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Advancing the Reference Narrative: Assessing Student Learning in Research Consultations

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Article abstract

Objective – As reference services continue to evolve, libraries must make evidence based decisions about their services. This study seeks to determine the value of reference services in relation to student learning acquired during research consultations, by soliciting students' and librarians' perceptions of consultation success and examining the degree of alignment between them.

Methods – The alignment of students' learning outcomes (reported skills and knowledge acquired) with librarians' expectations for student learning during consultations was assessed. An online questionnaire was conducted to gather responses from students who had sought consultation services; 20 students participated. In-person interviews took place with eight librarians who had provided these consultations. The online questionnaire for students included questions about students' assessments of their self-identified learning goals through consultation with a librarian and their success at applying the knowledge and skills gained. Librarian interviews elicited responses about students' prior research experience, librarians' objectives for student learning, librarians' perceptions of student learning outcomes, and perceived consultation success. The responses of both the students and the librarians were coded, matched, and compared.

Results – Students and librarians both considered the consultation process to be successful in advancing learning objectives and research skills. All students reported that the consultations met their expectations, and most reported that the skills acquired were applicable to their projects and significantly improved the quality of their work. Librarians expressed confidence that students had gained competency in the following skill sets: finding sources, search strategy development, topic exploration, specific tool use, and library organization and access. A high degree of alignment was observed in the identification by both students and librarians of "finding sources" as the skill set most in need of enhancement or assistance, while some disparity was noted in the ranking of "search strategy development," which librarians ranked second and students ranked last.

Conclusion – The data demonstrate that both students and librarians perceived individual research consultations as an effective means to meet student learning expectations. Study findings suggest that as reference models continue to change and reference desk usage declines, research consultations remain a valuable element in a library's service model and an efficient use of human resources.

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Advancing the Reference Narrative: Assessing Student Learning in Research Consultations

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Abstract

Objective – As reference services continue to evolve, libraries must make evidence based decisions about their services. This study seeks to determine the value of reference services in relation to student learning acquired during research consultations, by soliciting students' and librarians' perceptions of consultation success and examining the degree of alignment between them.

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Results – Students and librarians both considered the consultation process to be successful in advancing learning objectives and research skills. All students reported that the consultations met their expectations, and most reported that the skills acquired were applicable to their projects and significantly improved the quality of their work. Librarians expressed confidence that students had gained competency in the following skill sets: finding sources, search strategy development, topic exploration, specific tool use, and library organization and access. A high degree of alignment was observed in the identification by both students and librarians of "finding sources" as the skill set most in need of enhancement or assistance, while some disparity was noted in the ranking of "search strategy development," which librarians ranked second and students ranked last.

Conclusion – The data demonstrate that both students and librarians perceived individual research consultations as an effective means to meet student learning expectations. Study findings suggest that as reference models continue to change and reference desk usage declines, research consultations remain a valuable element in a library's service model and an efficient use of human resources.

Introduction

Librarians are increasingly expected to demonstrate the value of their services for improving student learning and success, and to make informed decisions based on empirical data. While research consultation services have been shown to be useful for students (Butler & Byrd, 2016), and although users report satisfaction with such services (Ishaq & Cornick, 1978; Magi & Mardeusz, 2013; Martin & Park, 2010; Rogers & Carrier, 2017), most previous

studies evaluating research consultation services have tended to focus on the usage or effectiveness of the service (e.g., Attebury, Sprague, & Young, 2009; Watts & Mahfood, 2015). We still know little about the extent to which these services affect student learning in academic library settings specifically and in higher education more generally.

Our study investigated the value and contributions of research consultation services with respect to student-centered learning objectives. We sought to understand students' experience beyond the use of the service or the evaluation of the quality of the service. Therefore, we conducted an empirical study to examine the value of research consultation services to assess student learning and the direct implications of that learning for student success.

