



“You Just Type in What You Are Looking For”: Undergraduates' Use of Library Resources vs. Wikipedia

by Mónica Colón-Aguirre and Rachel A. Fleming-May

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This study presents findings from one-on-one interviews with 21 undergraduate students at a large public research university in the southeastern United States. While the preliminary focus of the study was to be students' opinions about and use of Wikipedia as a resource for course-related research, many of the interviews evolved into discussion about the relative merits of freely-available web-based resources as compared with subscription databases. In addition to providing illuminating information about respondents' relationships with Wikipedia and Google, these interviews offered an unexpected glimpse into participants' understanding of the nature of information creation, presentation, and retrieval in the free web-based environment. Additionally, respondents provided valuable insight into the question of why some students rely heavily on library resources while others avoid visiting the physical and virtual library.

Keywords: Undergraduates; Information behavior; Information literacy; Instruction; Relations with faculty; Interviews

INTRODUCTION

The widespread shift to electronic formats for information resources has enabled academic librarians to provide users with an ever-increasing scope and breadth of quality information. Users who choose to conduct research independently online encounter not only vetted, proprietary resources, but also freely available information from resources of varying credibility. The rapid expansion of the Internet as a means to both access and share information has been both a boon and a curse for academic librarians; while users often find the presentation of information on many free sites to be more navigable than the field searching and thesauri presented by proprietary databases, the content may not be subject to the scrutiny applied to their edited or peer-reviewed counterparts.

One resource that generates a significant amount of concern is Wikipedia. Launched by Jimmy Wales and Larry Sanger in early 2001, Wikipedia is a freely licensed, multi-language, online encyclopedia written by volunteers.¹ Wales had previously started a similar project known as *Nupedia*, which was a web based encyclopedia with articles written by experts but its content was licensed as free; meaning that anyone could use, distribute, copy and modify it. In 2000 Wales and Sanger decided to create a site that allowed contributions from the public, not just experts, editors and administrators. They re-launched *Nupedia* as a 'wiki', renaming it *Wikipedia*.² The site has grown steadily since it was launched with 184 articles; as of early 2012, the English Wikipedia site contained more than 3,750,000 individual articles.³

Wikipedia as a Source of Information

Wikipedia's main defining factor, its open nature, has both enhanced its attractiveness and raised many questions about its quality as a reference resource. Because anyone can create or contribute to a Wikipedia article, the site's main criticism relates to the authority and objectivity of the sources and authors of its information. Wallace and Van Fleet assessed Wikipedia according to Bill Katz's evaluation criteria for reference sources and found that if the goal of Wikipedia's editors is to fashion the site into a reliable reference source, they still have a long way to go.⁴

It can be argued that Wikipedia's editors have made an effort to address this concern in the years since Wallace and Van Fleet conducted their assessment of the site. For example, Wikipedia editors have begun to add banners at the top of pages that do not contain proper citations, are written in a biased tone or contain unverified information. However,

Mónica Colón-Aguirre,
Graduate School of Library and Information Science, Simmons College,
300 Fenway, Boston, MA 02115, USA

Rachel A. Fleming-May,
School of Information Sciences, the University of Tennessee,
1345 Circle Park Drive, Knoxville, TN 37996, USA
Tel.: +1 865 974 6509.
<rf-m@utk.edu>.

Wikipedia's open nature has made many wary about possible vandalism, most frequently individuals intentionally adding false information to an article for a variety of reasons.⁵ Critics have also expressed concern about the (less nefarious) possibility of authors generating errors as a result of lack of expertise or subject knowledge.⁶

It is important to remember that Wikipedia not only depends on volunteers from the general public to contribute with articles to the open encyclopedia, but also to edit the content that might be genuinely incorrect or vandalized. To study the speed with which volunteer editors were able to make these corrections, Magnus inserted "fibs" or "one and two sentence fictitious claims" into 36 articles about deceased philosophers, one-third to one-half of which were corrected within 48 h of insertion.⁷

In general, findings from empirical studies of Wikipedia's accuracy have been mixed. Although all of the authors advise exercising caution when using information from Wikipedia, most studies have shown that its quality is not significantly worse than that available from sources that might be considered more authoritative.⁸ In fact, one study of the content and citation patterns of scientific articles on Wikipedia found these articles to be of good quality and to cite high impact journals such as *Nature* and *Science*.⁹

Although he acknowledges that information included in Wikipedia articles is generally accurate, Don Fallis pointed out an important, and frequently overlooked, related issue. According to Fallis, the most significant threat to readers posed by Wikipedia is not so much that of inaccurate information, but that of omissions which can lead to false beliefs based on incomplete information.¹⁰ While not an empirical study, Timothy Messer-Kruse recently wrote about a similar issue stemming from a Wikipedia policy he considers problematic: the "undue weight" editors ascribe to majority or long-established interpretations of events and phenomena that might be considered subjective. In his *Chronicle of Higher Education* essay, Messer-Kruse recounted his attempts to amend the source's article about the 1886 Haymarket riot and subsequent trial, about which he has written several scholarly articles and books. In spite of his scholarly credentials, Messer-Kruse said the changes he made to the article were reversed because they represented a "minority" viewpoint of the events in question. As one editor explained in an email exchange, "Wikipedia is not 'truth,' Wikipedia is 'verifiability' of reliable sources. Hence, if most secondary sources which are taken as reliable happen to repeat a flawed account or description of something, Wikipedia will echo that."¹¹

