Research consultation effectiveness for freshman and senior undergraduate students

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Abstract
Purpose – The aim of this paper is to compare the effectiveness of library research consultations for freshmen and senior undergraduate students, to determine if freshmen or seniors benefit more from these sessions.

Design/methodology/approach – This study looks at the results of a survey conducted with students enrolled in a senior level capstone research course and in a freshman level composition course who were required to attend library research consultations.

Findings – The study finds that freshman students can be overwhelmed by the amount of resources a research consultation may help them locate, and research consultations for freshmen should be conducted with this in mind.

Research limitations/implications – Because the size of our study was small, further research with a larger sample size should also be conducted.

Practical implications – If librarians experience high demand for required research consultations, and have difficulty scheduling sessions, then they may take into consideration that senior students benefit more from consultations than freshmen. Research consultations should also be designed to take student class rank into account.

Originality/value – This study shows that upper-level students benefit more from research consultation than freshman students. Librarians should take this research into consideration when consulting with faculty about the most effective methods of instruction for students.

Keywords Academic libraries, Reference services, Research consultations, United States of America

Paper type Case study

Introduction
Research consultations and library instruction sessions are both well-established methods for teaching information literacy skills. Research consultations provide one-on-one instruction that library instruction sessions cannot offer. Students, including those surveyed in this study, express satisfaction with the personalized assistance they receive during a research consultation. The challenge for librarians in conducting researching consultations is the labor intensive nature of this service. As with any library service, librarians must determine how to allocate resources for
maximum benefit. In order to do this, librarians need to ask the following questions. First, which students benefit most from library research consultations? Second, how do librarians choose which classes they will agree to conduct required research consultations for when scheduling research consultations becomes challenging due to staffing and time limitations?

This study is inspired by Pamela N. Martin and Lezlie Park’s “Reference desk consultation assignment: an exploratory study of students’ perceptions of reference service” (Martin and Park, 2010). The students in Martin and Parks’ study were sophomore English composition students, and the authors’ focus on student perceptions of reference services without looking at how these perceptions might vary among student researchers from different class rankings. While we were influenced by their research, the goal of our study is to investigate the effectiveness of library research consultations for freshman versus senior student researchers. We believe that it is important to investigate student perceptions of research consultation effectiveness at all levels. For example, freshman students taking introductory courses and working on assignments that require minimal research skills may have different perceptions of research consultations than senior students enrolled in the capstone courses required for their majors and working on more involved projects that demand sophisticated research skills. If librarians do have to make difficult scheduling choices, then knowing more about student perceptions of research consultation effectiveness may inform these decisions.

For the purposes of our study, we will consider research consultations effective when students report that the assistance they received during their consultations was useful to them. Because this method of measuring effectiveness is based entirely on students’ perceptions, we will also take into consideration whether or not students’ answers to survey questions might indicate whether or not the librarian’s instructional goals for the consultation were also met.

**Literature review**

Library research consultations are not a widely studied topic in the library literature perhaps because they exist at the border between reference services and information literacy instruction and cannot be clearly defined as entirely one or the other. In articles that put research consultations in the context of library instruction, a debate appears early on as to which method of teaching, research consultations or library instruction sessions, better serves students. These articles also often express concern over which method is a better use of librarians’ time. Donegan *et al.* (1989, p. 195) conducted a study which compared the effectiveness of library instruction sessions and library research consultations (referred to by the authors as “term paper counseling sessions”). This study found that both methods of helping students were equally effective but that library research consultations were much more time consuming for librarians. Library instruction sessions are recommended by the authors as a more time efficient way to reach students.

In the 1980s, library administrator David Kohl (1984, p. 8) also wrote about the efficiency of library instruction sessions over one-on-one research consultations but went further in his recommendation of library instruction by stating he believes that academic libraries have a responsibility to teach students the concepts of information literacy and not to “simply provide them with specific answers to specific questions”.
While research consultations could accomplish this, Kohl believes that library instruction sessions are better suited to providing this instruction.

Later in the literature on research consultations, these two ideas start to come together more than they compete with one another. Rowe (1991) suggests that librarians should use both methods as long as this does not strain staff resources because although most patrons will have their needs met through library instruction sessions, there may be some who want further assistance. Hua Yi’s (2003) study, “Individual research consultation service; an important part of an information literacy program”, shows that rather than having to choose one over the other, research consultations can complement library instruction programs and serve to reinforce program goals. Yi (2003, p. 348) sees research consultations as addressing important “student needs that were not sufficiently covered in a classroom setting”, and believes that if librarians “consciously integrate information literacy objectives into their encounters with students” they will significantly improve the quality of assistance available to students during these sessions. In his 2012 study of the impact of research consultations, Reinsfelder (2012) points out that “this method of instruction can be quite effective and is used frequently by on-campus tutors and writing centers because these personal meetings allow for greater attention to detail and the ability to address unique concerns of each student in a way that is not possible in larger groups” (Reinsfelder, 2012, p. 263).

