifarm which hosts the wiki project. Wikis are distinguished by their access controls (e.g., password protected or open access to the public), editing controls, pricing differences (e.g., free or licensed), and advanced features (e.g., spell checking, polling, blogging, emoticons, and calendars).

Wikis at the Wikimedia Foundation: Wikipedia and Wikibooks

Wikipedia, the free online community-generated encyclopedia started in 2001 by the Wikimedia Foundation, is undoubtedly the most well known wiki environment. In fact, an annual survey by brandchannel.com found that Wikipedia was the fourth most influential brand impacting the lives of professionals and students in 2006 (Reuters, 2007b). It ranked only below Google, Apple Computer, and YouTube. By September 2006, Wikipedia had more than 5.3 million articles in over 250 different languages (Wikipedia, 2007d). Not surprisingly, the largest assembly of articles was in English; nearly two million (actually 1,974,774) articles had been generated and retained as of August 22, 2007 (Wikipedia, 2007b). Perhaps more impressively, in a recent study reported in *Nature*, the quality of Wikipedia's scientific contents measured up to that of Encyclopedia Britannica in terms of factual accuracy (Giles, 2005).

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. As indicated, 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. Original names included 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. Astoundingly, the number of Wikibook modules (i.e., chapters) passed the 10,000 module milestone after only two years of operation (Wikibooks, 2007a). Wikibooks presently contains more than 1,000 books completed or in process and more than 26,000 modules and chapters (Wikibooks, 2007b). Less than 100 of those books were completed or near completed at the time of this study, however.

The Wikibook project site indexes textbooks, nonfiction books, study guides, information booklets, and other reference materials that are written collaboratively. As alluded to earlier, the contributors to such online books and modules are referred as Wikibookians. As of August 22, 2007, there were more than 66,882 registered users of Wikibooks (Wikibooks, 2007c). And it continues to grow at a brisk pace while expanding into new languages, book topics, and missions. As an example of such expansion, the Wikimedia Foundation recently sanctioned the development of junior Wikibooks for learners of ages 8 to 11 (Wikibooks, 2007d). Such trends are bound to broaden the resources and scope of Wikibooks in academic as well as informal learning settings in the coming decade.

While Wikibook environments offer hope for providing access to educational books, study guides, and other documents to every connected learner in every language, there are numerous issues, questions, and problems related to books written collaboratively online such as those found on the Wikibooks site. Among the major criticisms against Wikibooks--fully 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 the purpose of designing a polished book in a professional format. They also lack some of the functionality of other online collaboration tools and systems (e.g., annotation, outlining, highlighting, concept mapping, file sharing, and group dropbox tools); many of which Wikibook users undoubtedly have already experienced. In addition, HTML coding of pages does not equate to the measurement of fixed book pages in terms of their lengths and widths. And the Wiki-based style of editing starkly contrasts with a hierarchical style of editing common to paper-based professional books.

Purpose of the Current Study

In this study, we focus on statuses, successes, satisfactions, and sociocultural experiences of those who coordinate, edit, or otherwise contribute to Wikibooks at the Wikibooks Website from the Wikimedia Foundation. We are particularly interested in sociocultural issues related to collaboration, negotiation, and discussion of changes in this Website. In addition, we were curious about who these Wikibookians were and their motivations to create a Wikibook as well as their satisfactions with the tools and resources that they encountered when they coordinated or assisted with a Wikibook project. Our research questions include those listed below.

1. Wikibookian Demographic or Status Questions: Just who are Wikibookians in terms of age, gender, educational backgrounds, current job or occupation, and previous experience with wikis?

2. Wikibook Coordination and Success Questions: What are the key roles of a Wikibookian? What challenges, frustrations, and obstacles do they face within those roles? And what motivates

Wikibookians to collaborate with others in the development of a Wikibook? Did they find their most recent Wikibook project a success? And can a Wikibook project ever be completed?

3. Satisfaction with Wikibook Environments and Tools Questions: How satisfied are Wikibookians with the existing suite of tools and resources? What improvements should be made to existing ones? What additional Wikibook tools and resources are needed?

4. Wikibooks as a Sociocultural Phenomenon Questions: What types of learning approaches and experiences do Wikibook environments tend to encourage? How effective do Wikibook environments promote collaboration and social interaction? Do Wikibook environments foster a type of apprenticeship process?

Method

To answer the above questions, this study included survey and interview data from Wikibookians who had already developed, edited, or contributed to a Wikibook (i.e., Wikibookians). To answer our research questions, noted earlier, we designed close-ended survey questions related to Wikibook environments for each group of participants using a Web-based survey tool called SurveyShare. To extend beyond the survey items, we also designed a set of open-ended email interview questions.

These survey respondents came from a list of 45,000 registered Wikibook users (i.e., possible Wikibookians) made available through the Wikibooks Website. However, only a small fraction of that number provided contact information and actually coordinated a Wikibook project. While the exact number of active Wikibookians was difficult to determine, they were identifiable by their names appearing with a blue color font on the list of Wikibookians.

Using this information, we sent survey messages through the contacting function (i.e., the user list) of the Wikibooks Website to about 1,500 Wikibookians selected randomly from the

ones whose status was active (i.e., those who had typed some information in their user account and who had provided their email contact information). We received 80 responses to our survey request as well as 4 emails from individuals who felt that they lacked enough experience to complete our survey. The 80 respondents were considered an acceptable rate for an opt-in email-based survey (Bosnjak & Tuten, 2001; Cho & LaRose, 1999; Solomon, 2001). Many factors, of course, impacted the response rate (Sheehan & Hoy, 1999), including time available (there were 35 survey items), perceived needs for anonymity of many Wikibookians, and the fact that, at that time, we were not part of the Wikibookian community. In addition, many who had something posted in their user accounts were no longer active but we could not determine how many of the 1,500 Wikibookian individuals selected were inactive. Hundreds of these individuals likely participated in Wikibooks just once or twice and were no longer actively involved in Wikibooks. Therefore, the response rate was deemed sufficient and the number of respondents noteworthy; especially since we had not found any previous research on Wikibookians.

The online survey was open from May to July, 2006. When the survey was deactivated, the open-ended interview questions were sent out via email to 15 individuals randomly selected from the 80 Wikibookians who had completed the survey. The quantitative data from the online survey was compared to the qualitative information from the email interview data. Findings across these data sets are integrated in the section below.

Results of Study

Results Part I. Wikibookian Demographics or Statuses

In an attempt to understand Wikibookians, we explored many demographic or status variables in this study, including age, gender, educational backgrounds, current occupations, and

wiki-related experience. The results of these questions proved highly interesting and informative.