Although West and Williamson concluded that overall, Wikipedia articles are objective, clearly presented, reasonably accurate and complete, they objected to the poorly written nature of some content and the inclusion in some articles of unsubstantiated information. The authors also assert that while Wikipedia's topical coverage is uneven and frequently shallow, this is what one would expect of a volunteer community-generated resource. West and Williamson point out that in keeping with the nature of an encyclopedia, Wikipedia's purpose is to provide general information on a subject rather than serve as the only source of information in an exhaustive research exercise.¹²

College Students' Use of Wikipedia

There exists a significant body of research investigating undergraduate students' behavior related to conducting research in support of class assignments. After observing and interviewing nearly 600 undergraduate students, Kim and Sin concluded that while their respondents appeared to understand the types of considerations they should make in choosing information sources for classwork, the students also seemed to "prefer immediate benefit over long-term investment for a bigger gain"¹³ and prioritized the accessibility of a resource over its degree of accuracy. Kim, Yoo-Lee, and Sin also found that students employed a set of criteria to evaluate the reliability of information presented on a site like Wikipedia that differed significantly from standards used for other information resources.¹⁴ Through a

task-based assessment of 210 undergraduates' information resource selection behavior, Mencken-Trevino and Hargittai established that while Wikipedia was a popular choice among respondents, few had a complete understanding of the site's organizational structure or editorial policies and practices.¹⁵

Mizrachi shared preliminary findings from an ethnographic study of undergraduates' research behavior.¹⁶ While respondents reported heavy use of the library as physical space, they also indicated that they "still prefer to begin their research projects on public internet sources."¹⁷ Luyt, et al., interviewed fifteen respondents aged thirteen to twenty-four regarding their opinion and usage of Wikipedia.¹⁸ The authors concluded that despite the source's initial appeal to young people, respondents were unlikely to truly integrate Wikipedia into their everyday information behavior, instead using it as an "instrumental tool for the fulfillment of a narrow range of tasks."¹⁹

It is unsurprising that Wikipedia's egalitarian approach to presenting information, its user friendly design, and its free availability make it a popular source of information for undergraduate students. Researchers at the University of Washington recently conducted a large-scale survey and series of focus groups with undergraduate students from six separate institutions. 82% of their respondents reported using Wikipedia for their course related research.²⁰ Forty percent of the students who participated in this study said that they use Wikipedia at the very beginning of a project and another 30% do so "near the beginning" of the project. When asked to provide the main reasons they used Wikipedia for their schoolwork, students cited Wikipedia's capacity for helping them get started on a research project (76%), and helping with terms and use of language regarding certain topics (69%) as the two most important factors. Respondents also identified Wikipedia's clarity of language (64%), and inclusion of hyperlinked citations (54%) as additional justification for using the resource.²¹

In another study of the reasons college students use Wikipedia, Lim found that the main reasons students cited for using Wikipedia included quick fact checking and finding background information. Students in this study reported having good past experiences with the source, however their perceptions of the quality of the information obtained through it was not as high as Lim expected it would be. In the same study, Lim also found that students tend to use Wikipedia more frequently than library-provided databases and that most reach it through a search engine, although a significant number reached it through their own bookmarks.²²

Head and Eisenberg revealed that college students use Wikipedia in combination with other sources of information, and that it meets students' needs in terms of coverage, currency, convenience and comprehensibility. The authors concluded that these factors outweighed the credibility (or lack thereof) of the information. It is important to point out that students in this study reported using other sources such as course readings and Google more often than Wikipedia for obtaining background information on a subject, and very few of the students used Wikipedia because they believed the information in it to be more credible than other sources.²³

METHODOLOGY

This study presents findings from semi-structured one-on-one interviews conducted during the spring and fall semesters of 2010 with 21 undergraduate students at a large public flagship research university in the southeastern United States. In the interviews, which lasted between 14 and 36 min, respondents were asked to evaluate Wikipedia as an information source as well as their approach to gathering information resources for an assignment. In addition to providing illuminating information about respondents' relationships with Wikipedia, these interviews offered unexpected insight into participants' understanding of the nature of information creation, presentation, and retrieval in the free web-based environment.^a Respondents also led the researchers to

^a See [Appendix A](#) for Semi-Structured Interview protocol.

an improved understanding of why some students rely heavily on library resources while others avoid visiting the physical and virtual library, depending instead on free online information resources like Wikipedia.

The interviewer identified respondents through a research participation program required of undergraduates enrolled in two sections of the university's introduction to public relations course. In accordance with Institutional Research Board (IRB) requirements, students were informed that participation in the interview was voluntary and that declining to participate would have no effect on the course grade, but that participants would receive two bonus points on the semester grade. Neither of the two authors was instructor of the P.R. course in question, and the only incentive for participation was satisfaction of the research participation component of the P.R. course. Although all students who wished to participate were able to participate in an interview, there were no first-year students among the participants (Table 1).

The qualitative interview method is a well-established research method employed in a variety of social inquiry settings including disciplines as diverse as sociology, nursing, and education.²⁴ This study was conducted using a semi-structured questionnaire (see Appendix A) which helped organize the interviews and insure that coverage of subjects is fairly uniform from one participant to the next. This method also allowed the researcher the freedom to investigate other patterns that emerged in the process of data collection.

Because respondents are able to fully articulate their responses rather than relying on the pre-determined options presented to them in a survey, the research interview is recognized by many as the most effective way to explore participants' thought processes. The researcher has the opportunity to ask interview respondents to clarify and expand

upon their responses, which allows the researcher to explore the categories and logic by which respondents organize their world.²⁵ Interviews were conducted in a private conference room and a semi-private sitting area on campus. While conversations varied in length, the average duration was 27 min; the shortest interview was 14 min and the longest lasted for 36 min.

