Information Literacy and High School Seniors: Perceptions of the Research Process

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Abstract

To better understand how high school students apply their information literacy skills when conducting research and how these students carry out research projects, researchers asked a group of 289 high school seniors to complete an information literacy survey related to the research process. In addition, approximately ten percent of these students were randomly selected and asked to participate in an interview to provide more in-depth information about their perspectives on finding and using information. Results indicate the study participants were able to use library resources to locate and use information, that they used a variety of resources, and that they considered themselves successful library users. However, participants voiced a need for help in deciding which resources are best to use and how to identify important information from those resources. These high school seniors also wanted to learn more about how to use books for research. Although these students indicated they may need assistance when doing research, they rarely asked the school librarians for help. These findings are discussed in the context of the role of school librarians.

Keywords: high school students; information literacy; research process; school librarians; student perceptions.

Introduction

With the continued emphasis on information literacy (IL), school librarians and other educators face a daunting task in helping prepare students for higher education, careers, and lifelong learning. As students graduate from high school, their perception of what information literacy means and how one engages in finding and using information may be enhanced if it encompasses more than the skills needed to use an online database or search the Web effectively. B. Jane Scales and Elizabeth Lindsay suggested that educators and librarians need to affect "the way students think about approaching and evaluating information sources" (2005, 521) in addition to teaching information literacy skills and techniques. Carol Gordon stressed the need for those who teach about research and information literacy to move beyond information literacy as "collecting information and rearranging facts" (2002, 19) to include instructional strategies that help students understand research from a conceptual perspective. David V. Loertscher (2009) recommended librarians move beyond finding and locating materials and, instead, become active in helping learners engage in higher-order thinking.

Although the role of a school librarian may be central to learning about information literacy, the perception and attitudes of students toward librarians and libraries is also an important factor. To better understand how high school students apply their information literacy skills when conducting research and how these students carry out research projects, we asked a group of high school seniors to complete an information literacy survey related to the research process. In addition, approximately ten percent of these students were randomly selected and asked to participate in an interview to provide more in-depth information about their perspectives on information literacy

Literature Review

Information literacy is an important area of research because of the abundance of readily available information that needs to be located, evaluated, and analyzed to be used effectively and appropriately. Students at all levels of education need to possess information literacy skills; however, for those students leaving high school, IL skills may be a critical component of their education and one that may affect their success in higher education or the workplace (Burhanna and Jensen 2006). Assumptions that the current generation of students is information savvy because they are growing up with technology may lead some educators to think that students are more knowledgeable about information literacy than they actually are (Allen 2007; Caspers and Bernhisel 2005; Kolowich 2011). In one study, researchers found that college students tended to perform simple searches when looking for resources and did little to evaluate those resources (Asher and Duke 2012).

The realities of the twenty-first century underscore the importance of information literacy because critically thinking adults need to effectively and efficiently deal with increasingly disparate information in their work and personal lives (Vansickle 2002). Alison J. Head and Michael B. Eisenberg (2009) reported that college students may experience information overload when faced with the myriad resources available for research projects and that these students tended to use resources with which they were familiar rather than seek the most appropriate resource for a particular task. This finding is similar to what Michael K. O'Sullivan and Kim B. Dallas (2010) found when investigating the research process of high school seniors and what Andrew D. Asher and Lynda M. Duke (2012) found in their study of college students. Thus, we can conclude with some certainty that students may be able to find information, but may not possess adequate skills to determine whether they have found quality and relevant resources or to

critically review that information so it can be used appropriately and effectively (Knight 2005; Morrison 1997; Williams and Wavell 2007).

Carol C. Kuhlthau (2004; 2008) introduced consideration of affective qualities that are often part of the research process and found that many students experience uncertainty, especially in the early stages of research, and, thus, may find it difficult to clearly identify a specific focus for their research endeavors. In a study of college students Asher and Duke (2012) found that students may experience anxiety and confusion when looking for resources. Although students may struggle with aspects of the research process, they typically do not seek help from a librarian, instead relying on friends, their instructors, or their own self-instruction (Miller and Murillo 2012; Robinson and Reid 2007; Vansickle 2002; Vondracek 2007). These findings of student anxiety, emotional factors that influence seeking help, and reliance on peers, friends, and family for help were further corroborated by Mary Pillai (2010) in her study of academic help seeking.

In looking at teachers and how they understand information literacy, Elizabeth Probert (2009) and Dorothy A. Williams and Caroline Wavell (2007) identified similar issues in their respective studies. Teachers think of information literacy as a subject separate from the content they teach; they find it difficult to know how to help students make meaning from the gathered information. Recognizing the need for teachers to be knowledgeable and skilled in information literacy, Jia Rong Wen and Wen Ling Shih (2008) identified competency standards in information literacy for teachers and advocated ongoing training in IL skills. Wen and Shih also advocated for schools to identify ways to assess how well teachers apply IL knowledge and skills in their teaching. However, content teachers may not yet possess adequate IL knowledge and skills to help students become skillful consumers and users of information.