      Age. Our survey results revealed that approximately 58 percent of Wikibookians were younger than 26 years old (see Table 1) and 83 percent were under age 35. Whereas nearly one in five (i.e., 19 percent) of Wikibookians were under age 18, a mere one in 20 (i.e., 5 percent) were over age 50. Such results indicate that this is a young person's environment. Whereas knowledge typically accumulates throughout one's life, thereby nurturing topical expertise and giving one more opportunities to write a book, as our data indicates, older and more experienced individuals are much less likely to be coordinating or penning Wikibooks than those in their teens and twenties.

Table 1: Age of Wikibookians

Age	Amount	Percentage
Under 18	15	19
18-25	31	39
26-34	20	25
35-50	9	12
51-65	2	2.5
Over 65	2	2.5

      Gender. Our result showed that in addition to appealing to young people, those writing or coordinating a Wikibook are typically males. As Figure 1 reveals, more than 97 percent of our Wikibookian respondents were male. Such findings are consistent with Rosenzweig's (2006) observations of Wikipedia as a male dominated resource. 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. We further speculate on why males appear to dominate Wikibooks in the recap of our findings.
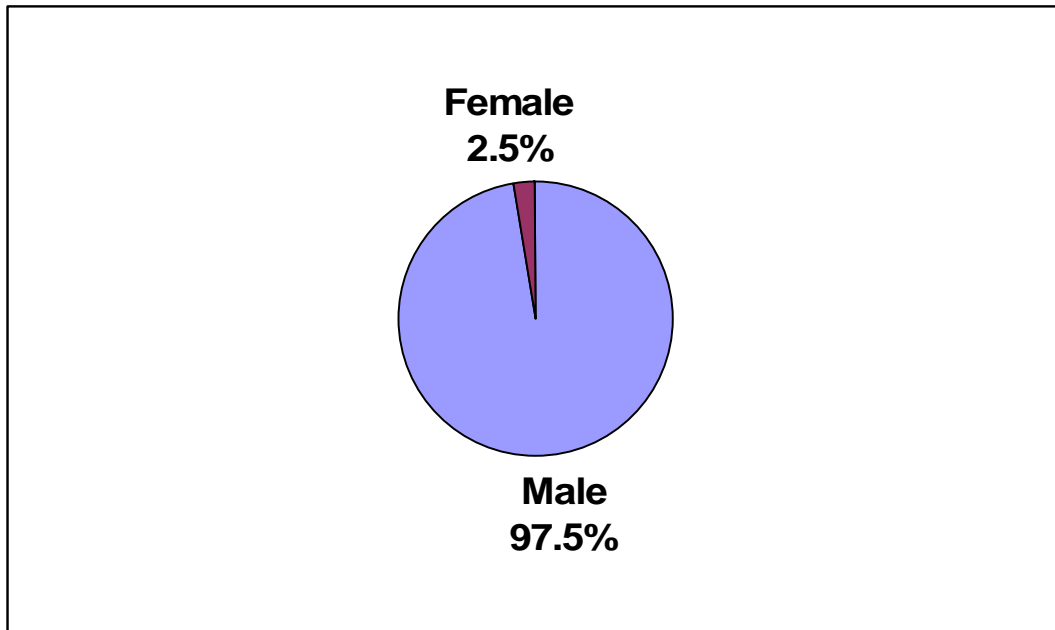

Figure 1. Gender of Wikibookians.

Educational Backgrounds. Given that the development of books is normally associated with those with high educational levels, we were curious what educational level Wikibookians had attained. In addition to Wikibookians tending to be young males, our data showed that a fairly high percentage lacked a college education. As shown in Figure 2, half did not possess a four year college degree. More specifically, 29 percent only had a high school degree, while another 1 in 10 Wikibookians had not even completed high school. Stated another way, nearly 40 percent of the respondents had yet to graduate from any type of college setting. Another 11 percent had obtained a two year college degree. Of course, this also directly reflects their relatively young age.
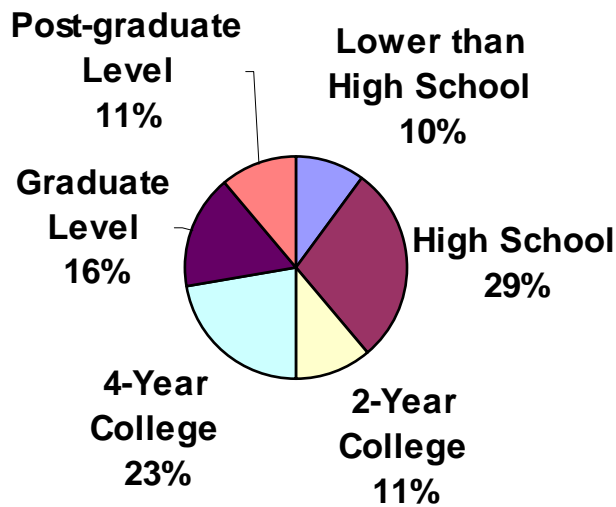
Figure 2. Level of education of Wikibookians.

Our qualitative data as well as our analyses of Wikibookian Websites indicated that many Wikibookians seemed to be working on a degree at the undergraduate or graduate level. It was not unusual, in fact, for an undergraduate or a graduate student to be coordinating a Wikibook during his or her course studies. Moreover, as our survey data revealed, despite their relatively young ages, more than 1 in 4 Wikibookians had at least one graduate level degree. Clearly, Wikibookians appear to be educationally-oriented individuals.

Current Occupations. We also inquired about where they were employed since we expected that many would be coordinating books as professors of higher education. However, as Figure 3 illustrates, that was not necessary the case. In fact, less than 1 in 3 (i.e., 29 percent) of Wikibookians were from higher education. And, as indicated earlier, it was apparent that many of these individuals were not professors, but were undergraduate and graduate students who were employed in a higher education setting. Still, higher education settings provided the highest percentage of Wikibookian employment. The next highest sector of employment was from business and industry at 27 percent followed by 23 percent from the "other" category (which likely included those who were under age 18 and not currently unemployed). Another 13 percent

were employed in primary and secondary education sectors and 5 percent were independent