Because it is more time consuming to collect, process, and analyze data through an interview, studies that utilize this model have far fewer participants than do other types of studies, such as surveys. Typically, a researcher continues to conduct interviews until reaching redundancy, or until additional interviews cease to add new information.²⁶ This was the model utilized for this study.

The recorded interviews were transcribed and subjected to a process of thematic analysis to identify patterns emerging from the data.²⁷ During this process the researcher used open and axial coding to create categories allowing for meaningful analysis of the data.^b The process of open coding involves "breaking the data apart and delineating concepts to stand for blocks of raw data"²⁸ to generate categories in which to locate the different types of data analyzed.²⁹ Once the categories were created, the data was subjected to axial coding; a process through which relationships are established among the categories generated in the open coding process.³⁰ During coding the researcher paid special attention to identifying 'emic' terms, or those terms generated by the respondents to explain the phenomenon under study, an approach to analysis that some qualitative methodologists believe allows the researcher to better understand the participants' worldview.³¹ This has also been referred to as 'in vivo' coding.³²

According to Ayres, a thematic analysis should generate "more than a list of themes and their descriptions," it should provide insight into "the important concepts and processes identified in the study and the overarching patterns of experience by which those concepts and processes are manifested."³³ This study ascribes to the idea that the participants are "active, interpreting individuals who act upon the world rather than allowing the world to act upon them."³⁴ Rather than developing generalizable results, the main purpose of this type of research is coming to a deeper understanding of the phenomenon in question, thereby illuminating its complexity.³⁵ The authors approached the project with a certain number of assumptions; primarily, that students use free online resources to locate information for classwork when library-provided resources might be more appropriate. However, we made every effort to reflect upon and minimize the impact these preconceptions might have on analysis. While not strictly a phenomenology, throughout the process of analyzing the interview transcripts we made every effort to engage in self-reflection in order to minimize the impact of our assumptions.

FINDINGS

The original purpose of this study was to assess respondents' use of Wikipedia and other free Internet resources in support of their classwork, and the relatively few questions about library resources in the interview protocol reflects this. However, several respondents initiated discussion of library-provided information resources when answering questions about Wikipedia early in the interview. This is especially intriguing considering that the interviewer is not a library employee and did not conduct the interviews in the library. This emphasis on the library and its resources in conjunction with the inductive thematic analysis approach allowed for additional discovery. Specifically, interview participants' responses regarding when and how they use the library and its resources led the authors to identify three categories of undergraduate library user. *Avid* users

^b The second author (who was not involved in conducting the interviews) reviewed the interview transcripts at a later date for significant themes. While both analyses largely agree, the second author did uncover additional points of interest in the data.

Table 1
Participant year and major of study

Participant identification code	Year	Major
A	Senior	Public relations
B	Senior	Public relations
C	Senior	Public relations
D	Senior	Public relations
E	Senior	Public relations
F	Senior	Public relations
G	Senior	Public relations
H	Junior	Public relations
I	Sophomore	Communication studies
J	Junior	Communication studies
K	Junior	Advertising
L	Junior	Communication studies
M	Junior	Public relations
N	Junior	Advertising
O	Junior	Public relations
P	Junior	Communication studies
Q	Sophomore	Public relations
R	Senior	Journalism and electronic media
S	Sophomore	Communication studies
T	Junior	Public relations
U	Junior	Journalism and electronic media

consider library resources their first option when searching for information to complete class work. *Occasional* library users acknowledge the value of library-provided resources but will consult them only after having exhausted other, more convenient options. *Library Avoiders*, on the other hand, actively eschew the library and its resources unless explicitly required to utilize them.

Avid library users recognize the superior quality of their library's materials compared to those that they can find through online search engines and prefer to use library resources (both print and electronic) for the duration of a class project or assignment. Unlike the other two groups of students, when Avid library users are given an assignment, they actually begin their information searches with library materials rather than a free online resource. Although users in this group may make judgments about the quality of specific library resources and formats, in general they recognize the superior quality of the information presented in library resources and the subsequent time savings offered by their more focused nature. This group of students was more likely to start the research process for class work using proprietary databases. As one student put it: "...if [the assignment is] something where you need all credible sources, I usually go to the [institution's] library site and click on the online databases."^c Most of the students in this category described the information resources they access via the library as more 'reliable' and 'credible': "anything on the [university's] databases [is] usually pretty credible."^d

Students identified as having characteristics of the "Occasional" library user do not model consistent behavior in their use of library resources. While these students are somewhat familiar with the resources offered by the library, unless the instructor has required them to utilize library-provided resources, they are likely to bypass library resources when it is time to search for information. For example, one of the students expressed that when she is working on research for class work she generally gets her information from information sources she finds in the library "...just because [that] is what other teachers normally recommend or...force you to use."^e In spite of this aversion to beginning a coursework-related information search with library resources, Occasional library users generally feel that the information they are getting through the library is of as good or higher quality than what they can find using free online search engines and other sources available through the Internet. This group includes those students who reported not having visited the library building, but accessing library-provided electronic resources from a remote location.