School librarians may be in a unique position to not only be effective conduits to information, but also to help students engage in critical thinking and careful analysis of that information. However, school librarians can fulfill these roles only if students are aware that they may need help in finding and using information and are willing to ask for help. One of the theoretical premises from Heidi Julien and David Michels's study of how people identify sources when they need information help is that behavior related to finding and using information is subjective. People attach meaning to the information they find based on their ability to understand and make sense of that information as well as on the specific environment or situation they are in. In their study Julien and Michels found that participants preferred face-to-face personal contact when information was sought related to daily living questions and that print sources were most frequently the first choice when questions were school related. In addition, participants in their study indicated that as information seekers they often sought help with ill-defined issues and that they valued a "comforting manner" (2000, 15). These authors suggested that affective characteristics may have implications for information providers, such as librarians, who typically concentrate on finding information that is easy to access and use and specific to a particular request, without necessarily providing more personal interaction that helps define or clarify an information request while also providing a supportive and respectful environment.

Margie Ruppel and Jody Condit Fagan reported that for over thirty years research related to user perceptions of librarians and libraries consistently demonstrated that "patrons have often chosen not to ask for help because they are or expect to be dissatisfied, embarrassed, or do not believe librarians are ready or willing to help" (2002, 186). In a study related to student use of academic help in a higher education institution, Pillai (2010) found that students tend to be anxious about needing and asking for help and, thus, may not seek help even when it may be beneficial to their academic success. She also found that students may not know how to go about the process of

asking for help or where to find the help they need. In a longitudinal study on academic library use by undergraduates, Ethelene Whitmire (2001) found that how students used their high school library predicted their use of college library facilities. Therefore, better understanding how high school seniors use libraries is important, because as Lynda M. Duke and Andrew D. Asher pointed out, "Growing up with the Internet has, for many of our students, meant never having to talk to a librarian" (2012, 167).

Information literacy is complex, and IL skills may best be developed over time, through continued guidance and scaffolding (Chu, Tse, and Chow 2011). Therefore, it is important for librarians and educators to better understand high school seniors' perspectives of the research process, how they seek help in finding information, and how these students apply their information literacy skills. As seniors leave high school for higher education or the workplace, a better understanding of the level of IL skills they possess and of how they have used library resources may help students, school librarians, and other educators work collaboratively to build an educated citizenry.

Research Questions

Three research questions framed this study to help the researchers identify how a particular group of high school students perceived the research process:

1. What are high school seniors' perceptions of the research process?
2. What are high school seniors' perceptions of where they find information and who they ask for help?
3. What are high school seniors' perceptions of how they use library resources?

Methodology

The school librarians at a large upper-middle-class suburban high school located northwest of Columbus, Ohio, and a university faculty member from a large midwestern university collaborated on this research project. The university's human subjects review board and the school district's administration approved the study. Participants in this research study were high school seniors.

On a prearranged school day, the researchers visited each senior language arts class, and the university faculty member explained the purpose of the study and what participation in the study would entail. Following this overview, students were asked to sign a consent form if they were at least eighteen years of age and willing to participate. Students who were under eighteen were told they could participate in the study if they returned the consent form signed by their parent or guardian.

Those students who signed the consent form were given a paper-based twenty-eight-item survey and asked to complete it. The researchers decided to use a paper-based survey rather than a web-based survey to increase the likelihood that students would complete the survey. The researchers felt that if students were asked to visit a website to complete an online survey, many would opt out of the process.

Participants took approximately fifteen minutes to complete the survey. The researchers collected the surveys as students finished. The school librarians pulled surveys completed by

students who were not yet eighteen and held those surveys separately until parent permission forms were returned. A total of 289 usable surveys resulted.

After all language arts classes were visited, the researchers randomly selected approximately 10 percent of the surveys, representing 28 participants. The school librarians then contacted each randomly selected student and asked him or her to participate in a one-on-one interview. Nineteen students agreed to participate in an interview. Each student was scheduled for a 20-minute interview on one of two days approximately one week following the administration of the survey. On the first day of interviews, the university faculty member and a doctoral student conducted the interviews. On the second day of interviews, the university faculty member conducted the interviews. Questions for the interview were scripted; however, participants were encouraged to provide additional information as the interview progressed. To provide a quiet and private environment for the interviews, they were conducted in separate rooms within the school library.

Participant responses were manually written on interview sheets. The researchers thought that trying to type responses into a computer would detract from establishing rapport with each participant and possibly restrict responses.

Survey and interview data were subsequently transferred into digital form for further analysis. Descriptive statistics were tallied for survey data. Interview data were qualitatively analyzed to identify common themes or patterns (Stake 1995).