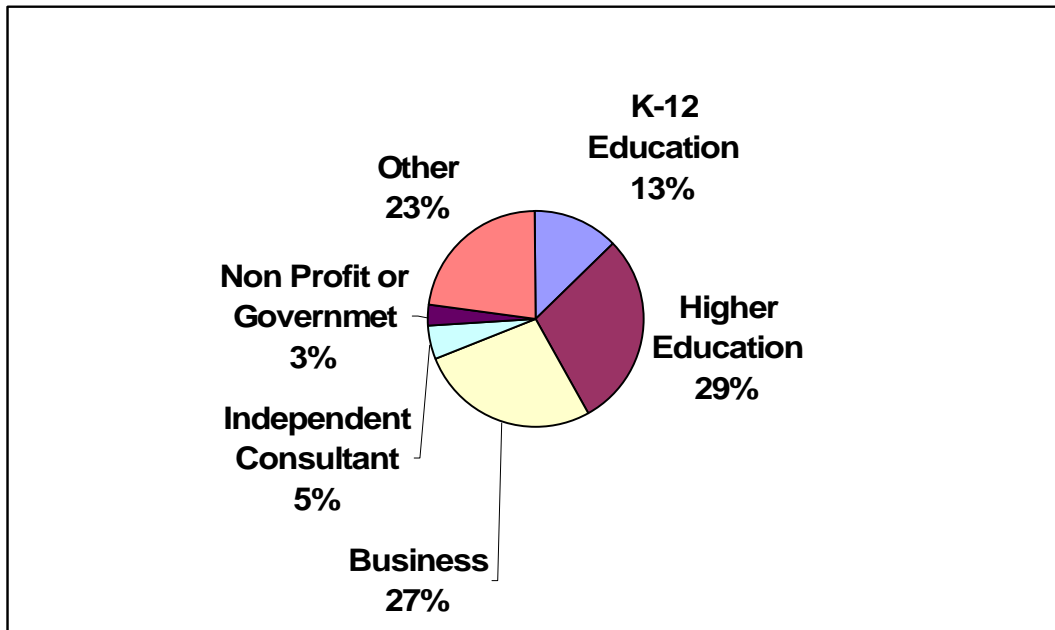consultants. Just 3 percent were employed in government or non-profit settings.

Figure 3. Where Wikibookians were employed or working.

Wiki-Related Experience. Next, we asked about their previous experiences with Wikis

as well as their online collaboration backgrounds since those with more Wiki expertise would

likely require less time to understand how to develop a Wikibook. In addition, those with

previous experience in online collaborative environments should be able to facilitate

collaboration and discussion in the development of a Wikibook, which should lead to greater

success and completion of it than those who lacked such experience. Fortunately, most of our

survey respondents (77 percent) had experience working or learning collaboratively in an online

environment other than a Wikibook.

Of course, familiarity and experience with wiki technology is also critical to Wikibook

success and perceived sense of challenge. As our qualitative data indicated, many of our

Wikibookian respondents originally had been active in the Wikipedia Website where they gained

Wiki-related expertise and experiences. Figure 4 reveals that nearly three-quarters of

Wikibookians (72 percent) had been contributing to a wiki site of some type for more than a year

and another 18 percent for more than six months. In fact, only 10 percent had less than six

months of experience in a wiki environment. In general, therefore, our respondents were savvy

with wiki technology. Their extensive experience enhances the credibility of our findings.

Figure 4. Previous Wiki-related experience of Wikibookians.

Not surprisingly, when asked about another wiki environment that they had helped build

or contribute to, the most common previous experience was with Wikipedia (98 percent). Next

in line, was another wiki tool from the Wikimedia Foundation called Wikionary (34 percent).

Moreover, nearly one of five had listed Wikinews (19 percent) or Wikiquote (18 percent), while

14 percent of our respondents had contributed to or helped build Wikiversity and 11 percent

Wikibooks junior. Simply put, Wiki tools were part of their lives.   In fact, one-third of them had

experience with still other wiki tools that were not part of the Wikimedia Foundation's slate of

wiki-related resources and tools. Only 1 percent of our respondents had limited their wiki

experiences to just the use of Wikibooks. Instead of university professors and professional

writers attempting to pen a new book or two in an electronic forum--perhaps just happening to

stumble upon the Wikibooks Website for that to happen--most Wikibookians are experienced

wiki users engaged in myriad wiki-related resource development activities. Helping compose,

coordinate, or edit one or more Wikibooks is just one of several wiki-related activities that they

are engaged in. You can just as easily find them editing or adding to entries in Wikipedia or

Wikiquotes.

Across these demographic data, we can, in general, conclude that our Wikibookian

survey respondents were young men, half of whom did not posses a four year college degree,

though most of them were gainfully employed outside of their lives as Wikibookians.

Additionally, these individuals had extensive previous experience working in Wiki-related

environments.

Results Part II. Wikibook Coordination and Success

Inspiration to Work on Wikibooks. As mentioned earlier, we were interested in

finding the source of inspiration and motivation for Wikibookians to create, contribute to, or co-

edit Wikibooks. According to our survey results, the Wikibookians felt that making a learning

contribution and sharing knowledge was the most important motivating factor for their

involvement in Wikibooks (78 percent), while personal growth and enrichment was rated second

highest (56 percent). The third most important reason was to learn new ideas from others (38

percent). Interestingly, only 33 percent of them were inspired to create a Wikibook in order to

publish their work[1]. Experiencing a new technology was mentioned by 30 percent of them,

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[1] In stark contrast, pilot data we had collected in a graduate course at the same time showed that
our university students were highly interested in using Wikibook environments for publication
purposes as well as to complete a course requirement or to learn a new technology, but were less
likely to use it for global sharing and personal growth.

while 24 percent found their inspiration in self-exploration and personally learning new ideas for their chapter or book. The results of the survey indicated that external requirements such as for a job, degree program, or course assignment were much less important motivators.

In our interview data, the Wikibookians also suggested some strategies that can inspire those considering a Wikibook type of project. Such strategies included simple tips like "start using it," "find help rather than trying hard on their own," and "work on existing Wikibooks rather than creating a new one."

Fun, Frustration, and Challenge. In our surveys, we also asked questions related to whether their Wikibook projects were fun, challenging, and frustrating. In terms of whether these individuals found the tools and resources at Wikibooks fun to use, 94 percent of Wikibookians agreed or strongly agreed. In fact, more than 30 percent of Wikibookians indicated strong agreement with that particular question.