Some Avid and Occasional library users expressed the belief that searching for information in library resources is likely to produce a more reliable and concise set of results than conducting a similar search in Google: "[library sources are] really reliable in that a lot of information that I needed I probably wouldn't be able to find if I just from Google...Google brings up a million sources literally and the databases here have more narrow and concise results."^f

Finally, library Avoiders steer clear of the library except to use facilities such as computer labs and study rooms. Library Avoiders expressed feeling "lost" when visiting the library and try to use it only when explicitly required to do so in order to satisfy the requirements of an assignment. Some have never attempted to use library materials because they fear that doing so would be too confusing. When it becomes necessary for library Avoiders to collect information for a class assignment, they rely on either materials located on the free web using online search engines or class materials such as textbooks and notes. These students also prefer easy to use information sources such as Google and Wikipedia and become very frustrated when these

sources fail, leaving them with the sole option of using the library's resources, as expressed by one Senior respondent (Table 2):

"There's been a lot of times when I cannot find any information through Google. That's really frustrating 'cause [I] don't really know what else to do 'cause that's what I always do, I mean, I know I can go to the library resources but I try as much as possible to stay away from them."^g

Respondents' Use of Wikipedia and Free Online Information Sources

While all students who participated in this project, regardless of comfort and familiarity with the library and its information resources, reported using Wikipedia at some point during a research process, their reasons for doing so varied in interesting ways. Avid library users most frequently reported using Wikipedia to collect background information at the beginning of a class project: "Wikipedia to me is more like a starting point, like just to get the background information."^h "I kind of use Wikipedia to give it [research paper] that background for whatever is going on."ⁱ Several of these students also reported using library resources for this purpose: "usually I use a lot of the library databases and there's encyclopedias in there, I don't use online encyclopedias very much but usually just like the library databases."^j

In contrast, Occasional library users and library Avoiders tended to use Wikipedia as a substitute for library resources. "I love Wikipedia...I know that for one of my classes we had to look up events in history and there is usually like a very good timeline and stuff in Wikipedia like what happened and dates and everything."^k According to another Senior student, "you can't avoid Wikipedia when you are doing a paper 'cause it is so helpful for background information and just to get a better feel for your topic."^l When the same student was asked if she had ever used library resources for this purpose replied that she "would be completely lost if I had to try and use the library. I've never done it so I [would] not know where to start...if I went to the library."^m

While Wikipedia usage was the initial point of interest for this study, most of the students interviewed expressed that they usually reach the Wikipedia site by searching for a term on Google or another search engine and not by going directly to Wikipedia. Confirming findings from previous research in the information seeking behaviors of undergraduate college students,³⁶ this study found that Google is the main resource students pick for class-related web searches: "oh no, I've never been actually to the Wikipedia site I've always go through Google."ⁿ "I usually use the Google search engine and then it usually brings up the Wikipedia site."^o In addition, once on Wikipedia most students reported that they just read the information they were initially looking for and then leave the site "I just go there for that quick thing and then I'm out of there."^p Some did mention using Google Web as a jumping-off point for accessing Google Scholar and Google Books.

Resource Usage: The Instructor's Role in Selection

One of the most prominent trends that emerged from the data was the instructor's influence on the type of material students select for classwork. Studies have shown that college students rely on their professors as their first source of information when conducting research and consult them more often than they consult the academic librarian,³⁷

^g Student E.

^h Student K.

ⁱ Student Q.

^j Student H.

^k Student E.

^l Student B.

^m Student B.

ⁿ Student A.

^o Student F.

^p Student Q.

^c Student G.

^d Student M.

^e Student L.

^f Student O.

Table 2
Description of library user type and distribution of respondents

Category name	Category description	Participant code	Number of students in category
Avid library users...	Prefer library resources both print and electronic when they have to find information for class projects or assignments. They recognize the superior quality of their library's materials compared to those that they can find through online search engines and usually start class-related information searches using library materials.	C, G, I, K, M, Q	6
Occasional library users...	Use library resources for class-related purposes inconsistently. This group includes those students who do not visit the library but have used the library's electronic resources from their personal computers. They are somewhat familiar with the materials the library offers, but required to use library resources by the instructor, may forgo them in favor of free online information resources.	D, F, I, J, L, O, P, S, T, U	10
Library avoiders...	Express that they feel lost when visiting the library, and use library resources only when doing so is specifically required. Some have never tried using library materials because they feel like they would become too confused.	A, B, E, N, R	5

and this held true for our respondents. Most of the respondents reported their sole or main reason for using library resources was that the course instructor either requested that they do so, or required that students include a list of references as proof of having used library resources. In the words of one senior class member, "I had a teacher last semester say we have to have four copies of books [and] to cite them, so I used the database [the library's OPAC] to search through for potential books that I can check out here."^q In the event that an instructor did not place such a restriction on the type of information resource deemed acceptable for an assignment, most students said they browse for information using an online search engine such as Google. This was true even for those respondents who expressed appreciation for the library's extensive collection and diversity of information sources. One Occasional library user said that he visits the library "...only if my professor has told us to use, to go and use only those." He described one instance in which he was required to use library resources for an assignment in his public speaking class: "we had to go to the [institution's] database, databases and then go on to find information on what we were looking for our first speech." However, he acknowledged, "if my professor didn't tell me to do that I'll probably just do it how I usually do it."^r

Several respondents also cited instructors' requirements as their primary reason for avoiding specific resources in the information search process. In particular, instructors directed students to steer clear of Wikipedia: "I mean most instructors don't really want you to use that because it's they say is not a credible source."^s Some respondents mentioned this directive being included in the course syllabus. When asked to speculate as to why their instructors might issue this edict, most students were unable to identify a reason beyond Wikipedia "not being credible." While most respondents seemed to take instructors' rejection of Wikipedia in stride, one student presented a more balanced assessment: "I think it's awesome and I don't understand why teachers tend to have such a vendetta against it 'cause it's really well laid out you can't just put random stuff up there. They check it every day and everything up there is cited, and even if you can't use Wikipedia as a website, you can use the sources that Wikipedia lists as your own sources."^t