Survey Instrument

The survey instrument (see appendix A) was based on Kuhlthau's (2004) survey related to student perception of the research process. Eight questions were added to more fully explore student use of library resources. The resulting survey consisted of twenty-eight Likert-type scale items with a score of 1 representing "Almost Never," 2 "Seldom," 3 "Sometimes," 4 "Often," and 5 "Almost Always."

Interview Questions

The interview protocol consisted of thirteen questions (see appendix B). The questions were designed to gather information related to the research process and to help identify what high school seniors had learned about the research process during high school.

Results

Introduction

Descriptive statistics were compiled for the survey questions. Items 1, 3, 4, 6, 7, 8, 10, 13, 14, and 20 were related to the research process. Items 2, 5, 9, 11, 12, 15, 16, 17, 18, and 19 were related to the role of mediators in the research process (Kuhlthau 2004). Items 21 through 28 were added to explore additional aspects of student use of library resources.

What Are High School Seniors' Perceptions of the Research Process?

Survey results indicated that over 60 percent of the students who participated in this study had a clear focus about a topic before using the school library; 60.2 percent answered "Often" or "Almost Always" for item 1 ("I have a clear focus for my topic before using the library"). However, they also indicated that their thoughts about a topic change as they learn more about it; 63.5 percent answered "Often" or "Almost Always" for item 4 ("My thoughts about my topic change as I explore information").

A large majority indicated that they are able to better clarify the direction of their research as they gather information; 82.1 percent answered "Often" or "Almost Always" for item 6 ("A focus emerges as I gather information on a topic"). Students in this study also indicated that they become more interested in a topic over time; 60.9 percent answered "Often" or "Almost Always" for item 14 ("I become more interested in a topic as I gather information").

Of the students surveyed, 41.6 percent indicated that they prefer to find all resources before reading them; these students answered "Often" or "Almost Always" for item 3 ("I like to find everything I will need first and then read it"). However, more than half (58.1 percent) answered "Sometimes," "Seldom," or "Almost Never" for item 3, indicating that they do not use resources in this way.

Only 10.8 percent of the students in this study indicated they find initial information confusing; these students answered "Often" or "Almost Always" for item 7 ("The information that I find at the beginning of a search is confusing and doesn't fit in with what I know"). More (44.3 percent) indicated they "Sometimes" find initial information confusing, and about the same number (44.9 percent) answered "Seldom" or "Almost Never" for item 7.

In response to item 8 ("I take detailed notes from every source of information I look at"), over one-third of the students in this study (37.2 percent) indicated they "Sometimes" take notes from all resources. "Often" or "Almost Always" was selected by 21.9 percent. The remaining students (40.9 percent) answered "Seldom" or "Almost Never" for item 8.

In response to item 10 ("A search is completed when I no longer find new information"), 41.6 percent answered "Often" or "Almost Always," and an almost equal number (37.1 percent) indicated they "Sometimes" stop searching when they no longer find new information.

A high percentage of students in this study indicated they stop searching once they have enough information; 77.5 percent answered "Often" or "Almost Always" for item 13 ("A search is completed when I find enough information").

Almost all students in this study indicated they need resources other than books for their research activities; 87.5 percent answered "Often" or "Almost Always" for item 20 ("I need materials other than books").

Table 1 contains mean values, frequency percentages, and charts for survey items related to the research process.

Table 1. The research process (survey items 1, 3, 4, 6, 7, 8, 10, 13, 14, and 20).

Survey item	Mean (*N*=287)	Almost Never (1)	Seldom (2)	Sometimes (3)	Often (4)	Almost Always (5)	Chart
1. I have a clear focus for my topic before using the library.	3.75 *SD*=.919	1.4%	5.5%	32.2%	37.4%	22.8%	
3. I like to find everything I will need first and then read it.	3.30 *SD*=1.157	4.8%	21.8%	31.5%	21.9%	19.7%	
4. My thoughts about my topic change as I explore information.	3.80 *SD*=.855	.7%	4.2%	31.3%	41.2%	22.3%	
6. A focus emerges as I gather information on a topic.	4.06 *SD*=.715	0%	2.4%	15.6%	56.1%	26.0%	
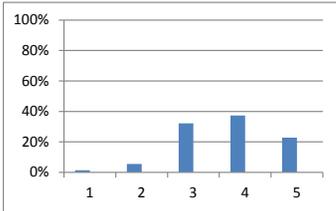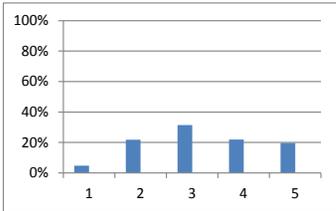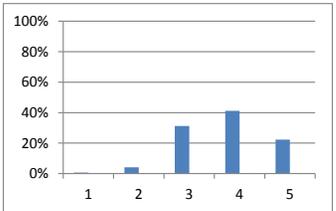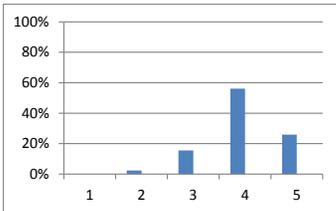
7. The information that I find at the beginning of a search is confusing and doesn't fit in with what I know.	2.61 *SD*=.793	5.9%	39.0%	44.3%	9.4%	1.4%
8. I take detailed notes from every source of information I look at.	2.74 *SD*=1.048	12.1%	28.8%	37.2%	16.3%	5.6%
10. A search is completed when I no longer find new information.	3.28 *SD*=1.018	4.2%	17.1%	37.1%	29.7%	11.9%
13. A search is completed when I find enough information.	4.01 *SD*=.846	1.4%	2.8%	18.3%	48.1%	29.4%