Along these same lines, only about one in four of the Wikibookians found their most recent Wikibook project frustrating (see Figure 5). Nevertheless, Wikibook projects are not particularly easy to complete. In fact, three times as many respondents (75 percent of Wikibookians) found their Wikibook project challenging. As one participant wrote in the email interview, "I would first offer a warning that writing can be very difficult. Writing a textbook is an involved task, demanding the full scope of your expertise, and requiring a substantial investment before any payoff can be realized." Another stated that, "I anticipated having more time than I do to working on this project. Development has been slower than I expected, by about a factor of two. I originally expected to be able to finish the book I'm working on in about two years...." Still another observed that, "Maintaining a wiki is much more a challenge for social issues than for technological issues. Above all, a collaborative writing community must

have a common vision, specifically a vision to create a written work. The technological

challenge is to design software that makes it easy to make a positive contribution (compared with

the difficulty of actually composing the contribution) and hard to make a negative contribution

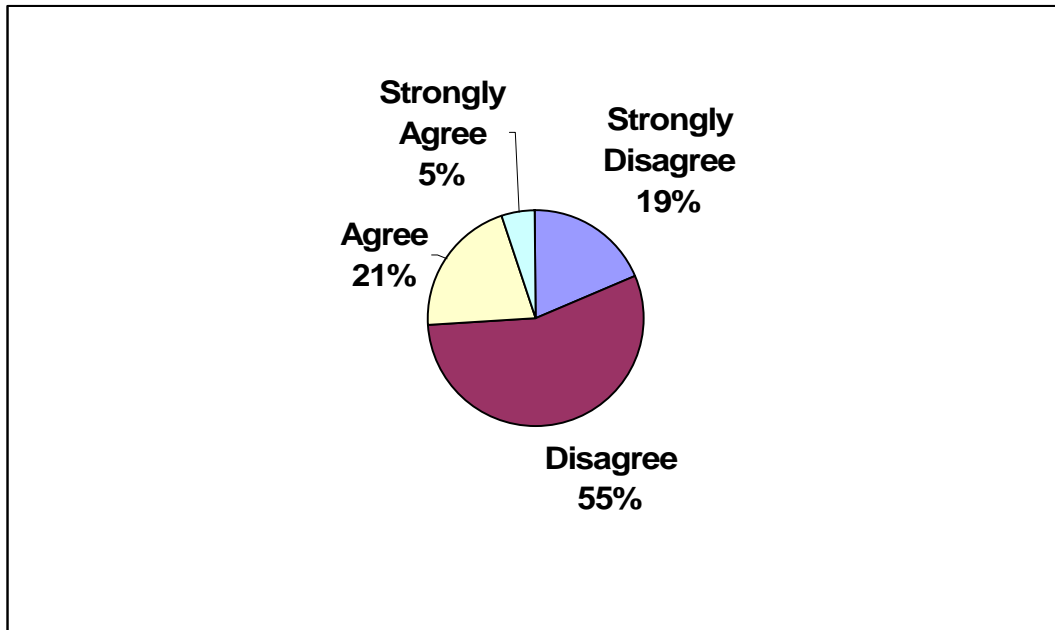(compared with the difficulty of repairing or replacing the contribution)."

Figure 5. Wikibook perceptions of frustration with their Wikibook project.

Wikibook Ownership and Role. Perhaps a key reason why open environments like

Wikipedia and Wikibooks have experienced success relates to the sense of shared control over

the final product; 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 of fellow writers, or the openness and flexibility of a Wikibook environment?

According to our survey activity, Wikibookians do not seem to take ownership over

Wikibooks; in fact 37 percent indicated that there were no owners (see Figure 6). However, just

16 percent noted that both they (i.e., the Wikibookians) and the other contributors jointly owned

the book. Another 24 were more inclusive indicating that they owned the book as well as the

editors, contributors, webmaster, and the readers—in effect, everyone owned the final product. While "everyone" may appear vastly different from the term "no one," the results basically indicate that the community at large owns Wikibook; there is no one ultimate owner since it is edited, enhanced, shared, and used by everyone. When asked in a separate question whether they had any ownership over a Wikibook, more than 70 percent of our respondents indicated that they did not. Such findings are consistent with earlier results that while one may coordinate or significantly contribute to a Wikibook project, the community ultimately owns the ending product.
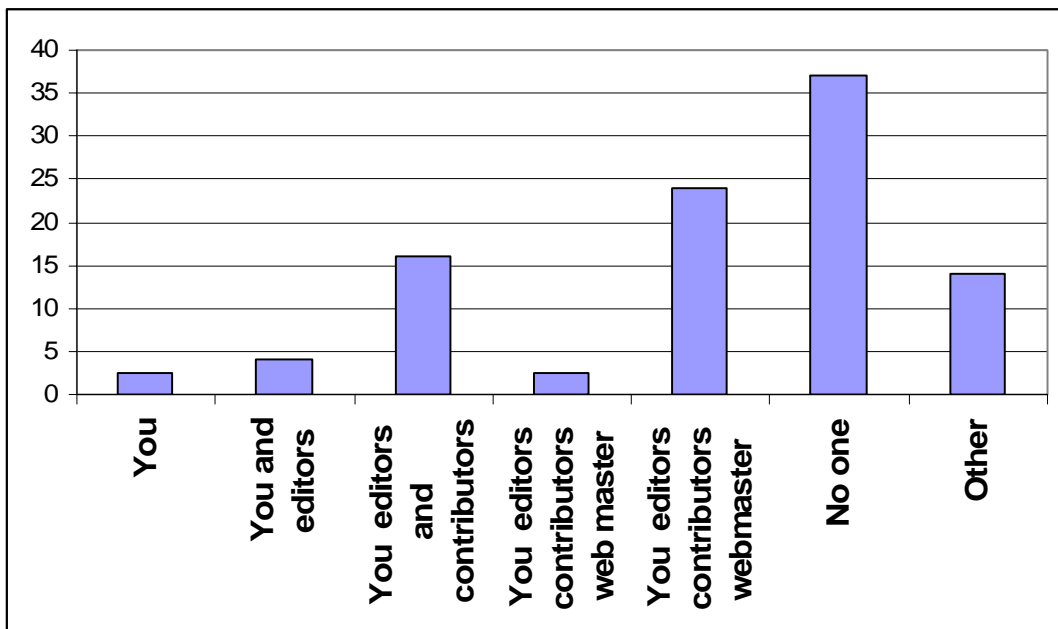

Figure 6. Perceived owners of a Wikibook according to Wikibookians (Note: "You" = Wikibookian).

Our survey also showed the diverse roles perceived by Wikibookians in the development of their Wikibooks (note that they were allowed to check all the roles that applied from eight that were provided: (1) author, (2) contributor, (3) coordinator, (4) editor, (5) facilitator, (6) organizer, (6) reader, (7) team member, or (8) other. Most Wikibookians indicated that they

were contributors (65 percent), editors (65 percent), or authors (54 percent) of their Wikibooks. Still, nearly half of them (i.e., 48 percent) also saw their role as a reader of other chapters or modules or the entire book. Thirty percent thought that they had a role of organizer and 19 percent as a team member. Surprisingly, only 18 percent indicated that their role was one of coordinator, while even fewer (i.e., 14 percent) noted that it was facilitator. Such data indicate that Wikibookian roles are extremely complex and multifaceted. Training future Wikibookians, therefore, will likely not be an easy task.