It should be pointed out that there may be repercussions for instructors' taking a "no tolerance" approach to Wikipedia rather than asking students to critically evaluate and confirm information found on the site. One student adroitly pointed to a potential consequence of instructors taking this hard line attitude: "the most frustrating part about that is that if a teacher types in something, like you quote something from a page that also happens to be on Wikipedia, it is going to pull up that Wikipedia has it on there, and you are going to get in trouble for A) sourcing it wrong, and B), using Wikipedia."^u This student reported having been reprimanded by an instructor for using a quote from another website that had also appeared in a Wikipedia entry.

Respondents' Usage of Academic Library Materials

When asked about the format of library material used most frequently in their research, both Avid and Occasional library users reported using both proprietary databases and monographs. Academic Search Premier (EBSCO) and LexisNexis were the databases most commonly mentioned by name. Although students identified monographic publications as reliable sources of information for class projects, several respondents did not see them as an efficient conduit of information. "...I feel like it's hard to get a lot of information out of a book, unless you want to read the entire book..."^v One Senior reported that "lately I've been using books" but conceded that he "didn't, I guess, do that until this semester. I just go into the library and get books. I found that very helpful."^w

Students from all three user categories expressed some level of frustration with the process of interacting with the OPAC and database search platforms. "I like the databases just 'cause I know they are a lot more reliable but sometimes it's hard to find the [information]. Like, because my topic was so specific it was hard to find information for it."^x Students from all three groups described the process of locating and using library materials, especially books, as 'confusing' and 'difficult.' Respondents reported feeling overwhelmed by the size and arrangement of the library's physical collection:

^q Student R.

^r Student I.

^s Student U.

^t Student R.

^u Student S.

^v Student K.

^w Student D.

^x Student J.

“there’s so many stacks you know you don’t even want to go look [for a book].”^y “I think it’s just that the library is so big, and it’s... There’s so many floors that, one time I went on to the wrong floor looking for a book for about like 20 min and then I realized I was on the wrong floor.”^z

Students also expressed frustration with identifying appropriate electronic resources among the vast array of databases as divided by disciplinary categories. One student volunteered, “I think that the search engines [sic] is kind of convoluted. Like, you had to go to databases and to find the subject that is related to and if you don’t have a specific subject you have to search for it to figure out what subject it was under, and then you had to actually type in a search and it didn’t always come out the way it needed to.”^{aa}

There was a consensus among participants that even though the materials available through the library can be more difficult to locate than those freely available on the Web, library resources are more reliable and credible.

“it is little more difficult to use the database from the library, but it provides you better information. So, if you know how to use it, it’s a lot better to use, just because it provides credible sources. In Google you have to sift through every website to see if that’s what you want or not, and the school’s databases narrow it down to where you can use options to narrow down your search a lot better than Google.”^{bb}

In reference to the role of the librarian in the pursuit of information, some participants reported having requested help from library employees when searching for information, and finding it to be a positive experience. One participant pointed out that this personal assistance is a feature that free online search engines do not offer: “if you are doing it by yourself on Google, you are not you are not going to get any help from someone.”^{cc}

Feelings about the Library

Although both Occasional library users and library Avoiders expressed reluctance to utilize the library and its resources, there is an important distinction to be made between the two groups’ reported reasons for this hesitancy. Occasional library users who expressed reluctance to visit the library typically cited reasons related to inconvenience and concerns about time management. Library Avoiders, on the other hand, shared very negative feelings towards visiting the library or using its resources that extend beyond a mere lack of convenience. Most of these students expressed feelings of discomfort and intimidation towards the physical library building that reflect those described as symptoms of library anxiety first identified by Mellon in 1986³⁸ and later expanded by Bostick, Jiao, and Onwuegbuzie,³⁹ among others. Specifically, individuals who suffer from Library Anxiety experience unease with one or more aspects of library usage. They may be confused about how to begin a search for resources, be intimidated by seeking assistance from staff, have trouble navigating the mechanics of locating materials, or be daunted by working with equipment.⁴⁰ It is important to note that Library Anxious students believe their level of competence to be far lower than that of their peers. For example, in one student’s words, “...it annoys me to...[have] to go to the library but I know that is a lot easier for other people, other people can just sit in there and like type in there but for the most part I’ll do...online.”^{dd}

The origin of Occasional library users’ aversion to consistently using library resources is unclear, and is likely to be more varied. It is

possible that some of them overestimate their ability to find quality information outside the resources selected by librarians. In a study designed within the framework of competence theory, which posits that students with lower skill levels are more likely to overestimate their skills than do students who “know enough to know how much they don’t know”, Gross and Latham found that first-year students with relatively low levels of information literacy-related skills were more likely to assess themselves as competent than those students who actually demonstrated significant information literacy skill levels.⁴¹ While they did not assess the relationship between participants’ self-estimation of skills and library anxiety, Gross and Latham did find that students with higher levels of skill were less likely to exhibit library anxiety as measured by Bostick’s Library Anxiety Scale.⁴²