| 14. I become more interested in a topic as I gather information. | 3.69 *SD*=.906 | 2.4% | 5.2% | 31.5% | 43.3% | 17.6% | |
| 20. I need materials other than books. | 4.40 *SD*=.811 | .7% | 2.4% | 9.4% | 31.6% | 55.9% | |

What Are High School Seniors' Perceptions of Where They Find Information and Who They Ask for Help?

Over half the students in this study indicated that the school library has the information they need for research projects: 52.6 percent answered "Often" or "Almost Always" for item 5 ("The library has the information I need"). However, only about one-third (36.7 percent) of the students answered "Often" or "Almost Always" in response to "All the sources of information I need are found in the online catalog" (item 11).

Over half of these students indicated they do not make multiple trips to the library when they have a research project; 52.6 percent answered "Almost Never" or "Seldom" for item 16 ("I make several trips to the library to research a topic"). A much smaller number indicated they do make multiple trips; 18.4 percent answered "Often" or "Almost Always" for item 16.

In response to item 15 ("The information I need is in unexpected places in the library"), 47.2 percent answered "Sometimes." An almost equal number indicated information *is* where they expect; 43.7 percent answered "Almost Never" or "Seldom" for item 15.

A large number of students in this study find it helpful to talk to others about their research topics; 75 percent answered "Often" or "Almost Always" for item 2 ("I find it helpful to talk with others about my topic"), with only 6.3 percent *not* finding it helpful, answering "Almost Never" or "Seldom" for this item. The majority of students in this study, 40.8 percent, indicated they "Sometimes" talk to people who know about their topics (item 12). For this same statement ("I talk to people who know about my topic"), "Often" was selected by 28.4 percent; "Always" was selected by 8.0 percent.

However, these students tend *not* to ask the school librarian for advice on research topics; 49.1 percent answered "Almost Never" or "Seldom," and 28.9 percent answered "Sometimes" for item 18 ("I ask the librarian for advice when exploring a topic"). Also, students do not ask for help in locating materials in the library; 47 percent answered "Almost Never" or "Seldom," and 31.4 percent answered "Sometimes" for item 9 ("I ask the librarian for direction in locating materials in the library").

Similarly, many participants (47.3 percent) are unlikely to ask for help in identifying resources to use; they answered "Almost Never" or "Seldom" in response to item 19. In response to this item ("I ask the librarian for assistance in identifying materials"), 31.6 percent answered "Sometimes."

Approximately one-third of students (33.8 percent) indicated they were only "Sometimes" successful in using the library (item 17). In response to this item ("I am successful in using the library"), close to twenty percent indicated they were "Seldom" (13.9 percent) or "Almost Never" (5.6 percent) successful. Students reporting they were "Often" or "Almost Often" successful totaled 46.7 percent.

Table 2 contains mean values, frequency percentages, and charts for survey items related to the use of mediators, including people and physical libraries.

Table 2. Role of mediators (survey statements 2, 5, 9, 11, 12, 15, 16, 17, 18, and 19).