Wikibook Successes, Personal Rewards, and Productive Exchanges. In addition to issues of role and ownership, we were curious about Wikibook success and motivators. Despite the fact that most Wikibooks at the Wikibooks Website were incomplete or never officially started, the majority of Wikibookians felt that their most recent Wikibook project was a success (see Figure 7). More than three-fourths of the respondents agreed or strongly agreed with that statement. Only 4 percent strongly disagreed. Such positive results are noteworthy for such a new technology and activity. Additionally, more than half of the respondents (57 percent) agreed or strongly agreed that the existence of the Wikibooks website encouraged them to write a chapter or a book that they would not have completed otherwise.
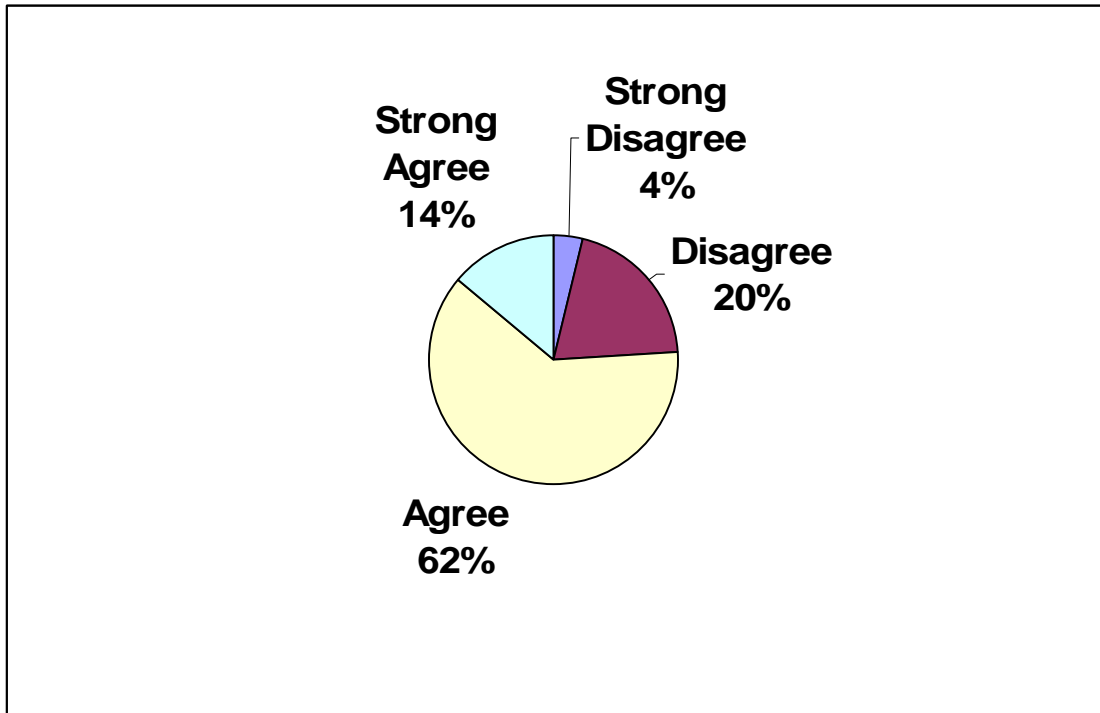
Figure 7. Perceptions that most recent Wikibook project was a success

Along these same lines, nearly 90 percent of participating Wikibookians found their most recent Wikibook project to be personally rewarding, while 88 percent agreed or strongly agreed that it was motivational and engaging. Eight-four percent either agreed or strongly agreed with the statement that Wikibooks helped people to be more personally productive. The same percent agreed or strongly agreed that wikis promoted effective communication among writers, while, slightly fewer (i.e., 76) agreed or strongly agreed that they promoted communication between writers and readers. In fact, more than 9 in 10 found it to be an environment that provided an opportunity to work with different types of people. The interview data also included such positive perceptions of the Wikibooks environment. One participant, for instance, shared that "it's extremely rewarding. In writing about a subject, a writer endows herself with a much richer level of understanding, thorough though her prior understanding may have been.....Making progress in a writing project also grants a sense of accomplishment."

Results Part III. Satisfaction with Wikibook Environments and Tools

      Perceptions of Overall Environment. In addition to their actual book or chapter projects, it was deemed important to ask about the general environment for composing a Wikibook both in our survey as well as in the follow-up email interviews. In our interviews, for instance, 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. At the same time, another Wikibookian indicated his need for "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.

      When asked how they might describe Wikibooks to someone else, most referred to it as a(n) online library (63 percent) or community of writers (61 percent) (see Figure 8). Additionally, fairly large percentages of respondents also viewed it as a learning tool (41 percent), supplement to classroom or training resources (35 percent), community of learners (34 percent), learning environment (32 percent), emerging technology for knowledge generation (29 percent), or knowledge management tool (28 percent). Fewer than one in five, however, would describe a Wikibook as a place for a community of idea generators (18 percent) or as a database of content (15 percent). Apparently, a Wikibook can serve many functions and potentially meet myriad user needs; especially in regards to education and training settings.
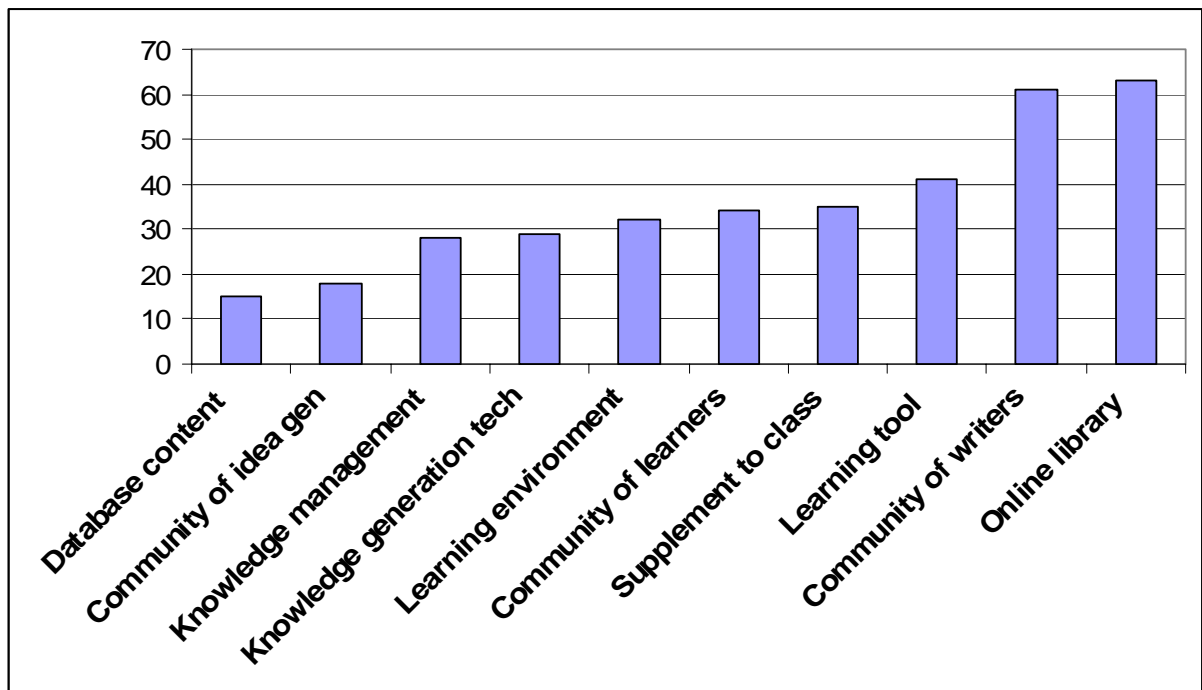
Figure 8. How Wikibookians would describe a Wikibook