Other researchers discuss research consultations in terms of value; some see value for the students individually and others see promotional value for the library. In “Face-to-face: the implementation and analysis of a research consultation service” Gale and Evans (2007) also find value in individual research consultations. Gale and Evans agree that “Yi’s findings that consultations complement an information literacy program, as some students need individual reinforcement of newly learned information-seeking skills”.

Questions concerning students’ class rankings and research skills did arise in Gale and Evans’ work, but the answer to their questions was inconclusive. Gale and Evans asked librarians in their study this question: “Do you think the student’s age or class level (freshmen, graduate, etc.) has any bearing on preparation? (In other words, have the students wanted guidance or have they mostly wanted you to do the work for them?)” (Gale and Evans, 2007, p. 100). The results, which were provided in the appendix, do not show a definite answer on student preparation in relation to class ranking. Another researcher, Deborah Lee (2004) mentions that students have different research needs at different points in their college careers; however, Lee’s work focuses on promoting the research consultation service to the campus community rather than exploring how class rankings affect consultation sessions.

Institutional situation
At the time of the study, Coastal Carolina University’s (CCU) Kimbel Library served approximately 8,700 students and 346 full-time faculty members. The library had four reference librarians and two reference staff members serving students, faculty, staff, and the community. All students had the opportunity to schedule a research consultation through the library’s reference department. Some upper-level courses, such as capstone courses, integrated a research consultation requirement into the course. The number of courses integrating research consultations was manageable by
available staff when this was limited to senior-level courses only. However, as the
library moved instruction sessions for the First Year Experience freshmen classes from
one-shot in library sessions to online tutorials, faculty teaching these classes began to
encourage research consultations for their students. Librarians initially conducted
sessions for these students but became unsure that this was a good allocation of
resources. The primary concern was that it would prove to be unsustainable if students
in all 100 + sections of the required freshmen class requested a consultation. This
concern prompted our study in an effort to evaluate the effectiveness of research
consultations for freshman students. The librarians decided to partner with a member
of the English department to investigate the effectiveness of research consultations for
freshman students and to compare freshmen satisfaction with research consultation
sessions with that of senior students. Students of all levels have similar research
consultation experiences because all librarians follow the same guidelines at Kimbel
Library.

Research consultation process
To schedule a research consultation at Kimbel Library, students visit the library’s
reference desk where they are given a research consultation form that contains the
appointment request form. These forms are also distributed during library instruction
sessions for classes that require in-depth research assignments. The reference
department currently uses an online consultation request form, but at the time of this
study, a paper form was still in use. Use of paper forms made it more difficult to
schedule and track appointments because there was no central repository for the
scheduling data. The form asks for basic information including the student’s name,
contact information, preferred dates and times for the appointment, and basic
information about his or her assignment and topic. The librarian working at the
reference desk checks the reference librarians’ calendar, matches the student with an
available date and time, and informs the student of the appointment time. The
reference librarian is notified about the appointment and given the research
consultation request form with the student’s information. During the period of the
study, the reference department was not usually able to accommodate same-day
requests for consultation appointments.

A typical research consultation at Kimbel Library lasts between 15-20 minutes,
depending on the number of questions the student brings to the consultation. Research
consultations for all undergraduate students have the following general student
learning outcomes:

- student will be able to identify relevant sources;
- student will be able to retrieve the full text of a relevant source;
- student will be able to identify one new relevant database to search; and
- student will learn at least one relevant advanced search technique (often subject
  searching or specific search limiters).

Students will be at varying stages of their research and will bring different questions to
the meeting. It is not realistic to expect that all of these goals will (or should) be
accomplished, but these goals can be a useful place for librarians to begin, especially if
the student seems unwilling to ask questions about research. The librarian asks
questions such as: “Have you found any articles yet that you like?,” “Do you feel comfortable locating the full text of articles, or have you run into problems?,” “Where have you searched so far?,” and “Have you had any problems or challenges with your searches?.” Librarians try to focus on responding to the student’s stated needs and to make sure that the student learns something that they can take away from the consultation and use to improve their research.