This study was conducted in a U.S. research university with 45,000 students, comprising 30,000 undergraduates and 15,000 graduate students. The University's library offers various consultation services through which students can meet one-on-one with a librarian for approximately 30 minutes. While the library provides specialist consultation services whereby users can receive assistance from an expert in an academic discipline or technological field, the library also offers a general research consultation service staffed by librarians identified as generalists who have some knowledge in many fields. This study focuses on the consultations provided through this general service.

Consultation topics are patron driven, typically centering on questions that students have about research-based academic projects. The consultation format is flexible, determined by students' self-identified learning objectives. With the purpose of evaluating the extent to which students perceived their learning objectives had been achieved and to better understand the students' self-identified learning objectives, an online questionnaire was initiated by contacting those students who had used the

consultation service. To obtain librarians' perceptions of those same consultations, all of the librarians who had provided the service to those students who responded to the online questionnaire were interviewed. This method enabled examination of the alignment between students' reported acquisition of knowledge and skills and the librarians' expectations and perceptions of student learning during the consultation process.

Literature Review

The literature on library research consultations dates back to the 1970s, when academic libraries began to offer appointment-based consultation services. In their early study of consultations at the University of North Carolina at Chapel Hill, Ishaq and Cornick (1978) found high degrees of satisfaction with the program; all of the 49 questionnaire respondents who had utilized the service indicated that they would use the service again and recommend it to others. Later studies found similarly high levels of satisfaction with library consultation services at other institutions. For example, a study of the University of Idaho's library research consultations found that an average of 115 students per year utilized the service, a number that remained relatively stable over the 10-year study period and that represented a wide array of departments and levels of study (Attebury et al., 2009). In addition, in a recent questionnaire of 80 students, 86% described their consultations as "very useful" and 14% described them as "somewhat useful" (Butler & Byrd, 2016, p. 85).

Much of the recent literature on consultation services focuses on the role of technology in facilitating research consultations. Online appointment tools like Google Calendar and YouCanBook.me have been found to decrease student wait times and mitigate library anxiety by enabling students to make appointments without having to contact a librarian directly (Cole & Reiter, 2017; Kuglitsch, Tingle, & Watkins, 2017). At the same time, employing online note-taking tools like Evernote during

consultations has been found to help students organize information and provide a research narrative that students can refer back to (Kani, 2017).

Despite the usefulness of digital tools in consultation sessions, many students describe face-to-face consultations as the easiest and most efficient method for getting help, in comparison to forms of virtual reference such as chat (Magi & Mardeusz, 2013). For example, when working in collaboration with their university writing center, Meyer, Forbes, and Bowers (2010) described the importance of providing a dedicated, highly visible space for research consultations; having a physical space that served as the "research center" eased students' anxiety about asking for help and facilitated the promotion of the library's research services. Similarly, Rogers and Carrier (2017) found that students appreciated the opportunity to meet in a private consultation environment as opposed to the "open" environment of the reference desk.

Many research consultation studies center on specific student populations or circumstances. For example, Isbell (2009) focused on honors students' perceptions of a consultation service because such students are highly motivated, study a wide range of disciplines, and tend to overestimate their research abilities. Faix, MacDonald, and Taxakis (2014) surveyed students from both a senior capstone class and a freshman seminar who were required to attend a library research consultation. The study found that upper-level students benefited more from the consultations than freshmen, who were sometimes overwhelmed by the number of resources that consultation sessions helped them locate. In addition, Kolendo (2016) identified the extra-credit consultation as a unique circumstance, in which students schedule sessions for the credit only, usually after having already completed their papers.

A persistent challenge is measuring the effectiveness of research consultations. Fournier and Sikora (2015, 2017) discussed the lack of assessment in scholarly literature, finding that most libraries either practice no form of assessment or rely solely on informal feedback from users. However, the literature demonstrates that more sophisticated analyses have been attempted. Sikora, Fournier, and Rebner (2019) administered pre- and post-consultation tests, demonstrating statistically significant improvements in students' search abilities and confidence in their research skills after consultations. Reinsfelder (2012) used citation analysis to show that consultations positively impacted the quality and quantity of sources that students used in their papers.

