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Using Single-Case Research Design to Assess Course-Embedded Research Consultations

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FOR THE ASSESSMENT IN Action (AiA) project at Webster University we sought to answer the following research question: How do required research consultations with a librarian impact student learning in a graduate-level course? To answer this question we used a single-case research design with multiple baselines across participants.¹ While single-case research design is infrequently if ever used in library assessment, it is common in the fields of clinical psychology, education, and rehabilitation. The method allows investigators to quantify changes in behaviors of individuals or small groups over time because subjects act as their own control.² In practice researchers study the behavior of a subject over some time to create a baseline. After a baseline is established investigators perform an intervention aimed at changing current behavior. Following the intervention investigators observe behavior in order to identify change.³ We chose this method because of institutional context, disciplinary focus, relationship between librarian and faculty member, and the research question.

Institutional Context

Webster University is a private university with an enrollment of approximately 22,200 students located in Webster Groves, Missouri.⁴ One of Webster University's core values is a "personalized approach to education through small classes and close relationships with faculty and staff."⁵ One of the best practices for assessment identified by *The Value of Academic Libraries: A Comprehensive Research Review and Report*⁶ is to align an assessment plan with the goals and values of your institution. To that end it seemed especially fitting that we prioritize direct student contact on the part of the librarian that emphasized a personal approach to information literacy (IL) instruction. As the liaison to the School of Education, my work focused on one-shot IL instruction and individualized research consultations for undergraduate and graduate courses in various programs within the school. Instruction statistics indicated that the majority of my instruction occurred in research-intensive graduate courses. Because we sought to assess the impact of IL instruction in areas of greatest need it made sense to target a graduate course for this assessment project.

Relationship with Faculty and Course Size

In the year prior to the assessment project I built a strong working relationship with a professor in the School of Education in order to embed required one-on-one research consultations into her research methods course situated in the Master of Special Education program. She was open to collaboration for this project and required her students to complete the work necessary to produce the observable behaviors that yield meaningful assessment data. When we launched our assessment project ten students were enrolled in the course. Although small, this size was appropriate for a single-case research design.

Research Question

Anecdotally the professor and I considered the required research consultations with the students' subject librarian (me) to be a success in the year prior to the assessment. She received fewer emails from desperate students who were struggling to find relevant information for their literature reviews and I was happy to work closely with students in order to tailor my

instruction to their information needs. However even with such a small cohort there was a considerable amount of time spent on coordinating meetings, preparing for the consultations, and actually meeting with the students. Therefore it was crucial to illustrate the impact of the consultations in order to properly calculate the sustainability of this partnership. To that end we developed this research question: How do required research consultations with a librarian impact student learning in a graduate-level course?

Secondary Method: Focus Group

After choosing single-case research design as a primary method the campus team decided that a focus group would be a complementary method to the single-case design. According to the literature on mixed methods research designs, combining quantitative and qualitative elements of assessment can help to validate one form of data with another. It also can provide support if data from the single-case design did not yield the desired results.⁷ The choice to use a focus group rather than a survey was based on the social nature of focus groups and their ability to allow participants to think through questions and build on each other's comments.⁸ This was appropriate for a cohort of students who had an established culture of building on one another's ideas or challenging those with which they did not agree.

Single-Case Research Design in Practice

For our project a class of ten graduate students was divided into three groups, the first two consisting of three students each and the third having four. Baseline data were collected for the dependent variable, which were the student responses to weekly research scenarios developed by the professor and me and posted on the course learning management system. Each of these scenarios described a person in the midst of searching for articles on a given topic. Included with each scenario was the topic of the search and a list of the articles the hypothetical person had already discovered.

After reading the scenario students were asked to provide as many recommendations as they could to improve the search results of the student in the scenario. Additionally, students were required to provide rationales

for each of their recommendations. The faculty member and I scored these recommendations and rationales using a self-designed rubric. Student scores were compared before and after each student's one-on-one research consultation with me.

Focus Group in Practice

On the final day of the research methods class students participated in a focus group. In order to encourage students to speak freely about their experiences with the research consultations we invited a faculty member from the School of Education who was not involved in the project to moderate the focus group. We used two voice recorders, one acting as a backup in the event that the primary recorder failed. Students were asked a series of eight questions addressing their experiences with the research consultations as well as several questions exploring their general experiences with research as graduate students. The session lasted a total of forty minutes. A third party subsequently transcribed the recording so that comments were anonymous. We coded comments for themes using the constant comparison method.⁹

Methods and Research Question

We set out to identify the impact of research consultations on student learning in a small cohort of students. The single-case research design is meant to pinpoint the impact of interventions on subjects without the luxury of a large sample size. Since we considered research consultations to be interventions, this method served our study well. Several students were able to provide more advanced search strategies in their responses to the weekly prompts after the research consultation and therefore scored higher on the rubric.

The focus group gave students the opportunity to reflect on the impact of the librarian on their learning with the use of more open-ended questions such as "How did personal attention in the form of the one-on-one research consultation with a librarian affect your experience in this class?" Here we were able to look more closely at how students learned more complex skills like evaluating sources for relevancy and back-chaining references from a relevant source. The focus groups also allowed us to explore

other aspects of the consultation such as how students' perceptions of the librarian shifted from that of someone who only curates information to someone who possesses the skills of a teacher. This additional layer provided important insight into their experiences. Therefore the mixed methods allowed us to look directly and indirectly at the impact of the librarian on student learning.