Assignment descriptions

**English 102**

English 102 is one of the required classes in the core curriculum at CCU. Students must take and pass English 101 before taking English 102. This study focuses on one out of four sections taught by Amanda MacDonald. Students in all sections had to complete a research assignment at the end of the semester, which included an annotated bibliography and a research paper. Students were required to include six scholarly sources in their annotated bibliographies, and they had to include four of the six sources in their research papers. The students in three sections of MacDonald’s classes attended one library instruction session. The students in the fourth section of English 102 were required to schedule and attend a research consultation with one of the reference librarians in addition to attending their class library instruction session. Students who did not attend the reference consultation lost 25 points on their final grade for the research project. The librarians could only accommodate research consultations for one of the four sections due to large class sizes and constraints on the time of librarians participating in the study.

**Psychology 497**

Psychology 497 is the capstone course for senior psychology majors. The class attended a library instruction session at the beginning of the semester. Each student in the class was required to attend a research consultation appointment with a reference librarian before the mid-point of the semester. In at least one section of the course, students who did not attend their library research consultation meeting lost ten points from their final paper automatically. Students enrolled in this class were engaged in conducting original research experiments. As part of their research, they were required to conduct a thorough literature review on their chosen topic. They were required to include at least 12 references, which were expected to be from peer-reviewed journal articles published within the last ten years.

Survey description

For this study, we decided to design a survey to measure satisfaction with research consultations. This survey was designed to look at student perceptions of whether or not research consultations were useful and to ask questions about what happened during the consultations. We chose to keep the study small to ensure that we did not over schedule required research consultations, which would cause even more of the staffing and scheduling issues that inspired our research. We chose to study two sections of Psychology 497 (40 students total) who were already scheduled for required research consultations and one section of English 102 (22 students total). We knew that this would give us a small sample size but felt that the results would be helpful, especially if we focused on student satisfaction rather than trying to look at multiple
measures of effectiveness. We created an online survey to measure satisfaction because it would be easy to administer and would also be a way of collecting student feedback that would not require us to ask for more class time from the faculty members involved.

Two surveys were conducted using SurveyMonkey. The two surveys were identical; one was given to Psychology 497 students and the other survey was given to English 102 students. The Psychology 497 students were given the URL for the survey through an email from their professors, and they had to go to the site on their own time to fill out the survey. Students were provided the link a few months after attending their research consultations. To ensure that the English 102 students completed the survey, they completed it anonymously in class. Later, the results of the English 102 survey were entered into SurveyMonkey, so the data could be analyzed. Questions used in the survey are available in Figure 1.

**Survey results: English 102**

In Table I, we list the results of the English 102 survey. As Table I shows, most students reported asking for help with one of the following items: using databases, locating print or electronic sources, or citing sources. Table II outlines how these

1. **Are you a:**
   a. Freshman
   b. Sophomore
   c. Junior
   d. Senior
   e. Other

2. **What did the library research consultation help you with that the library instruction session did not?**

3. **If you were to take another class requiring research, would you set up a research consultation appointment again?**

4. **How long was your research consultation?**
   a. Less than 5 minutes
   b. Between 5-10 minutes
   c. Between 10-20 minutes
   d. Between 20-30 minutes
   e. More than 30 minutes

5. **Did you feel like you needed more or less time for the consultation, or did you feel that you had a sufficient amount of time for the consultation?**

6. **What questions did you bring with you to ask the reference librarian during your consultation?**
survey results illustrated that the librarians’ goals for research consultations were being met. The English 102 survey results also provided us useful information that we did not directly ask for from the students. Their responses from question two revealed that most students acknowledged and understood the difference between classroom instruction and research consultations. The students stated that the consultations were