In addition to quantitative metrics, qualitative research methods such as questionnaires (Butler & Byrd, 2016), interviews (Rogers & Carrier, 2017), focus groups (Watts & Mahfood, 2015), and analyses of librarians' consultation notes (Suarez, 2013) provide valuable insights into what students learn during consultation sessions. Studies have found that confusion about library terminology can impede student learning (Butler & Byrd, 2016), but that students value the individualized attention from in-depth engagement with the librarian, as well as the librarians' perceived subject expertise (Rogers & Carrier, 2017). Relatedly, students who participate in consultations have reported a higher degree of confidence in their research abilities, believing that their research has become more efficient and feeling that they have developed good relationships with the librarian as an educator (Watts & Mahfood, 2015). However, others have found that students tend to overestimate their information-seeking abilities even when they still struggle to develop search strategies or generate keywords beyond those that are laid out in the assignment prompt (Suarez, 2013). In this manner, students in research consultations appear to evince the Dunning-Kruger effect, the cognitive bias whereby people are unable to recognize their own incompetence (Suarez, 2013). On the other hand, librarians have sometimes been found to underestimate the effectiveness of the

consultation, a phenomenon known as provider pessimism (Butler & Byrd, 2016).

Aims

This study therefore aims to contribute to this growing body of literature on student learning through research consultations, by providing a more complete and nuanced picture of students' and librarians' perceptions of the consultation process. Specifically, three research questions are addressed:

1. How do students who participated in a library consultation perceive their learning objectives and experience?
2. How do librarians who provided a library consultation conceptualize the student learning from this service?
3. How aligned are students and librarians in their perceptions of the degree of success of the consultation?

Methods

Study data was collected using a student questionnaire and in-person interviews with librarians. First, a questionnaire was sent to students who had participated in consultations during the Fall 2017 and Winter 2018 semesters. The questionnaire had three main foci: (1) understanding students' self-identified learning objectives; (2) evaluating the degree to which students perceived that these learning objectives were achieved; and (3) understanding students' perceptions of how they applied the knowledge and skills acquired in the consultations to their course projects. After the student questionnaires were completed, the librarians were interviewed. In order to minimize potential biases, neither the students nor the librarians were informed about the study prior to the consultations.

Part 1: Student Perspectives

Participants

During the Winter 2018 semester, questionnaires were sent to the 38 students who had participated in research consultations during the Fall 2017 or Winter 2018 semesters (see Appendix A). Of those 38, 20 questionnaires were completed for a 53% response rate. Researchers administered the questionnaire several months after the consultations occurred in order to permit students sufficient time to complete projects, to receive feedback on their projects, and to reflect upon their learning. Students required approximately 30 minutes to complete the questionnaire. A $30 Amazon gift card was offered as an incentive to increase the response rate and to motivate students to provide thoughtful and accurate responses.

Measures

The questionnaire was distributed via email using Qualtrics software and was comprised of 31 items in total, although not all questions were visible to all students due to the use of skip logic. In addition to demographic questions there were open-ended items asking about the students' self-identified learning objectives ("What did you hope to learn from the consultation?") and student perceptions of the learning that took place ("What, if anything, did you discuss that was new to you?"). Closed-ended items asked about student perceptions of the success of the consultations ("Do you feel that the consultation met your expectations?" "To what extent did this service improve the quality of your project/assignment?"). We also asked for specific feedback that students may have received from course instructors on their projects. Although student emails were solicited in the questionnaire for possible future contact, follow-up interviews were not conducted.

