



Factors that Influence Undergraduate Information-seeking Behavior and Opportunities for Student Success



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ARTICLE INFO

Article history:

Received 4 February 2016

Accepted 11 April 2016

Available online 11 May 2016

Keywords:

Information-seeking behavior

Undergraduate students

Library resources

ABSTRACT

Informed from a survey we administered to undergraduate students on their information seeking behavior, we identify variables that influence how students conduct their search for sources, what types of sources they select, and what attributes of their sources they value. These variables relate to student academic characteristics, demographics, and actions that have been taken by instructors and library staff. With a thorough understanding of students' information seeking process and its influences, we find opportunities for instructors and librarians to have a positive influence.

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INTRODUCTION

Little has been done to date to investigate what causes students to decide to use or not use various library resources. What can librarians and instructors do to encourage successful student use of library resources? The purpose of our study is to get a deeper understanding of the undergraduate student information seeking process from start to finish, and identify factors that influence this behavior. We identify where students report starting their research, what resources they tend to use, what attributes they report valuing in their sources, in what physical location they generally conduct their work, and whether they seek help from library staff. We consider a number of explanatory variables that may influence these information seeking behavior variables, including demographic and academic variables and variables that librarians and instructors control.

We measured these variables with an electronic survey administered to undergraduate students at the University of Wisconsin – La Crosse in Fall 2013. The University of Wisconsin – La Crosse is a regional comprehensive university in the University of Wisconsin system with about 10,000 undergraduate students and less than 1000 graduate students. The university library includes resources appropriate for undergraduate students, graduate students, and faculty with research and publication expectations.

Convenience is a primary factor that drives undergraduate information-seeking behavior, partially because resource evaluation is such a challenge for undergraduate students (Lee, 2008; Connaway, Dickey, & Radford, 2011; Taylor, 2012; Lee, Paik, & Joo, 2012; Rempel,

Buck, & Deitering, 2013). The volume of resources and complexity of library search tools lead many undergraduates to rely heavily on familiar internet search engines for their information rather than on library subscription databases and electronic resources. Georgas (2014) finds that students' search strategies reflect a limited grasp of how the search tools students use fit into the larger information architecture. Georgas (2013) directly observed students conducting research and notes that when search tools took students to publisher interfaces hosting the library's subscription journals, students failed to understand what kind of interface they were in and what types of content they would find there. Despite these observations, when students were asked to evaluate themselves, they revealed that they believed they possessed excellent research skills (Georgas, 2014, 2015).

As students progress in their academic careers, they do not necessarily develop better research habits. Mbabu, Bertram, and Varnum (2012) finds that despite having higher levels of learning and being expected to have more sophisticated research skills, juniors and seniors use the university's subscription databases proportionally less than freshmen and sophomores. Similarly, Callinan (2005) finds that both first-year and final-year students struggle to use resources in the electronic environment and both groups indicate a desire to receive further instruction on finding journal articles in electronic databases.

Research shows that library use is related to student retention and, ultimately, success. Haddow (2013) compares the number of resources borrowed and the number of log-ins to authenticated resources between students that remained enrolled in college in the subsequent semester and students that later withdrew from college. She found that students who would be retained logged in more to authenticated resources and borrowed more from the library than students who would withdraw. Similarly, Soria, Fransén, and Nackerud (2013) show that using library workstations and logging in to library databases

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were behaviors consistently and positively related to retention. In this present paper, we identify actions that instructors and library staff members can take to improve students' search process and use of library resources, which may ultimately improve students' retention and overall academic success.

Like other researchers, we find that students do value convenience. This is evidenced from students starting their search process with popular search engines, relying on blogs and websites like Wikipedia for their sources, and reporting a high value on full text availability. Still, we also find that library subscription databases are also popular for beginning the search process and for finding sources. We also find that students do place a high value on sources being peer reviewed, even if it is less valued than a source being immediately, electronically available. When we examine what variables influence student information seeking-behavior, we find evidence that instructors and library staff members can positively influence students' research process.

In the next section we describe students' information-seeking behavior beginning from where the students begin their search process, to what sources the students use and what they value in these sources, to where students actually conduct their work. In the section '[Influences on information seeking behavior](#)', we examine how a set of independent variables influences these information-seeking behavior variables, identifying opportunities for instructors and library staff members to make a difference. The '[Conclusion](#)' section presents some concluding remarks.