Source Selection

The results of this study also echo previous findings that students use Wikipedia as a source of information for their coursework, although they most frequently began searches of the free web by searching Google. In fact, several respondents said that they “never” begin a search that concludes with a Wikipedia entry by first visiting the Wikipedia.org website. This is consistent with the fact that as much as 70% of the traffic on Wikipedia comes from search engines,⁴³ and 87% of 2006 and 2007’s most popular Wikipedia pages are also among the top three results generated by a Google search for that topic.⁴⁴ A more recent study conducted for the Search Engine Watch website found Bing searches are even more likely to rank a Wikipedia article among the first few hits than those conducted using Google,⁴⁵ and a study of 1000 Google UK searches using randomly generated terms found that a Wikipedia entry was the first or second result an astonishing 80% of the time.⁴⁶ While our respondents’ route to Wikipedia is consistent with that of other users, further inquiry led us to discover that some students assumed the reason for a Wikipedia entry’s prominence among search results was because “there probably is a lot of information about whatever topic on Wikipedia.”^{ee} In other words, the entry’s standing in the results list was an indicator of its quality.

This finding, and others, pointed to some aspects of respondents’ perception of both library information resources and online information resources that might provide helpful guidance for both instructors and librarians interested in educating and informing students about information sources. All respondents, regardless of library use category, seemed more familiar with the library’s online information sources than with those available in print. They used words like ‘confusing’ and ‘difficult’ to describe the process of finding information in the physical library more frequently than in discussing library subscription databases. In spite of this wariness, however, most also recognized that the information sources found in the library are superior to freely available online and tended to describe them as ‘reliable’ and ‘credible’ sources.

Study Findings: Implications for Practice

Since the results reflect that faculty members’ input and opinion as well as specific instructions and requirements for research projects really influence students’ use of library information sources, we would suggest reaching out to faculty members first. Academic librarians can share findings from this study with teaching faculty to reinforce their understanding that students tend to pay close attention to what their instructors say, at least in regard to establishing requirements for information sources as part of a class project. Unless instructed otherwise, students seem to abide by Zipf’s principle of least effort when searching for information to use in their coursework and rely on free online websites that they locate using a search engine.⁴⁷ However, when instructors require that students provide evidence

^{ee} Student T.

^y Student F.

^z Student O.

^{aa} Student R.

^{bb} Student M.

^{cc} Student C.

^{dd} Student N.

of having consulted 'credible' and 'reliable' information sources, students are more selective. This indicates the need for a collaborative effort between professors, who provide specific instructions and strict guidelines for acceptable formats and sources of information used in course work, and librarians, who provide outreach and instruction tailored to students' particular areas of study. Instruction might also go further than merely assisting students with locating information, but broaden its focus to accommodate a more holistic approach to the research process in which both professors and librarians provide guidance throughout the process of conducting a research process. This is easier said than done, however, as many academic librarians find it difficult to establish such partnerships with teaching faculty.⁴⁸ One suggestion for getting the attention of teaching faculty is for librarians to emphasize the ways in which *instructors* will benefit from partnering with an instruction librarian to enhance their students' information literacy skills. While it's natural for librarians to focus on the value of library instruction for student learning, less focus has been placed on the ways in which information literacy instruction supports teaching and instructors by helping them conserve time and effort. Whether the primary focus of the institution is on teaching or research, it is safe to assume that any classroom instructor would like to spend less time grading papers, and work that reflects a student's information literacy skills almost certainly takes less time to grade.

Ameliorating the library-related anxiety respondents in the library Avoider category are obviously experiencing presents a challenge, but it is one that librarians and classroom instructors must meet. Studies have demonstrated that students who participate in group instruction, in-person, in the library, can experience a reduction in library anxiety.⁴⁹ Researchers have not found that although online tutorials are effective vehicles for conveying information, they do not have the same anxiety-reducing effect as in-person instruction. This is an important consideration given that many academic libraries are allocating significant resources to creating asynchronous instruction tools.

Instruction librarians might find that students' comfort level with searching Google products presents an opportunity rather than impediment. While several interview participants said they used Google Scholar to search for assignment-related resources, none indicated having adjusted the Google Scholar preferences settings to reflect the access provided by their university's proprietary database subscriptions. Instruction librarians might find increasing the emphasis on maximizing Google Scholar's potential as a federated search tool to be of significant benefit to students, particularly those who indicate an aversion to using library resources.

Two specific findings are especially heartening. First, regardless of their level of comfort with using the library, the majority of respondents recognized that the information sources found in the library are superior to those found using a free online search engine. Second, there seemed to be a positive relationship between library instruction and students' knowledge of and comfort with the library and its resources. We would like to point out to both classroom instructors and instruction librarians that students from one specific disciplinary major represented in our study indicated having had a more significant amount of prior library instruction and a higher level of comfort with and knowledge of the library and its resources than did majors from other departments in the College. One major from this department described her experience thus: "every single class had a guest speaker come in and we'd go to the library and speak with librarians."^{ff} Library instruction does not strike the authors as being particularly more appropriate for this discipline than for others in the College. Rather, it may simply be the case that integrating library instruction is more a part of this department's "culture" than those of other departments in the College, or that this

department's faculty have had good experiences with instruction, and shared those experiences with their colleagues.

Both points reinforce the notion that effective library instruction is essential for students' skills and affective development. Reaching out to students in the "Occasional" and "Avoider" categories presents a practical challenge: how might one cater services to non-users? The obvious answer is to go where the students are: the student center, classrooms, dormitories, cafeterias...in recent years academic librarians have made significant strides out of the library. As remote access becomes more prevalent, however, putting a friendly face on the library, its resources, and services, is ever more essential.