Student learning objectives and student perceptions of learning were coded using four categories as follows:

1. Library tools (use of research tools such as specific databases)
2. Library organization and access (understanding how to access print and digital resources within the library, including the physical library buildings and library website)
3. Research process (topic exploration, search strategy development, and finding, evaluating, and citing sources)
4. Other (goals not covered above, such as earning extra credit for meeting with a librarian)

Student perceptions of success were coded along two dimensions using a four-point Likert scale:

1. Success, ranging from one (not at all) to four (significantly)
2. Met expectations, ranging from one (not at all) to four (significantly)

After the questionnaire closed, the responses were downloaded from Qualtrics in CSV format. Two researchers then coded the open-ended responses using NVivo software.

Part 2: Librarian Perspectives

Participants

After students submitted their questionnaires, the librarians who had conducted the consultations were contacted for interviews. We sought to understand what the librarians believed the students had needed to learn in order to complete their projects and to compare this to the students' own perceptions of what they themselves needed to learn. Therefore, the interviews focused on (1) understanding librarians' perceptions of student learning needs and (2) evaluating the degree to which librarians believed these learning needs were achieved.

Using consultation scheduling software, we identified the names of eight librarians who provided the consultations for all 20 students were identified using consultation scheduling software. One of the eight librarians provided approximately half of the consultations, while each of the other librarians conducted between one and three consultations. All eight librarians were interviewed during the Winter 2018 semester. Student and librarian responses were matched based on library records of the research consultations. Interviews lasted approximately 30 minutes and were audio recorded and transcribed for coding purposes.

Measures

To assess librarians' perspectives of student learning, an interview protocol was developed that contained questions about the students' prior research experience ("What was your impression of the student's research skills at the start of the session?"); librarian learning objectives ("What goals did you have for the session? That is, what did you want the students to walk away from the session having learned?"); librarian perceptions of student learning outcomes ("What [skills and concepts] did the student learn?"); and consultation success ("On a scale of one to ten, ten being highly successful, one being not successful, how successful was the session?") (see Appendix B). The interview questions were coded along the same four dimensions outlined for student learning objectives and student perceptions of learning: library tools, library organization and access, research process, and other. The question about consultation success asked librarians to provide a rating on a scale from 1 (very unsuccessful) to 10 (very successful). The transcribed interviews were coded by two researchers using NVivo software. A codebook was developed focusing on the following themes: library organization and access, specific tools, and the research process. We test coded five interviews to assess the feasibility of the coding scheme, to facilitate consensus on the

application of the codes, and to ensure inter-coder reliability.

Demographic Background and Consultation Length

Of the 20 students who had received consultations, 16 were undergraduate students, one was a master's student, one was a PhD student, and two students self-identified as "other." The students represented a total of 14 disciplines including nursing, economics, social work, political science, history, computer science, international studies, kinesiology, biochemistry, and several other disciplines that included five students with undeclared majors. The duration of the consultations varied; four consultations lasted over 30 minutes, nine were 20–30 minutes long, six were 10–20 minutes long, and one lasted less than 10 minutes. The majority, 15 of the sessions, were in the 10–30 minute range. All of the students responded that they were working on a project; of these, 15 projects were for a course and five were not course related. All consultations were sought to meet immediate, short-term objectives rather than for longer-term projects. The eight librarians had between two and 30 years of reference service experience in academic libraries.

Eighteen students reported that they remembered the consultation "well," while only two reported remembering it "a little." Therefore, although students completed the questionnaire several months after the consultations occurred, they were able to provide a good level of detail in their responses. Likewise, for the librarians, most remembered the consultations well with some having sent follow-up email messages to students. In one case, a librarian was not able to recall enough information about the consultation to assess its level of success.

Results

In this section, we examine the results of our study from two perspectives: student

perceptions about their own learning and their assessments of the success of the consultations versus librarian perspectives on student learning and consultation success.