Environment Problems. There were many suggestions for improvements of the

Wikibook environment. Among the key problems encountered included the fact that individual

authors might start but not complete their work. According to the survey results, 30 percent of

respondents felt that there was a lack of individual accountability in a Wikibooks environment.

And, of course, the coordinator or leader of a particular Wikibook could run out of time or lose

interest in the project. In addition, better tools were deemed needed for discussing disagreements

and changes as well as for planning, developing, and tracking a Wikibook. The future, therefore,

was uncertain in the eyes of many Wikibookians (Lin, Bonk, & Sajjapanroj, in press).

The Wikibookian survey respondents perceived many problems or barriers when working

in the Wikibooks environment. Among the more significant barriers or problems included the

direction of the project (34 percent), confusion regarding definitions and terms used (27 percent),

difficulties coordinating interactions among the authors, editors, and other contributors (25

percent), the complexity of a Wikibook task (22 percent), the limited instructions on how to use Wikibook tools (19 percent), and other technical problems (17 percent). Less serious problems were perceived with the flexibility of a Wikibook type of task (8 percent), time schedules and deadlines (9 percent), and accessibility of the site (14 percent). For instance, one participant argued for, "A way for people to communicate with each other, a way to track the contributions of each person, a way to make the information accessible to newcomers, a simple interface that an average person can learn very quickly or even use intuitively." Another participant emphasized the importance of a voting system; "I think for revisions, a voting system might be instituted. This eliminates power struggles over points of view, etc." Clearly, there remain many Wikibook components and tools that require additional refinements and enhancements to facilitate online collaboration and coordination among Wikibookians.

Tool and Feature Satisfactions. The Wikibookians were generally positive and satisfied with features, tools, and resources of the Wikibook. For instance, they were highly satisfied with the editing tools (88 percent), the discussion tools (68 percent), the user-friendliness of the Wikibooks Website (64 percent), the organization of the Website (61 percent), the registration process (60 percent), and the navigation tools (53 percent). However, only about four in ten were satisfied with the uploading tool (43 percent), the permission and authorization features (42 percent), the delete tool (39 percent), and the overall system responsiveness (39 percent). In addition, nearly 70 percent were unhappy with the existing Wikibook publishing tools.

Results Part IV. Wikibooks as a Sociocultural Phenomenon

Learning Possibilities. We were also seeking to understand the types of learning that a Wikibook environment fostered. The prevailing research literature on wikis pointed to their

sociocultural capabilities (e.g., Bruns & Humphreys, 2005), but we wanted verification from those who had used such tools to accomplish a major task such as a wiki.

As shown in Figure 9, more than 40 percent of Wikibookians found that these environments were more socially interactive (41 percent), exploratory (49 percent), collaborative (65 percent), and informal (67 percent). In contrast to many educational environments, the highest rated response was for self-initiated or independent learning which 82 percent of our respondents perceived it encouraged. In contrast, fewer than one in four perceived that Wikibook environments could foster rote (8 percent), strategic (16 percent), formal (19 percent), or reflective (22 percent) learning. In terms of learning possibilities, Wikibook environments, therefore, appear to be much more exploratory, informal, and interactive, than controlling and lecture-based; i.e., social and collaborative learning take precedence over the highly competitive, rote and formal learning of prior generations. Such results are 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).
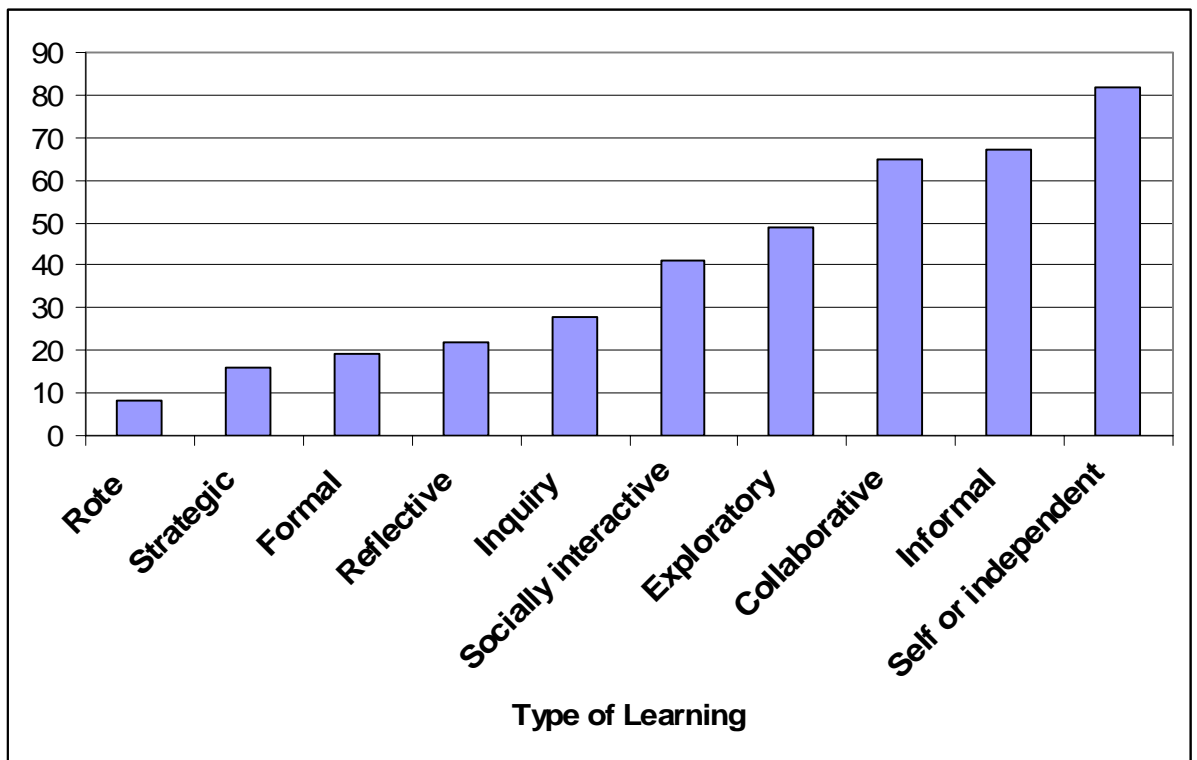
Figure 9. Types of learning perceived fostered in a Wikibook environment.