Survey Statement	Mean (N=287)	Almost Never (1)	Seldom (2)	Sometimes (3)	Often (4)	Almost Always (5)	Chart
2. I find it helpful to talk to others about my topic.	3.97 SD=.899	1.4%	4.9%	18.8%	45.1%	29.9%	
5. The library has the information I need.	3.55 SD=.948	3.1%	7.0%	37.3%	36.6%	16.0%	
9. I ask the librarian for direction in locating materials in the library.	2.60 SD=1.216	23.3%	23.7%	31.4%	13.2%	8.4%	
11. All the sources of information I need are found in the online catalog.	3.20 SD=.993	4.5%	17.8%	40.9%	26.9%	9.8%	
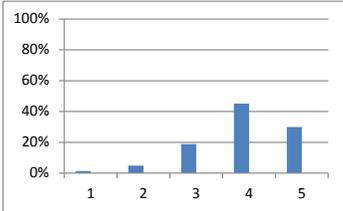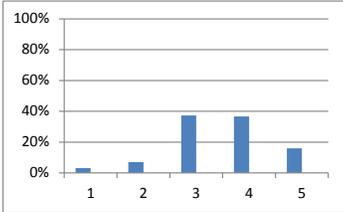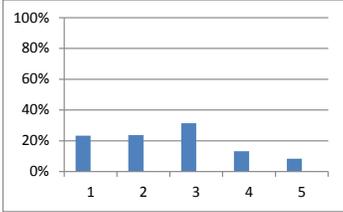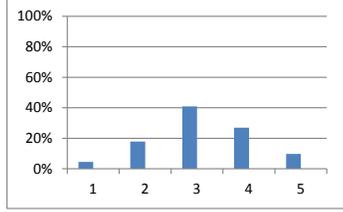
12. I talk to people who know about my topic.	3.17 *SD*=.975	4.8%	18.0%	40.8%	28.4%	8.0%	
15. The information I need is in unexpected places in the library.	2.57 *SD*=.846	10.1%	33.6%	47.2%	7.0%	2.1%	
16. I make several trips to the library to research a topic.	2.51 *SD*=1.090	19.2%	33.4%	28.9%	13.9%	4.5%	
17. I am successful in using the library.	3.37 *SD*=1.072	5.6%	13.9%	33.8%	31.7%	15.0%	

18. I ask the librarian for advice when exploring a topic.	2.54 *SD*=1.130	22.3%	26.8%	28.9%	18.5%	3.5%

19. I ask the librarian for assistance in identifying materials.	2.54 *SD*=1.168	24.7%	22.6%	31.6%	16.3%	4.9%

What Are High School Seniors' Perceptions of How They Use Library Resources?

In response to item 21 ("I use the library to gather information on my own, not connected to an assignment by a teacher") over fifty percent of the students in this study indicated they "Almost Never" (28 percent) or "Seldom" (24.9 percent) use the library unless they are working on a school-related assignment. An additional 29.1 percent indicated they "Sometimes" use the library outside of class assignments.

Only ten percent of students in this study indicated they have trouble finding information on a research topic; 7.3 percent answered "Often," and 3.1 percent answered "Almost Always" for item 22 ("I have difficulty finding information on a topic"). When responding to item 23 ("Researching a topic takes more time than I anticipate") the majority of students in this study, close to 87 percent, indicated that research "Sometimes" (39.2 percent), "Often" (36.1 percent), or "Almost Always" (12.5 percent) takes more time than they had anticipated.

The responses from students in this study were approximately evenly split when indicating if they use the school's library to select books to read (item 24). Approximately one-third indicated "Often" (22.1 percent) or "Almost Always" (14.9 percent) using the library to select books to read. In response to "I use the library when I want to select books to read" (item 24), close to one-third indicated they "Sometimes" (31.8 percent) select library books to read, and the remaining approximately one-third of students in this study indicated "Seldom" (15.2 percent) or "Almost Never" (15.9 percent).

For item 25 the majority of students in this study indicated they "Often" (34.4 percent) or "Almost Always" (35.8 percent) use a variety of resources for research projects. In response to item 25 ("I use multiple types of sources for my projects (e.g., books, journal articles, websites)") less than ten percent of the students indicated they "Seldom" (6.3 percent) or "Almost Never (2.4 percent) use multiple resources.

Study participants indicated they tend to use only the school library when doing research; approximately 16 percent indicated that they use more than one library when doing research; 9.0 percent answered "Often" and 7.6 percent answered "Almost Always" for item 26 ("I use more than one library to research a topic").

Over half of the students in this study indicated they find indexes in books helpful when looking for information about a topic; 33.9 percent answered "Often" and 22.1 percent answered "Almost Always" on item 27 ("I use indexes in the back of books to find information on a topic"), and another 22.8 percent indicated they "Sometimes" use indexes.

In response to item 28 ("Research assignments add to what I learn in a course") 35.3 percent answered "Sometimes." An additional fifty percent indicated that research "Often" (33.6 percent) or "Almost Always" (20.1 percent) adds to what is learned in a course.

Table 3 contains mean values, frequency percentages, and charts for survey items related to other uses of libraries and library resources.

Table 3. Student use of library resources (survey statements 21, 22, 23, 24, 25, 26, 27, and 28).