Student Learning: Student Perspectives

In general, students reported that their self-identified learning objectives were met during the consultations, responding consistently that the consultations had helped them to learn new skills for their projects; the fact that the consultations provided them with search tactics that they could use in the future was appreciated. The students also reported that the consultations had helped them to locate higher quality sources. One respondent wrote, "I was completely lost on where to go. The topic was a little bit peculiar and doing a simple Google search was not helping much. The consultation helped me gain more trustworthy sources, which was key." There were no discernible differences between undergraduate and graduate student participants' expectations or perceptions about consultation outcomes.

Students identified their top four learning objectives as (1) finding sources ($n = 19$); (2) using specific tools/databases ($n = 10$); (3) library organization and access, which included navigating both the physical space of the library and the library website ($n = 7$); and (4) search strategy development ($n = 3$).

One interesting finding is that students reported that they applied what they had learned to their projects. Sharing feedback received from their course instructors, respondents stated: "My instructor said my sources were extremely strong and made my argument more well-rounded"; "my compilation of data was outstanding and everything they were looking for"; and "I got good feedback and a good grade in part because of the thoroughness to which I worked to find meaningful resources."

One of the questions we asked in the questionnaire was whether students had used

skills learned during the consultations to enhance their work on any subsequent projects, as this would demonstrate transferable skills learned. Half of the survey respondents (n = 10), indicated that they were able to apply something they discussed during the consultations to a project other than the one that led them to schedule the consultation. One student commented, "I have since used the methods [the librarian] taught me to aid my research in my new political science research assistant job. I have also used them in other courses for other essays and projects." Another offered, "I'm working on a psych project now that I regularly use my database research skills to find articles for."

Some students reported that they shared what they learned from the consultation service with others, such as one respondent who indicated, "I was able to teach these techniques to my research partner to find other sources for our project." Such responses strongly suggest that student-librarian consultations pay themselves forward by helping students to use their enhanced skills and knowledge in subsequent research projects, and by enabling students to teach these skills to others, which extends the impact of consultations beyond a single-project application.

Student Learning: Librarian Perspectives

At the beginning of each interview, we asked librarians to rate each student's pre-consultation level of research experience. Most students (n = 12) were rated "low" in previous research experience, while only two students were identified as having "high" skill levels. Data analysis revealed that the librarians identified four main skill sets that students needed to acquire or enhance in order to successfully complete work on their projects, with individual students requiring help in several of these skill areas: (1) finding sources (n = 19); search strategy development (n = 15); (3) topic exploration (n = 5); and (4) using specific tools (n = 3).

Librarians described in detail how they felt that students displayed their understanding of the concepts covered in the consultation, describing how students suggested synonyms to create better search strategies and used new search strategies and new databases while searching alongside the librarian. While librarians recognized that the students had requested help with specific databases, they felt that students would benefit from more broad-based help, for example, with formulating search strategies or exploring topics through using filters to refine search results. Librarians expressed confidence that the students had gained competency in the top learning needs that they had identified (Table 1).

Table 1
Librarian and Student Assessment of the Top Four Student Learning Needs

Librarian Perceptions	Student Perceptions
1. Finding sources	1. Finding sources
2. Search strategy development	2. Using specific tools/databases
3. Topic exploration	3. Library organization and access
4. Using specific tools	4. Search strategy development