Collaboration and Apprenticeship. As part of our exploration of Wikibooks as a

socioculturally-related tool, we asked our respondents questions about whether the tools at the

Wikibook Website promoted collaboration and interaction. As shown in Figure 10, nearly 100

percent of Wikibookians agreed that Wikibooks offered an environment that promoted online

collaboration. As indicated by one participant email that "…people can work together on a wiki

and come up with a result that is better than something written by one or a couple of "experts."

…There is not one person in charge who can make the hard decisions that everyone will
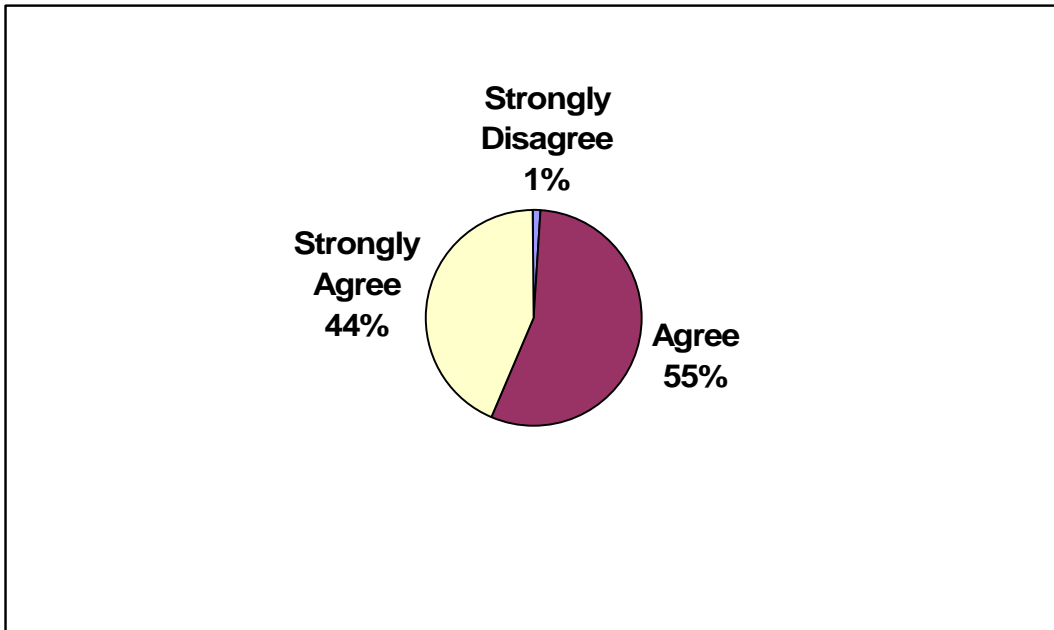
respect."

Figure 10. Wikibookian perceptions of online collaboration in Wikibooks.

Many of these survey results about the benefits of collaboration and the social negotiation of text were corroborated by our follow-up email interviews. As indicated earlier, the Wikibooks Website (Wikibooks, 2007b) was founded based on the expressed need by several experienced Wikipedians for a space to write textbooks. Such individuals have found their ideas and content more suitable to a Wikibook environment than other 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 did not expect it to be very effective because he deemed it difficult to engage people in collaborative work all the time. Another, in contrast, believed that Wikibooks could be a great place to maintain "free, collaborative written textbooks." Nevertheless, most people who have accessed the Wikibooks

Website appreciate the collaborative environment provided by Wikibooks; particularly, in the ability to track the contributions and changes of each contributor.

Based on our email interviews, it was clear that Wikibookians' believed it important to work with others when trying out Wikibook types of environments. In effect, a Wikibook activity involves significant apprenticeship wherein one should start with sufficient help from others or get involved by helping with someone else's book project rather than starting from scratch on their own. Only after acquiring enough experience should one work on her own Wikibook project.

Social Negotiation of Text. In situations wherein someone edits or changes a section of a Wikibook, the interviews indicated that most Wikibookians would discuss the issue with that person in a talk or discussion page. While they might simply revert content back to previous versions, from most perspectives, it would be pointless and potentially never-ending unless one had first discussed the issue with the contributor and attempted to reach a sense of consensus.

Wikibook Completion. Given the sociocultural aspects of a Wikibook (i.e., a resource which can forever be negotiated and changed), we were interested in Wikibookian perceptions related to the possible completion of a Wikibook. Whereas most Wikibookians (58 percent) believed that a Wikibook could be completed (see Figure 11), the remaining 42 percent indicated that such a book could not be completed.
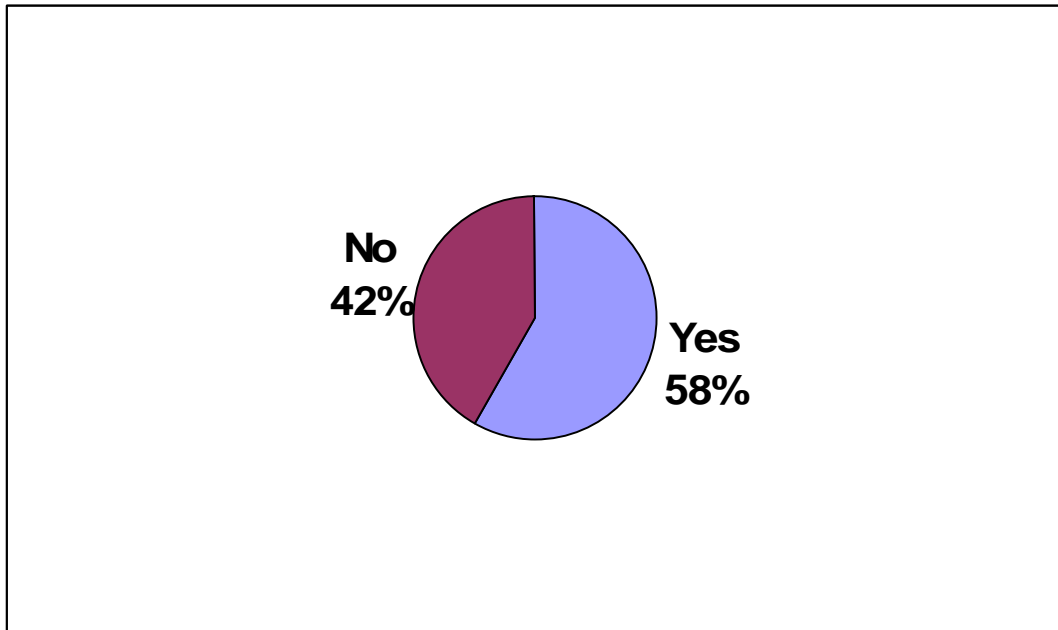
Figure 11. Perceptions of whether a Wikibook could ever be completed