Limitations and Areas for Future Study

This study has certain limitations. For example, respondents were undergraduate students from a single academic college; future studies should focus on a more diverse set of undergraduate students. It would be beneficial to conduct similar studies with graduate students and instructors in order to gain a better perspective on their use of different types of information sources. A study of the issue from the academic librarian's perspective would also provide helpful context. It would be interesting to ascertain practitioners' awareness of the concepts of library anxiety and the affective dimension of information behavior...and how they incorporate knowledge of users' emotional responses to finding information in the library into their practice.

CONCLUSIONS

Whether or not academic librarians believe that "Google is the enemy,"⁵⁰ the fact remains that students rely on it and other free online resources for conducting their academic research. This appears in many cases to be due (at least in part) to students' perception of the academic library and its resources as "confusing to navigate"^{gg} and "terrible."^{hh} In the words of one respondent, "you can't just type in what you need with the library databases...like you can with Wikipedia."ⁱⁱ The academic library has been described as the "heart of the university,"⁵¹ charged with providing patrons with the best information sources for all types of academic endeavor. As this study demonstrates, however, that message is not reaching everyone in the academic institution. While we do not suggest that academic libraries adopt the organizational and information retrieval features of Google and Wikipedia uncritically, perhaps we can meet them halfway.

APPENDIX A. SEMI-STRUCTURED INTERVIEW PROTOCOL

1. Tell me about yourself.
2. What kind of assignments and projects are you most likely to get in your classes?
3. When given a writing or research assignment, how do you start working on it?
4. Do you use Wikipedia articles as resources for your school papers?
5. What do you think about the quality of the writing of Wikipedia articles?
6. Who do you think writes the articles in Wikipedia?
7. What would you say is Wikipedia's best feature?
8. What would you say is Wikipedia's worst feature?
9. Have you ever contributed to Wikipedia by writing or editing an article?
10. What do you think about Wikipedia in general?

^{gg} Student E.

^{hh} Student D.

ⁱⁱ Student E.

^{ff} Student K.

11. How did you find out about Wikipedia?
12. In general, what is the online resource you use the most in order to complete your class work?
13. Do you use print encyclopedias?
14. Do you use the library resources?
15. Any final thoughts you would like to share with me?