Consultation Success: Student and Librarian Perspectives

Using a scale of *significantly, somewhat, a little,* and *not at all*, all 20 students reported that the consultations had met their expectations, with 15 rating that their expectations had been *significantly* met and five rating that their expectations had been *somewhat* met. No students reported that the consultation met their expectations *a little* or *not at all.* Using a similar scale to assess whether the consultations had
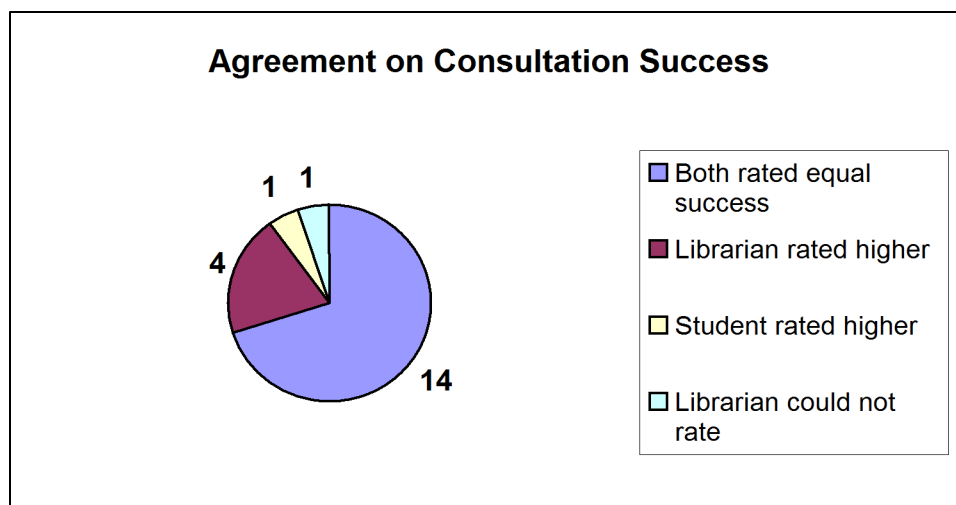
Agreement on Consultation Success

Figure 1

Agreement on consultation success between librarians and students.

any impact on the participants' projects, 19 students out of 20 felt that the consultations improved their project to some degree. Fourteen students responded that the consultations improved their projects *significantly*, three *somewhat*, and two *a little*. Only one reported that the consultation did not improve their project at all; this student had already explored a significant amount of resources and was referred to a subject specialist outside of the general reference consultation service.

Librarians' assessments of the success of consultations were similar to those of the students. Using a scale of 1–10, ranging from 1 (*very unsuccessful)* to 10 (*very successful*), librarians reported that they felt 13 of the consultations were *very successful* (rated 8–10), and that six were *somewhat successful* (rated 4–7). None of the librarians considered any consultations to be *very unsuccessful* (rated 1–3), although one librarian revealed that they could not remember enough details to rate the success of one consultation.

The rates at which the librarians and students agreed on the degree of success were measured using the same scale as above. For 14 consultations, both groups agreed on the level of

success. Of interest, the librarians rated four consultations as having been more successful than the students rated those consultations. Although, one student did rate a consultation as more successful than the librarian did. For the instance in which the librarian could not remember enough about the consultation to attach a level of success, we decided not to compare it with the student-reported level of success (Figure 1).

Discussion

This study was designed to address three questions: how did students who accessed the library consultation service perceive their learning objectives and experience? How did librarians who provided the library consultation service conceptualize the student learning from this service? How aligned were students and librarians in their perceptions of the degree of success of the consultations?

With regard to learning objectives, there was almost complete agreement (19 cases) between both librarians and students that "finding sources" was the most important area requiring new and additional skills in a general consultation. However, both groups diverged

when ranking the other learning objectives (see Table 1).

Perhaps most striking is the discrepancy in the ranking of "search strategy development," which was ranked second in importance by librarians but last by students, whereas "specific tools and databases" was ranked second in importance by students and last by librarians. "Topic exploration" was third in importance for the librarians, but was not named among the top four learning needs by students. "Library organization and access," named third in importance by students, was not mentioned by librarians among their top four.

When describing gaps in students' skill sets, the librarians were more likely to discuss broader concepts such as critical thinking, as well as universally applicable competencies like search strategy development and topic exploration. By contrast, students tended to discuss basic needs with concrete outcomes, wanting to learn how to use a particular tool or to find a specific source at the library. This discrepancy is an opportunity for librarians to expand students' awareness of their own learning needs and to encourage self-reflection.