Survey statement	Mean (N=287)	Almost Never (1)	Seldom (2)	Sometimes (3)	Often (4)	Almost Always (5)	Chart
21. I use the library to gather information on my own, not connected to an assignment by a teacher.	2.42 SD=1.173	28.0%	24.9%	29.1%	12.8%	5.2%	
22. I have difficulty finding information on a topic.	2.49 SD=.940	14.9%	34.3%	40.5%	7.3%	3.1%	
23. Researching a topic takes more time than I anticipate.	3.47 SD=.910	2.1%	10.1%	39.2%	36.1%	12.5%	
24. I use the library when I want to select books to read.	3.05 SD=1.268	15.9%	15.2%	31.8%	22.1%	14.9%	
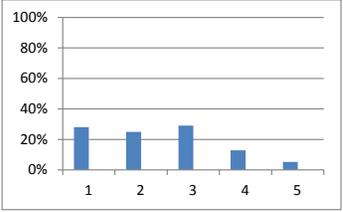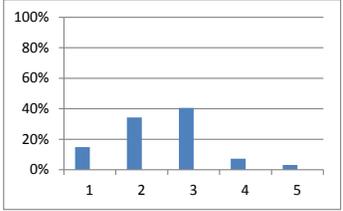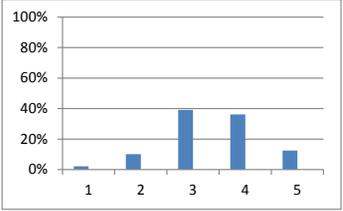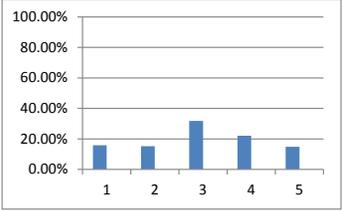
25. I use multiple types of sources for my project (e.g., books. journal articles, websites).	3.95 SD=1.019	2.4%	6.3%	21.2%	34.4%	35.8%	
26. I use more than one library to research a topic.	2.27 SD=1.220	32.3%	32.3%	18.8%	9.0%	7.6%	
27. I use indexes in the back of books to find information on a topic.	3.47 SD=1.239	10.4%	10.7%	22.8%	33.9%	22.1%	
28. Research assignments add to what I learn in a course.	3.59 SD=1.003	3.5%	7.6%	35.3%	33.6%	20.1%	
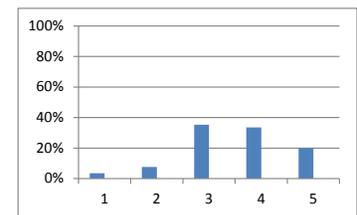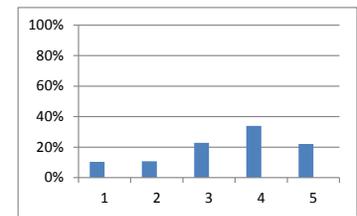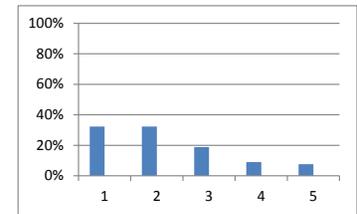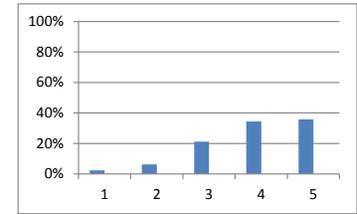
Interviews

The interviews provided additional insight into students' perceptions of the research process while they were in high school. Students were asked about what they thought they learned in high school regarding the research process and what advice they had for school librarians in relation to teaching information literacy skills to students. To interpret and describe findings, quotations from the interviews are used in the Discussion section.

Discussion

What Are Student Perceptions of the Research Process?

Study participants appeared to understand that a school library is a place to obtain information; this conclusion was reached because students visited the library after they had identified a research topic and they used information gathered in the library to learn more about their topics, enabling them to establish specific focuses for their research project and become more interested in the topics over time. Although the majority of the participants did not have difficulty understanding information about their topics, interview data suggested that students may benefit from help with, as one participant stated, "sifting through materials" and, as another participant stated, "determining what is important." Therefore, providing techniques and strategies to help students select appropriate information and then use that information effectively may help students refine their critical thinking skills, an important component of information literacy.

Another component of information literacy is note taking. Note taking is important because it is through note taking that students begin to make sense of the information they gather and, subsequently, use the information. Survey results indicated no clear consensus on note taking. Some participants tended to take detailed notes from every source of information they found; however, a larger number of participants indicated they did not take detailed notes from every source. This finding can be interpreted in multiple ways: students tend to be selective in which resources they feel are important and, thus, worthy of note taking; students do not feel that note taking is valuable and, thus, take few notes; students forego taking any notes; or students cannot distinguish important from unimportant information, resulting in them taking notes on all the information they find. Being aware that students may approach note taking in multiple ways suggests that teachers and school librarians may want to differentiate instruction related to how best to use resources and provide alternative note-taking methods.