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
<th>%</th>
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<tbody>
<tr>
<td>1. Are you a:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshman, Sophomore, Junior or Senior?</td>
<td>16 Freshman 94.1</td>
<td></td>
</tr>
<tr>
<td>1 Sophomore</td>
<td>5.8</td>
<td></td>
</tr>
<tr>
<td>2. What did the library research consultation help you with that the library instruction session did not?</td>
<td>8 Individualized help 47.1</td>
<td></td>
</tr>
<tr>
<td>8 Locate specific sources</td>
<td>47.1</td>
<td></td>
</tr>
<tr>
<td>1 Nothing</td>
<td>5.8</td>
<td></td>
</tr>
<tr>
<td>3. If you were to take another class requiring research, would you set up a research consultation appointment again?</td>
<td>5 Maybe 29.4</td>
<td></td>
</tr>
<tr>
<td>5 Yes</td>
<td>29.4</td>
<td></td>
</tr>
<tr>
<td>7 No</td>
<td>41.2</td>
<td></td>
</tr>
<tr>
<td>4. How long was your research consultation?</td>
<td>1 Less than 5 minutes 5.8</td>
<td></td>
</tr>
<tr>
<td>7 Between 5-10 minutes</td>
<td>41.2</td>
<td></td>
</tr>
<tr>
<td>7 Between 10-20 minutes</td>
<td>41.2</td>
<td></td>
</tr>
<tr>
<td>2 Between 20-30 minutes</td>
<td>11.8</td>
<td></td>
</tr>
<tr>
<td>5. Did you feel like you needed more or less time for the consultation, or did you feel that you had a sufficient amount of time for the consultation?</td>
<td>15 Enough time 88.2</td>
<td></td>
</tr>
<tr>
<td>2 More time</td>
<td>11.8</td>
<td></td>
</tr>
<tr>
<td>6. What questions did you bring with you to ask the reference librarian during your consultation?</td>
<td>10 Locating more sources 58.8</td>
<td></td>
</tr>
<tr>
<td>4 Locating a book</td>
<td>23.5</td>
<td></td>
</tr>
<tr>
<td>2 Narrowing topic</td>
<td>11.8</td>
<td></td>
</tr>
<tr>
<td>1 Citing sources</td>
<td>5.8</td>
<td></td>
</tr>
</tbody>
</table>

**Table I.**
English 102 survey results

<table>
<thead>
<tr>
<th>Research consultation goals for English 102 students</th>
<th>Survey comments from students related to this goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Student will be able to identify relevant sources</td>
<td>“[I asked] [h]ow do I know if a source is peer reviewed?” (question 6)</td>
</tr>
<tr>
<td></td>
<td>“[I asked] how do I know what’s a reference and what’s peer reviewed? How do I know if a source is valid?” (question 6)</td>
</tr>
<tr>
<td>2. Student will be able to retrieve the full-text of a relevant source</td>
<td>“[the research consultation helped me with] how to find a book source and such” (question 2)</td>
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<tr>
<td></td>
<td>“I needed another reference source, but I didn’t know what I could find in a reference source, so she helped me find relevant reference sources” (question 6)</td>
</tr>
<tr>
<td>3. Students will be able to identify additional databases to search</td>
<td>“The library research consultation introduced me to Biography Reference Center” (question 2)</td>
</tr>
<tr>
<td></td>
<td>“I was able to find other databases not mentioned in the instruction sessions” (question 2)</td>
</tr>
<tr>
<td>4. Student will learn at least one advanced search technique</td>
<td>“[the research consultation] helped me to narrow down my search to concentrate on certain sources” (question 2)</td>
</tr>
</tbody>
</table>
more personal, and they were able to ask questions that directly related to their research. Consequently, the students were shown and accessed databases that they were not introduced to during the instruction session. Other students stated that the instruction session was broader and that the research consultation allowed them to locate specific sources they would not have found without the consultation. While question two showed us that students understood the different purposes of classroom instruction and research consultations, question three revealed that while they know how helpful research consultations are, only 29.4 percent would make another appointment. This could be because students believe they can locate adequate sources on their own. They may feel that attending the instruction session and the research consultation in this class provided them with enough skills in the future that they will not need additional instruction. Overall, the students were told that the library instruction session would teach them how to locate the research needed to complete their assignment and that the research consultation was for extra help, and on their own the students were able to acknowledge and state in their responses the success and purposes of both types of research instruction.

Discussion: English 102

Although the goal of this study was to examine perceptions of research consultation effectiveness, this study revealed much more. It was impossible for MacDonald to grade the final papers of all of her students without comparing the final papers of students who attended both library instruction and research consultations with final papers written by students who only attended library instruction. A negative impact of the research consultation for freshmen became obvious; students who attended both an instruction session and a research consultation earned lower grades on their final research assignments, which at first seemed like a startling result. After further examination, we believe it happened for the following reasons.

First, freshmen who went to both research consultations and library instruction sessions located many more sources than the students who only attended a library instruction session. Because students were not yet skilled at choosing which sources to use, many of the students ended up writing a “fill-in-the-quote paper:” a paper that included so many quotations and references that the students’ voices and viewpoints were either obscured or left out entirely. This showed us that while both sessions helped teach the students the skills to locate appropriate research materials, the students still needed to hone their selection and evaluation skills.