Some research suggests that while students report a higher degree of confidence in their research abilities after a consultation (Watts & Mahfood, 2015), they may overestimate their information-seeking abilities overall (Suarez, 2013). A higher degree of confidence after a consultation may be an indicator of student success for the consultation. Librarians have underestimated their effectiveness in consultations in general (Butler & Byrd, 2016), and it might be concluded that librarians should be more confident than they are about the impact of their work. These prior studies indicate that there is a possible mismatch between what students rate as successful and what librarians perceive as impactful. The findings of this study also show that students and librarians interpret the success of research consultations in slightly different ways. While

most of the librarians and students agreed on the level of success of the consultations in this study, in four instances the librarians rated the consultations as more successful than did the students involved in those consultations, a finding that is seemingly inconsistent with Butler and Byrd's (2016) work. There was only one case in which the student's rating of the consultation's success was higher than the librarian's. While the discrepancy in perceptions of success among these five cases is interesting, more noteworthy is the fact that some degree of success was indicated by both librarians and students in all cases. We interpret this finding as suggesting the potential benefit of incorporating two routine practices into the consultation process: having students and librarians identify clear learning objectives at the outset of the consultation; and following up consultations by asking students about their level of satisfaction with the process and their success at applying newly developed library skills to additional projects. We believe that these practices are likely to improve student-librarian consensus of perceived success, enhance communication between students and librarians, and provide feedback to aid the ongoing improvement of consultation services.

By a very large measure, both librarians and students felt that the time and effort put forth in the consultations was worthwhile. Nearly all students, 19 out of 20, reported that the consultations improved their projects to some degree, while all responded that the consultations met their expectations. Consistent with Butler and Byrd's (2016) work, the librarians reported feeling that slightly fewer of the consultations (17 out of 20) were very successful. However, when assessing how well the self-identified learning objectives were met during the consultations, the data illustrate that half of the student respondents were able to apply something that they had discussed during the consultations to projects other than the one for which they had scheduled the consultation. This finding indicates the acquisition of transferable skills and demonstrates both the

short- and long-term value of consultations for improving students' research skills.

The consultations in this study were initiated for immediate, short-term needs associated with required projects, rather than for self-directed, longer-term projects. A valuable extension of this study might include consultations with undergraduates who are completing long-term projects, such as honor theses, or consultations with a sampling of graduate students. While the learning objectives in these cases might differ from those in the present study, the measures of perceived consultation success (applicability of new or improved skills, transferability of skills to other contexts, and alignment between librarian and student perceptions of success) would still pertain, thus offering a more complete picture of student learning through consultations.

Conclusions

The purpose of this study was to assess student learning from research consultations in the academic library by identifying the students' own learning goals and measuring the success in achieving those goals in relationship to librarian perceptions of the work completed in those consultations. Students and librarians in this study had the same primary goal in these consultations: to find sources for a research project. Though there were some differences in perceptions of learning outcomes outside of that primary goal, in most cases, both students and librarians interpreted the degree of success in the consultation similarly. The findings clearly demonstrate that individual research consultations are effective and impactful in meeting student learning needs. As reference models continue to change and reference desk usage declines, general research consultations are a valuable element in librarians' service model and an efficient use of human resources.

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Appendix A
Student Consultation Questionnaire Questions

Hello, you had a research consultation with a U-M librarian this past winter semester. How well do you remember this consultation?
- Not at all
- A little
- Fairly well
- Very well

Approximately how long did your consultation take?
- 0–10 Minutes
- 10–20 Minutes
- 20–30 Minutes
- 30+ Minutes

What was your program of study at the time of your consultation?
- Bachelor's
- Master's
- PhD
- Postdoc
- Other

What is your expected year of graduation?

What major, program, or department were you affiliated with at the time of your consultation?

Was this for a class?
- Yes
- No

(If "Was this for a class? Yes") What class was this for? (e.g., ENGLISH 125) [Optional]

Can you briefly summarize what your consultation was about?