Participants in this study are likely to end their search for information when the information became repetitive or when they felt they had found enough information. In the interviews, participants said they referred to rubrics and assignment requirements to determine when to stop searching for information. For example, one participant stopped searching "when all my questions [were] answered." Another participant stated, "I feel I have enough if I am in the top area of the rubric." A third participant indicated that feeling confident about a topic was the determining factor when deciding that enough information had been found: "You know you are there [because] you can speak well and feel [good] about the subject." These findings suggest that students rely on project or assignment requirements and guidelines when completing research projects. In this regard, collaboration between teachers and school librarians when

creating projects may lead to a better understanding of how librarians can help in the research process. For example, explicit expectations that students will seek help from the school librarian to develop a research strategy, assess the quality of resources, and write annotations can be included as part of project requirements. Students may then come to view the school librarian as a "research intervention specialist" whose assistance can be sought at any time and not only when a particular assignment must be completed. Fostering a more comprehensive view of the school librarian's role may lead to an increased use of librarians not only by students in high school but also when they transition to college.

What Are High School Seniors' Perceptions of Where They Find Information and Who They Ask for Help?

Survey results indicated that participants used the library to find information and that they were able to find resources through the library's online catalog; however, the majority indicated that they typically made only one trip to the library for a research project. If students visit the school library only once per research project, librarians have limited opportunities to interact with and help individual students in the library setting. Although participants did use the school library, they tended *not* to ask for help from librarians when locating materials, getting advice when exploring a topic, or identifying appropriate materials. These tendencies to not seek assistance from a librarian draw attention to a possible misinterpretation of, or lack of understanding about, the instructional role school librarians can play in supporting students in all aspects of the research process. Similar findings by Pillai (2010) suggested librarians may need to increase their visibility in schools and ensure that students know they are willing to help. Librarians, perhaps through whole-class instruction (whether in the library or classrooms), should consider providing clearly focused information literacy instruction so students become more aware of how librarians can facilitate the research process.

Because librarians serve as a critical link to high-quality and relevant resources, the importance of having school librarians for grades K–12 is paramount. If students have multiple opportunities to interact with librarians throughout their elementary and middle school years, they have a higher comfort level about approaching the school librarian with research questions by the time they move into high school.

Study participants found it helpful to talk about their research topics to others rather than to the school librarian. As one student stated, "...not a lot of people come [to the library] to get help." Another student said, "[I] never worked with any librarian. They are mean, and I get nervous." These types of (mis)perceptions about librarians can have a negative impact on student success in the school library. Although the majority of participants in this study felt they were successful in using the library, librarians and teachers need to be mindful of students who do not feel successful. As Whitmire (2001) found, future library use may be contingent on how libraries were used during students' K–12 years. These findings also point to the importance of librarians fostering a *helping* role rather than a disciplinary role in school libraries.

What Are High School Seniors' Perceptions of How They Use Library Resources?

Study participants were positive about their ability to use the library to find information on a research topic, indicating that they do not have difficulty in that regard. In addition, as they searched for information they used indexes in books, and they typically used the school library

when researching rather than the public library or a nearby university library. However, the majority reported using the library only when they had a specific assignment requiring them to do so, and only about one-third of the participants selected recreational books from the school library collection.

School librarians, teachers, and school administrators may want to further investigate the implications of these findings. If students are relying solely on resources in the school library for research projects, then access to varied and high-quality research databases gains in importance. If students are not using the school library for books for recreational reading, then adjusting expenditures in this area may be appropriate, or acquisition of e-books through the school library may be an option.

The high school seniors in this study indicated that research took more time than they originally anticipated, perhaps because the majority use multiple types of resources (books, journal articles, websites) when doing research projects. Participants also indicated they thought research assignments were a positive aspect of their courses and contributed to what they learned.

One interesting finding from the interviews was that several students indicated they wanted to learn more about books. As one student explained, librarians should "...tell students what books are available...and where to find [them]." Another student said, "I wanted to be trained on how to use books." A third student described how the typical practice of school librarians and teachers to preselect books, pull them from shelves, and place them in a separate area for students to use for research projects may be counterproductive because that practice reduces the need for students to learn how to find books themselves. The student said, "[Librarians] have done a good job with the Internet and online resources. I know where to start. But books are important, too. They told us where the books [are located], but how do we find them ourselves?"

Study Limitations

The participants for this study were students from an upper-middle-class high school with an established library curriculum, full-time school library professionals, and school-financed access to numerous subscription research databases. Due to these characteristics, this population has a record of relatively high academic achievement; the participants also had access to high-quality multiple types of information resources. Therefore, these study participants cannot be considered as representative of all high schools or all high school seniors. Additionally, the school environment where the study took place includes teachers who are willing to provide class time for efforts such as this research study and who regularly engage in planning, implementing, and assessing student projects in collaboration with the schools' librarians, activities that may not be typical of some high schools.

Conclusion

The high school seniors in this study were successful in using library resources to locate information related to research projects. Engaging in the research process helped them learn more about their respective research topics and enabled them to become more specific about aspects of a topic they wanted to investigate further. These students became more aware that research takes time and that multiple types of resources with varying perspectives should be included in research efforts. In the interviews, students commented that part of what they learned in high school from the school librarians was information about "how to get opposing

viewpoints" and the importance of "getting both sides" of an issue using subscription databases such as Opposing Viewpoints. The significance of clarity and adequate detail in assignment requirements and associated grading rubrics also was indicated in our findings. Study participants used these documents to guide them in determining how many and what types of resources they should use to complete projects and assignments.