REFERENCES

1. Lih, Andrew. *The Wikipedia Revolution : How a Bunch of Nobodies Created the World's Greatest Encyclopedia*. 1st ed. New York: Hyperion, 2009.
2. Wikipedia: About. 2012. Wikipedia: The Free Encyclopedia, <http://en.wikipedia.org/wiki/Wikipedia:About>. (accessed June 11, 2012).
3. Wikipedia: About.
4. Wallace, Danny P., and Connie Van Fleet, "The Democratization of Information? Wikipedia as a Reference Resource." *Reference & User Services Quarterly* 45, no. 2 (2005): 100–03.
5. Shachaf, Pnina, and Noriko Hara, "Beyond Vandalism: Wikipedia Trolls." *Journal of Information Science* 36, no. 3 (2010): 357–70;
6. Gorman, G. E. "A Tale of Information Ethics and Encyclopædias; or, Is "Wikipedia" Just Another Internet Scam?" *Online Information Review* 31, no. 3 (2007): 273–76.
7. Magnus, P. D. "Early Response to False Claims in Wikipedia." *First Monday* 13, no. 9 (2008): unpagd.
8. Fallis, Don. "Toward an Epistemology of Wikipedia." *Journal of the American Society for Information Science & Technology* 59, no. 10 (2008): 1662–74;
- West, Kathy, and Janet Williamson, "Wikipedia: Friend or Foe?" *Reference Services Review* 37, no. 3 (2009): 260–71;
- Nielsen, Finn Årup. "Scientific Citations in Wikipedia." *First Monday (Online)* 12, no. 8 (2007).
9. Nielsen, "Scientific Citations", unpagd.
10. Fallis, "Toward an Epistemology", (2008).
11. Messer-Kruse, Timothy. "The 'Undue Weight' of Truth on Wikipedia." *The Chronicle of Higher Education*, February 12, 2012.
12. West & Williamson, "Wikipedia.", (2009).
13. Kim, Kyung-Sun, and Sei-Ching Joanna Sin. "Selecting Quality Sources: Bridging the Gap between the Perception and Use of Information Sources." *Journal of Information Science* 37, no. 2 (2011): 186.
14. Kim, Kyung-Sun, EunYoung Yoo-Lee, and Sei-Ching Joanna Sin. "Social Media as Information Source: Undergraduates' Use and Evaluation Behavior." *Proceedings of the American Society for Information Science and Technology* 48, no. 1 (2011): 1–3.
15. Menchen-Trevino, Ericka, and Eszter Hargittai. "Young Adults' Credibility Assessment of Wikipedia." *Information, Communication and Society* 14, no. 1 (2011): 24–51.
16. Mizrachi, Diane. "Undergraduates' Academic Information and Library Behaviors: Preliminary Results." *Reference Services Review* 38, no. 4 (2010): 571–80.
17. Ibid., p. 579.
18. Luyt, Brendan, Chia Zuhaila Bte Chia Zainal, Olivia Victoria Petines Mayo, and Tan Siow Yun. "Young People's Perceptions and Usage of Wikipedia." *Information Research* 13, no. 4 (2008): unpagd.
19. Ibid., unpagd.
20. Head, Alison J., and Michael B. Eisenberg. "How Today's College Students Use Wikipedia for Course-Related Research." *First Monday* 15, no. 3 (2010): unpagd.
21. Ibid., unpagd.
22. Lim, Sook. "How and Why Do College Students Use Wikipedia?" *Journal of the American Society for Information Science & Technology* 60, no. 11 (2009): 2189–2202.
23. Head & Eisenberg, "How Today's College Students Use Wikipedia.", (2009).
24. Kvale, Steinar. "The Qualitative Research Interview: A Phenomenological and a Hermeneutical Mode of Understanding." *Journal of phenomenological psychology* 14, no. 2 (1983): 171–96.
25. McCracken, Grant David. *The Long Interview, Qualitative Research Methods*. Newbury Park, Calif.: Sage Publications, 1988.
26. Margaret A. Morrison, Eric Haley, Kim Bartel Sheehan, Ronald E. Taylor. *Using Qualitative Research in Advertising: Strategies, Techniques, and Applications*. Thousand Oaks, Calif.: Sage, 2002, p. 17.
27. Glaser, Barney G., and Anselm L. Strauss. *The Discovery of Grounded Theory : Strategies for Qualitative Research*. Hawthorne, N.Y.: Aldine de Gruyter, 1967;
- Patton, Michael Quinn. *Qualitative Research and Evaluation Methods*. 3 ed. Thousand Oaks, Calif.: Sage Publications, 2002.
28. Juliet M. Corbin & Anselm L. Strauss, *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*. 3rd ed. Los Angeles: SAGE Publications, 2008.
29. Dey, Ian. *Qualitative Data Analysis: A User-Friendly Guide for Social Scientists*. London: New York Routledge, 1993.
30. Corbin & Strauss, *Basics of Qualitative Research* (2008).
31. Patton, *Qualitative Research* (2002).
32. Corbin & Strauss, *Basics of Qualitative Research* (2008).
33. Ayres, Lioness. "Thematic Coding and Analysis." *The Sage Encyclopedia of Qualitative Research Methods*. Thousand Oaks, CA: Sage Publications, 2008. 868–69.
34. Morrison, et al., p. 17.
35. McCracken, *The Long Interview 1988*, Corbin and Strauss, *Basics of Qualitative Research* (2008).
36. Griffiths, Jillian R., and Peter Brophy. "Student Searching Behavior and the Web: Use of Academic Resources and Google." *Library Trends* 53, no. 4 (2005): 539–54, Head and Eisenberg, "How Today's College Students Use Wikipedia",
- Martin, Jason. "The Information Seeking Behavior of Undergraduate Education Majors: Does Library Instruction Play a Role?" *Evidence Based Library & Information Practice* 3, no. 4 (2008): 4–17.
37. O'Brien, Heather L., and Sonya Symons. "The Information Behaviors and Preferences of Undergraduate Students." *Research Strategies* 20, no. 4 (2005): 409–23.
38. Mellon, Constance A. "Library Anxiety: A Grounded Theory and Its Development." *College & Research Libraries* 47, no. 2 (1986): 160–65.
39. Onwuegbuzie, Anthony J., Qun G. Jiao, and Sharon L. Bostick. *Library Anxiety : Theory, Research, and Applications*. Lanham, Md.: Scarecrow Press, 2004.
40. Ibid.
41. Gross, Melissa, and Don Latham. "Attaining Information Literacy: An Investigation of the Relationship between Skill Level, Self-Estimates of Skill, and Library Anxiety." *Library & Information Science Research* 29, no. 3 (2007): 332–53.
42. Ibid.
43. Prescott quoted in Spoerri, Anselm. "What Is Popular on "Wikipedia" and Why?" *First Monday (Online)* 12, no. 4 (2007): unpagd.
44. Spoerri, "What Is Popular on "Wikipedia"", unpagd (2007).
45. Goodwin, Danny. "Bing, Not Google, Favors Wikipedia More Often in Search Results." *In Search Engine Watch*, 2012, <http://searchenginewatch.com/article/2161910/Bing-Not-Google-Favors-Wikipedia-More-Often-in-Search-Results-Study>.
46. Silverwood-Cope, Sam. "Wikipedia: Page One of Google Uk for 99% of Searches." *In Intelligent Positioning Blog*, 2012., <http://www.intelligentpositioning.com/blog/2012/02/wikipedia-page-one-of-google-uk-for-99-of-searches/>.
47. Rieger, Oya Y. "Search Engine Use Behavior of Students and Faculty: User Perceptions and Implications for Future Research." *First Monday* 14, no. 12 (2009): unpagd.

48. For an excellent overview of this issue, see Mounce, Michael. "Working Together: Academic Librarians and Faculty Collaborating to Improve Students' Information Literacy Skills: A Literature Review 2000–2009." *Reference Librarian* 51, no. 4 (2010): 300–20.
49. Van Scoyoc, Anna M. "Reducing Library Anxiety in First-Year Students." *Reference & User Services Quarterly* 42, no. 4 (2003): 329; Nicholas, Martina, Catherine Rudowsky, and Jesus Valencia. "Who's Afraid of the Big Bad Library?" Paper presented at the ACRL 13th National Conference, Baltimore, MD, March 29–April 1 2007.
50. Hunter, Karen. "Access Management." *Journal of Library Administration* 42, no. 2 (2005): p. 63.
51. Leupp, Harold L. "The Library: The Heart of the University." *Bulletin of the American Library Association* 18, Papers and Proceedings of the Forty-Sixth Annual Meeting of the American Library Association (1924): 193–97.