What did you hope to learn from the consultation?

Thinking about your answer above, do you feel that the consultation met your expectations?
- Significantly
- Somewhat
- A little
- Not at all

(If "Thinking about your answer above, do you feel that the consultation met your expectations? NOT Not at all") In what ways did the consultation meet your expectations?

(If "Thinking about your answer above, do you feel that the consultation met your expectations? Not at all") Please tell us why the consultation service did not meet your expectations.

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What, if anything, did you discuss during the consultation that was new to you?

Were you working on a project/assignment when you scheduled your consultation?
- Yes
- No

(If "Were you working on a project/assignment when you scheduled your consultation? Yes") To what extent did this service improve the quality of your project/assignment?
- Significantly
- Somewhat
- A little
- Not at all

(If "To what extent did this service improve the quality of your project/assignment? NOT Not at all") In what ways did the consultation service improve the quality of your project/assignment?

(If "To what extent did this service improve the quality of your project/assignment? Not at all") Please tell us why you didn't think that the consultation service improved the quality of your project/assignment.

Did you come to this consultation because you needed sources (e.g., materials such as books or articles to use for your research)?
- Yes
- No

(If "Did you come to this consultation because you needed sources (e.g., materials such as books or articles to use for your research)? Yes") Were you able to locate higher quality sources than before the consultation?
- Yes
- No

(If "Did you come to this consultation because you needed sources (e.g., materials such as books or articles to use for your research)? No") Please explain why not.

(If "Did you come to this consultation because you needed sources (e.g., materials such as books or articles to use for your research)? Yes") What made these sources better for your project/assignment?

(If "Were you working on a project/assignment when you scheduled your consultation? Yes") Did you get any feedback related to your project/assignment from your instructor or supervisor?
- Yes
- No

(If "Did you get any feedback related to your project/assignment from your instructor or supervisor? Yes") What feedback did you receive from your instructor or supervisor?

Were you able to use something that you discussed during your consultation for your project/assignment?
- Yes

- No

(If "Were you able to use something that you discussed during your consultation for your project/assignment? Yes") How were you able to apply what you discussed?

Were you able to apply something that you discussed during your consultation to OTHER projects/assignments (i.e., different projects/assignments than the one for which you scheduled a consultation)?
- Yes
- No

(If "Were you able to apply something that you discussed during your consultation to OTHER projects/assignments (i.e., different projects/assignments than the one for which you scheduled a consultation)? Yes") How were you able to apply what you discussed?

How would you describe the consultation service to a friend?

Would you recommend the consultation service to a friend?
- Yes
- No

(If "Would you recommend the consultation service to a friend? No") Why not?

If you would be willing to let us contact you with potential follow-up questions, please enter your email address.

Appendix B
Librarian Consultation Interview Questions

Introductions

[Ask the librarian what they know about the project, then fill in gaps based on what they don't know yet. If they don't know about the project, read the summary below.]

For those who conducted multiple consultations, do they want to talk about each consultation individually or all at the same time?

1. What was the student's project?
2. Did the research consultation take the full half hour? Otherwise, how long did it take?
3. What prior research on the topic had the student conducted?
4. What was your impression of the student's research skills at the start of the session?
5. What goals did you have for the session? That is, what did you want the students to walk away from the session having learned?
6. What steps did you take to help the student answer their questions?
7. What did the student learn?
    a. Skills
    b. Concepts
8. On a scale of one to ten, ten being highly successful, one being not successful, how successful was the session? Why did you give them this rating?
9. Did the student contact you after the consultation?
10. In your estimation, was the research consultation service the most appropriate mode for what the student needed to learn?
    a. If no, what other mode might have been more appropriate?
    b. If yes, what did the student learn from this session that would have been difficult to teach in another mode?
11. Is there anything that you wish that the student had learned during the consultation?
12. May we contact you with any follow up questions?