These survey results corresponded with the mixed opinions we later received in the follow-up email interviews. For example, one participant believed a Wikibook could never be completed, "It won't be completed ever, because there is so much to write about, as well as much stuff that will be renewed after some time so that the books have to get actualized sometimes. This is causing that they won't be completed ever - they only can be nearly complete," while another participant wrote "A Wikibook can certainly be complete enough to use in a learning situation." In contrast, one Wikibookian indicated that "theoretically, a wikibook could be complete, depending on the subject." As an example, a different 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."

Recap of Findings and Discussion

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Given the potential of Wikibook technology and resources to supplement or replace textbooks used in schools, institutions of higher learning, and other settings, we were interested in the educational status, gender, age levels, and previous wiki experience and backgrounds of Wikibooksians. Somewhat surprisingly, nearly all the Wikibookians in this particular study were men who were under age 35 with varied educational backgrounds. The high percentage of males may stem from the fact that many Wikibookians began coordinating Wikibooks after realizing that their ideas or content were too massive or beyond the functions of Wikipedia. If males were dominant in Wikipedia as pointed out by Rosenzweig (2005), then it made sense that they would dominate Wikibooks as well. Furthermore, many Wikibookians and Wikipedians likely come from computer science and engineering which tends to be a male dominated fields; i.e., despite the relative simplicity of a Wiki, having computer programming skills and knowledge does not hurt.

In addition to the somewhat unexpected demographic or status data on Wikibookians, our investigation into Wikbook coordination and success also proved interesting. For instance, the vast majority of Wikibookians perceived this type of environment as highly productive, engaging, fun to use, and successful. Furthermore, it was extremely fascinating to find that most Wikibookians felt inspired to contribute and share their knowledge purely on their own, not simply to publish their work. They enjoyed the "process" of sharing knowledge rather than just giving out the "product" of that knowledge. This result could be a reason why the Wikibooks website finds success in online collaborations among Wikibookians and their readers. Instead of publishing their own work, Wikibookians were focused on personal growth and enrichment. In addition, Wikibookians perceived their books to be owned by the world community; not by one person, publisher, or other entity.

A majority of Wikibookians 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. Additionally, our survey participants indicated that there were many roles to play in the Wikibook community (contributor, editor, author, reader, organizer, team member, coordinator, facilitator, etc.); such diversity of roles can help foster a community of writers who are members of one or more exciting Wikibook projects. With the diverse ways to share knowledge, opinions, and ideas (i.e., one's voice), such roles can bring a sense of equity where participant voices are acknowledged and deemed important.

The third key area we explored related to satisfaction with the Wikibooks environment. While Wikibookians were generally satisfied with the context of developing a Wikibook, they offered many tool- and resource-related improvement suggestions. A key area of need was in the preplanning and visual coordination of Wikibook progress as well as for better tools for uploading and publishing a Wikibook.

Finally, in terms of sociocultural phenomena, Wikibooks were perceived as a technology for fostering social interaction, collaboration, informal learning, and dialogue among the diverse people of this planet. As a sociocultural tool, Wikibooks are not that useful for rote learning or lecturing to learners. Instead, Wikibooks are environments rich in collaboration, the social negotiation of text, and apprenticeship opportunities.

Limitations

Given that this study was an initial exploration into the value and effectiveness of Wikibooks, there were a various limitations. First of all, we did not determine the number of Wikibooks each respondent had completed, edited, or contributed to, nor did we review their individual products. Those responding to our surveys and interview questions undoubtedly vary

widely in the number and quality of Wikibook projects.   Second, given the number of registered users at the Wikibooks Website, our sample size was admittedly modest. However, as explained in the Method section, obtaining access to the entire pool of Wikibookians was simply not possible given the data and records currently available and publicly accessible. In addition to incomplete records, other factors such as time, length of survey, and Wikibookian anonymity also lowered the percent of respondents (see Method section for other factors and issues). Given that this was an initial study of Wikibookians and their working environments, the number of respondents was deemed sufficient and important. Other constraints here revolve around the exploratory nature of the research resulting in more types of survey questions than follow-up research will require. Finally, some may also deem the electronic nature of the email interviews to be a constraint; however, the Wikibookian respondents were likely highly comfortable responding in an electronic environment.

Future Wikibook Research and Final Comments

Admittedly, this was our initial foray into Wikibook research. 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 sociocultural principles and concepts in an environment that can entail both formal as well as informal learning. Future research might attempt to document how intersubjectivity or shared knowledge among Wikibook participants enhances their collaboration and the overall book development process. Such research also might specifically address issues regarding the development of a community of practice within a particular Wikibook, set of Wikibooks, or the Wikibooks Website as a whole. In fact, our research team is conducting a follow-up study of the apprenticeship process of Wikibookians and the communities of practice in which they work.

This second phase of our Wikibookian research intends to be more expansive and focused than Phase One.

Other sociocultural areas of interest include the types of online scaffolding available in the Wikibooks Website as well as cultural differences in the creation and use of Wikibooks. For example, researchers might explore knowledge sharing and collaboration across different cultures or communities. Phase Three of our research efforts may extend into this area.

Another important line of research might push to uncover reasons why many Wikibooks are never completed and the strategies that can be embedded in the Wikibook development process to facilitate completion of more of them. In addition, usability studies on the Wikibooks Website, including Junior Wikibooks, can reveal specifics related to how Wikibook tools and resources are presently used as well as possible improvements and next steps. Does the Wikibook model of online book development encourage abortive book projects? Do existing wiki tools fail to support the plans and goals of Wikibookians? New tools are undoubtedly needed, but the specifics types and features will likely take years of experience and testing to sort out. Without a doubt, many research directions are possible.

We explored the challenges as well as success factors in the development of Wikibooks from Wikibookians who had experience participating in the popular Wikibooks Website from the Wikimedia Foundation. The results were intended to be informative for those building Wiki tools as well as those implementing them in both informal as well as academic settings. We hope that the findings of our initial study can help foster additional research which can lead to the next generation of Wikibook technology as well as dozens of innovative pedagogical experimentations and a plethora of free book projects for the citizens of this planet.

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