Second, as a result of including too many sources in their research papers, the freshman students who attended both sessions also seemed to forget how to construct paragraphs using research. Many of the students did not introduce, explain, and analyze the research they included in their papers. These students seemed to grasp what the articles were about, but instead of using the research to defend their own arguments, they assembled their papers quote-by-quote, losing their own voices and arguments.

Reviewing the annotated bibliographies turned in by the freshman students also revealed similar problems. The freshman students who attended both sessions also did worse on their annotated bibliographies. The freshman students seemed to forget how to decipher between source types in order to satisfy the assignment requirements. Instead of including two reference materials, two peer-reviewed journal articles, a book,
and a source of choice, students included several specific sources found in the consultation, which caused them to overlook their need to include general and specific research materials. We believe this shows that the freshman students became overwhelmed with sources after attending the research consultation, which caused them to forget the fundamental requirements of the assignment.

For all other major essays before the research paper and the annotated bibliography, all four of MacDonald’s classes submitted work that was comparable. However, the three sections not in this study submitted research papers and annotated bibliographies that showed those students knew how to select, evaluate, analyze, and incorporate sources into the bibliographies and research papers. The assignments from the section in this study showed that these students struggled selecting, evaluating, analyzing, and incorporating sources into their assignments. We believe this is because the students became overwhelmed with the amount of research the librarians helped them to locate. This suggests that English instructors who wish to require research consultations will need to spend more time emphasizing how to select sources, discussing the impact of including too much or too little research in papers, and teaching students how to incorporate research into writing. This is problematic if English composition instructors do not have additional time to spend focusing on these skills because of other curriculum requirements. Learning how to write, learning how to research, and learning how to write using research is a process; these skills are not all perfected in one class in one semester. This is why many universities require students to participate in library research sessions and writing classes throughout their college years.

Survey results: Psychology 497
The response rate for Psychology 497 students was much lower than the English 102 response rate because the survey was administered online instead of in the classroom. See Table III for the Psychology 497 survey results. Table IV shows how the survey comments illustrated that the librarians’ goals were met for the research consultations. Students in Psychology 497 also provided comments to the survey questions. These comments revealed that the senior researchers, like freshmen, were aware that research consultation appointments gave them the opportunity to ask questions and receive answers that were focused specifically on their own research needs. Most students seemed to value this opportunity and recognized that it was a chance to build on what they had learned in the library instruction session. Questions that the senior students reported asking during their research consultation sessions indicate that they had a better understanding of their research needs. Their questions contained more specific details, indicating that they had thought in detail about what they wanted to find: “how to go about finding appropriate articles for my introduction section of my paper,” “how to find research that was not available at our library,” and “how to find the bound periodicals section.” Students also reported discussing strategies with librarians during their appointments; for example, “I wanted to know how to get results because I could not get them the way I was searching” and “one-on-one attention aided [me] in thinking of specific keywords to use.”

Discussion: Psychology 497
Comparable data for how Psychology 497 students performed on their final projects is not available, because collecting this data was not part of our original survey design.
We do know, however, that when the library instruction session for this class was originally developed research consultations were optional. Because the professor teaching the class noticed that students who attended research consultations did better quality research, she asked librarians to make these sessions required for all students in Psychology 497. Because the psychology professors now require all students in

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Are you a: Freshman, Sophomore, Junior or Senior?</td>
<td>11 Seniors</td>
<td>100.0</td>
</tr>
<tr>
<td>2. What did the library research consultation help you with that the library instruction session did not?</td>
<td>7 Finding journal articles</td>
<td>63.6</td>
</tr>
<tr>
<td></td>
<td>2 Interlibrary loan requests</td>
<td>18.2</td>
</tr>
<tr>
<td></td>
<td>1 Citing sources</td>
<td>9.1</td>
</tr>
<tr>
<td></td>
<td>1 Nothing</td>
<td>9.0</td>
</tr>
<tr>
<td>3. If you were to take another class requiring research, would you set up a research consultation appointment again?</td>
<td>1 Maybe</td>
<td>9.0</td>
</tr>
<tr>
<td></td>
<td>8 Yes</td>
<td>72.7</td>
</tr>
<tr>
<td></td>
<td>2 No</td>
<td>18.2</td>
</tr>
<tr>
<td>4. How long was your research consultation?</td>
<td>4 Between 10-20 minutes</td>
<td>36.3</td>
</tr>
<tr>
<td></td>
<td>5 Between 20-30 minutes</td>
<td>45.5</td>
</tr>
<tr>
<td></td>
<td>2 Longer than 30 minutes</td>
<td>18.2</td>
</tr>
<tr>
<td>5. Did you feel like you needed more or less time for the consultation, or did you feel that you had a sufficient amount of time for the consultation?</td>
<td>10 Enough time</td>
<td>91.0</td>
</tr>
<tr>
<td></td>
<td>1 More time</td>
<td>9.0</td>
</tr>
<tr>
<td>6. What questions did you bring with you to ask the reference librarian during your consultation?</td>
<td>7 More journal articles</td>
<td>63.6</td>
</tr>
<tr>
<td></td>
<td>3 How to place interlibrary loan requests</td>
<td>27.3</td>
</tr>
<tr>
<td></td>
<td>1 Locating bound journals</td>
<td>9.0</td>
</tr>
</tbody>
</table>