INFORMATION SEEKING BEHAVIOR

We administered an electronic survey in Fall 2013 to undergraduate students at the University of Wisconsin – La Crosse (UW-L) which measured details about students' information seeking behavior, whether students' curriculum included encouragement or training in using library resources, students' perceived level of success using library resources, information on college major and academic progress, and demographic information. In total, 542 students responded to the survey, but non-responses to some individual questions led to smaller sample sizes in the analysis below.

The information seeking behavior of the students in our sample are similar to those in the studies cited above. A large fraction of students report using popular search engines for finding information for projects involving library research, however the library website and electronic databases are also very popular. Also, while many students report seeking scholarly articles and placing value on the quality of the source, it is also very popular to depend on Wikipedia, blogs and other websites.

Table 1 describes where students begin their search process. It shows the percentage of students that report beginning with popular search engines and websites versus online library search tools such as the library website, library catalog, or electronic database. While a large fraction of students report beginning with [Google.com](#) and Wikipedia, almost as many students begin their search process with the library resources.

Using Google or Wikipedia may be an appropriate and comfortable starting point for students while they familiarize themselves with a topic, but we see evidence that many students eventually turn to library electronic databases. Table 2 reports how often students use EBSCO and subject-specific databases when conducting research, whether or not the search began at this point. Students on average report high usage

of the EBSCO electronic database in their search process. The interpolated median¹ response for using EBSCO when conducting research was just below "most of the time" and approximately two-thirds of students report using EBSCO "always" or "most of the time." Subject-specific databases were less frequently used by students, with an interpolated median between "rarely" and "sometimes" with almost half of students reporting use at levels "rarely", "never", or "not sure."

The search tools students choose should be related to the type of content they seek, so we next explore how much students use scholarly articles, books, articles in the popular press, and possibly less reputable online sources such as Wikipedia and blog posts. Table 3 reports summary statistics on various types of sources, and is ordered by the median response for use frequency. Students report relying on scholarly articles most often; almost two-thirds of the students reported using scholarly articles "often" or "very often." Still, the next most frequently used source was, "Wikipedia, online blogs, and other websites," with more than one-third of students reporting relying on such sources "often" or "very often". This is followed in frequency by books (median response "sometimes"), and the type of source least frequently relied on is articles in popular press (median response "sometimes").

Students' decisions for search tools and types of sources they use should depend ultimately on what characteristics of the sources they value. That is, how much do students value peer-review, a source's reputation, an author's reputation, or immediate availability of a physical or electronic copy of a source? Table 4 describes how much students report valuing these and other attributes of a source. The table orders the attributes from highest valued to lowest valued according to the interpolated median. The responses likely suffer from some response-bias as students on average report valuing very highly almost all of the attributes presented to them in the survey. Still, the order is revealing. Most important to students is whether or not the subject is relevant (as any instructor or librarian would hope, but it is still curious to find that as much as 2% of students do place a high value on relevancy). This is followed closely by whether electronic full text is available. Of least concern to students is whether physical copies are available. Taken together, this reveals that students' preference for a convenient online medium is considered more important than all other considerations except relevancy. Physical availability of resources housed in the library was considered least valuable to students. The next three least important attributes are peer review, author reputation, and source reputation.

Since students have a high preference for electronically available full text and place little value on physical availability, it may be that students have a need or preference to conduct library research outside of the physical library. Both popular search engines and the library electronic databases are available online on and off campus. Still, there is a benefit to using the physical library: library staff members are on hand to help students navigate electronic databases, understand their sources, and even help find information on a particular topic. To determine if students are missing out on this opportunity, we investigate where students conduct their research, how often they visit the library facility for research or other purposes, and whether they take advantage of the expertise of the library staff.

Table 5 describes where students report conducting most of their work involving library research. More than half of students report using the library most often, but this is followed by more than one-third of students working primarily in their residence, and a small fraction do their work in other locations. We also asked students how

Table 1
Starting point for information seeking.

Resource	Frequency	Relative frequency
Library catalog, website, or electronic database	202	42%
Google.com	188	39%
Google Scholar	73	15%
Wikipedia	6	1%
Other	6	1%
Total Responses	476	

¹ The interpolated median is a measure of center appropriate for ordinal variables, which is related to the median but offers more precision for ordinal variables with a small number of possible outcomes and with many observations exactly equal to the mean. It informs whether the distribution is more heavily weighted *strictly above* versus *strictly below* the median value. Let M denote the standard median, n_L denote the number of observations strictly less than the median, n_C denote the number of observations strictly greater than the median, and n_E denote the number of observations exactly equal to the median. The interpolated median is given by $IM = M + (n_L + n_C) / (2n_E)$.

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