Given these findings, school librarians and classroom teachers should consider collaboratively developing assignments and rubrics that include components encouraging or requiring students to actively seek help from their school librarians. For example, school librarians and teachers can help students "sift through materials" and "determine what is important" by developing a rubric for annotated bibliographies. Having students write annotations for each source necessitates that they read each source critically instead of simply trying to collect information. Writing an annotated bibliography may also help students gain a solid perspective about a topic, identify main issues, and develop their own ideas. Rubrics for annotated bibliographies can be tailored to each grade level. If students see the librarians collaborating with teachers, students begin to regard the school librarian as a collaborator, not a stranger.

School librarians should seek opportunities to get to know students personally, as these opportunities may be an integral part of learning and internalizing information for many students (Panter 2010). Students' ambivalent perceptions of school librarians may shift as a result. Building a learning environment in which school library space is used for clubs and other student groups and activities will help increase the personal time librarians can spend with students beyond academics. For example, the school library can host book and poetry clubs, writing groups, and technology activities.

Students' perceptions of school librarians—and how these perceptions affect learners' willingness to ask for help—may be a function of the librarian's many roles. First and foremost, the school librarian is a teacher whose role is to help students develop mastery of information literacy skills. However, this role is often compromised by the librarian's role as a manager of a learning space that must accommodate multiple kinds of users, from teachers giving "timed writings" to students working in groups on class projects. Developing a culture in which the school librarian can trust the students and teachers to be attuned to what is going on in the library and to respect those activities is a challenge.

In the future, researchers may want to investigate how assignment requirements and grading rubrics for research-related projects or assignments support mastery of the research process and how these documents can be structured to best encourage student interactions with school librarians. Through these interactions, students could experience first-hand how librarians can help. Researchers may also want to examine the many roles school librarians have as teachers and managers and how these roles interact and affect the helping role. School librarians and teachers need to continue to work together to design learning experiences in which the librarian is an integral part of the learning process so students have direct and ongoing interactions with librarians. As a result, students could gain more thorough understandings of the many roles of librarians and how librarians can help them become information literate and confident lifelong learners.

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Appendix A

Survey Instrument for Assessing Information Literacy Skills of High School Seniors

Students were instructed to choose from the following close ended responses. The value in ( ) denotes the number assigned to that response. Almost Always (1), Often (2), Sometimes (3), Seldom (4), Almost Never (5).

1. I have a clear focus for my topic before using the library.

2. I find it helpful to talk to others about my topic.

3. I like to find everything I will need first and then read it.

4. My thoughts about my topic change as I explore information.

5. The library has the information I need.

6. A focus emerges as I gather information on a topic.

7. The information that I find at the beginning of a search is confusing and doesn't fit in with what I know.

8. I take detailed notes from every source of information I look at.

9. I ask the librarian for direction in locating materials in the library.

10. A search is completed when I no longer find new information.

11. All the sources of information I need are found in the online catalog.

12. I talk to people who know about my topic.

13. A search is completed when I find enough information.

14. I become more interested in a topic as I gather information.

15. The information I need is in unexpected places in the library.

16. I make several trips to the library to research a topic.

17. I am successful in using the library.

18. I ask the librarian for advice on exploring a topic.

19. I ask the librarian for assistance in identifying materials.

20. I need materials other than books.

21. I use the library to gather information on my own, not connected to an assignment by a teacher.

22. I have difficulty finding information on a topic.

23. Researching a topic takes more time than I anticipate.

24. I use the library when I want to select books to read.

25. I use multiple types of sources for my project (e.g., books, journal articles, websites).

26. I use more than one library to research a topic.

27. I use indexes in the back of books to find information on a topic.

28. Research assignments add to what I learn in a course.

Appendix B
Interview Questions

1. How do you define information literacy?
2. When you need to find information, what do you typically do first? Where do you look for information? Who do you ask?
3. How do you evaluate information you find to determine if it is relevant and accurate?
4. How do you decide when you have enough information for a specific task or project?
5. What types of things have you learned during high school that have helped you know how to look for and use information?
6. What do you think you have gotten better at during high school in terms of finding and using information for research projects?
7. What is the most difficult part of the research process for you?
8. What process do you use to identify keywords or search terms when you are looking for information?
9. At what points in the research process would feedback or assessment be most beneficial to you?
10. As you are finishing high school, what do you wish you were better at in regards to being able to find, evaluate, and use information?
11. How comfortable are you that you know the correct way to cite resources that you use in research projects?
12. What feelings do you experience as you go through the research process for a project such as Capstone?
13. What suggestions do you have for school librarians in helping students gain information literacy skills?

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