Table III. Psychology 497 survey results

<table>
<thead>
<tr>
<th>Research consultation goals for psychology 497 students</th>
<th>Survey comments from students related to this goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Student will be able to identify relevant sources</td>
<td>“[the research consultation] helped me find articles specific to my research” (question 2)</td>
</tr>
<tr>
<td></td>
<td>“[the research consultation showed me] how to go about finding appropriate articles for my introduction section of my research paper” (question 6)</td>
</tr>
<tr>
<td>2. Student will be able to retrieve the full-text of a relevant source</td>
<td>“[the research consultation] showed me each individual step to submit [inter]library loans for articles” (question 2)</td>
</tr>
<tr>
<td></td>
<td>“finding the bound periodicals in the library” (question 2)</td>
</tr>
<tr>
<td>3. Students will be able to identify additional databases to search</td>
<td>“the consultation explore[ed] other areas I would have never explored” (question 3)</td>
</tr>
<tr>
<td>4. Student will learn at least one advanced search technique</td>
<td>“one on one attention also aided in thinking of specific keywords to use when searching for information through the databases” (question 2)</td>
</tr>
<tr>
<td></td>
<td>“I had already done searches, so basically I wanted to know how to get results because I couldn’t get them the way I was searching” (question 6)</td>
</tr>
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</table>

Table IV. Librarians’ goals for Psychology 497
Psychology 497 to attend both a library instruction session and a research consultation, librarians are confident that attending both of these sessions is beneficial for these students.

Conclusion of study
Our research shows that requiring freshman students to attend both library instruction sessions and research consultations is not the most effective method for helping students. We suggest that freshman students should attend a general library instruction session for research projects and use the reference desk when they need additional help. When librarians schedule research consultations with freshmen, they should keep the following ideas in mind. First, freshmen are still learning to write academic papers and can become overwhelmed when provided with too much research. When freshmen students find too many good sources, their instinct is often to include all the research they have located instead of selecting and evaluating the best sources for their projects. Librarians should focus on helping freshmen students locate and cite one or two sources. Second, because many libraries are understaffed, all requests may not be filled. This research shows that seniors benefit more from research consultations than freshmen, so librarians should schedule sessions with seniors when decisions have to be made.

Implications for librarians
More research should be done on how to design research consultations for freshmen. Librarians should be aware of freshmen’s writing and research abilities. Even though most librarians would agree with Avery (2008, p. 193) that research consultations should be tailored, we found little research on how to do this other than responding to each individual student’s needs. This is problematic since many freshmen researchers cannot express their needs to librarians. In order to tailor research consultations more effectively, librarians should request that students attach assignment sheets to their request forms or bring assignment sheets with them to consultations. Librarians should discuss assignment requirements with faculty members who require research consultations.

In addition to studying how to better design research consultations, librarians need to develop better assessment tools that will enable them to get an accurate picture of whether or not research consultations achieved their goals. As Cardwell states, our current method for assessing research consultations is not ideal because “it is difficult to truly assess student learning and isolate the long-term impact that an individual session has on a student’s knowledge and skills. Typically, outcomes assessment aims to capture the ‘big picture,’ not an individual encounter at the reference desk or during a PRC” (Cardwell et al., 2001, p. 108). More recent research suggests that in order to assess the effectiveness of research consultations, “librarians [should] focus on purposefully selected groups or classes where the impact would be greatest” (Reinsfelder, 2012, p. 275). Whether librarians decide to assess individual research consultations or research consultations for entire classes, librarians need to develop a way to measure student learning. Martin and Park (2010) addressed student perceptions, but student learning must now be considered. Research consultations remain one of the best methods for teaching. Developing assessment tools for them can only improve their effectiveness.
References


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