Limitations

We encountered several limitations with the single-case research design. Though the team had established learning outcomes and a lesson plan for the research consultations, fidelity to the lesson plan wasn't always possible. Addressing the individual needs of the students was more important than rigid adherence to the plan. So some learning outcomes upon which the single-case scenarios were built could not be addressed in all research consultations. This inconsistency interfered with some students' responses to the prompts. Moreover the single case research design did not give the most comprehensive assessment of learning because each scenario focused exclusively on search strategies, which is only one of the many crucial research skills necessary for success in graduate school.

Students were required to respond to a prompt each week for eight weeks in the course site of the campus learning management system. They received participation credit for their responses and were not scored on how well they answered each prompt. This resulted in a low-stakes assignment compared to other, larger assignments throughout their semester. Therefore students might not have made their best efforts at responding to the prompts. Additionally, two students performed erratically—one scored progressively lower toward the end of the semester and another scored higher immediately after the consultation, lower in the middle of the semester, and higher again in the final two weeks. We speculated that outside factors affected their work.

Time commitment was also a limitation because the single-case design required weekly check-ins with students to remind them to complete the prompts before the deadline as well as follow up with those students who had missed deadline completely. Scoring the eighty scenarios was also time-consuming because the professor and I sought agreement on our scores. This required us to score each response individually and then meet

to discuss the scenarios we scored differently and make changes to our scores accordingly. The individual scoring took four hours and we met for two hours to reach agreement.

While the focus group produced insight into student learning, it had two limitations. First, according to best practices for collecting qualitative data holding one focus group with a class does not yield the most reliable data.¹⁰ Focus groups are typically held multiple times with different groups of participants using the same or similar questions so that investigators can see patterns. Ideally this focus group would be held with multiple classes in order to gather significant themes across responses. Second, though a third party facilitator unaffiliated with the class and the project guided the focus group and the recording was transcribed, students had built relationships with the professor and me over the semester. They knew that we would eventually examine the transcript, and even with anonymity those relationships might have persuaded them to speak more positively about their experiences with the consultations than if we were strangers.

Expertise

One of the many benefits of working with a professor from the School of Education was the expertise she brought to both single-case research design and focus groups. Having employed both methods in her own research in special education, she was able to provide guidance in the design, delivery, and reporting of our project findings. As I had no experience with either method in practice, her guidance was instrumental to the project's success.

Our third team member on this project was the Head of Institutional Effectiveness at Webster University. She was able to offer expertise regarding what tools would work best when collecting data, and how to store the data we collected. Most importantly, she advised us to use the focus group to complement the single-case design. Working with a member of University Administration also lent the project visibility on campus.

We invited a faculty member from the School of Education to conduct our focus group. This was doubly helpful. First, because she was not connected to the project students felt more comfortable speaking openly. Second, she had extensive experience conducting focus groups in her own research. Moderating a focus group can be challenging because the mod-

erator must encourage participants to speak openly and conversationally with each other while keeping the group on track with the designated questions.¹¹

Other Uses for Single-Case Research Design

This method is best employed with a single student or students in small groups. Groups could be academic or co-curricular and composed of undergraduates or graduates. For example one target audience could be a small class of undergraduate students writing a senior thesis who are required to meet individually with a librarian. Alternately, it could be students hired by the university to give tours and required to meet with a librarian before they can lead the tours on their own. In either case the small groups would need to be committed participants, which will require faculty or staff buy-in in addition to that of the students.

One additional way single-case research design could be utilized in libraries is to measure the change in skills of library student assistants after a training session. Student assistants are a rare, captive audience for librarians and a group that could be observed over a period of time. For instance, librarians who train students to work on a reference desk can implement a similar model to our design. The librarian could ask students to complete a task like a response to a scenario for several weeks. Once a baseline is set a training session would occur. After the training session the librarian continues to collect responses from students. Responses would be scored using a rubric and the scores prior to the training session would be compared against the scores post-training session.

Alternatives to Single-Case Research Design

One similar method for looking at changes in behavior before and after a research consultation is the pre- and post-test. Librarians could request that students complete a short test of information literacy skills prior to the research consultation and then complete the same test after the consultation. Scores from both tests would be compared to identify whether or not students improved. This method is more common and less time-intensive than single-case research design. However research posits that pre-and-post-tests lack validity when applied in educational settings.¹²

Since one of the limitations of single-case research design is that it provides a narrow insight into a student's information literacy skills, a more comprehensive and authentic approach to student learning outcomes assessment is to evaluate student work using an information literacy rubric tailored to the assignment.¹³ Doing so would provide a more holistic understanding of students' IL skills. Also, assessing more high-stakes assignments like final papers or projects will yield more realistic and meaningful results because students are more invested in the work being assessed.

Notes

1. Alan E. Kazdin, *Single-Case Research Designs: Methods for Clinical and Applied Settings* (New York: Oxford University Press, 1982), 132.
2. *Ibid.*, 3.
3. Alan E. Kazdin, *Behavior Modification in Applied Settings*. (Belmont, CA: Wadsworth/Thomson Learning, 2001), 75.
4. Webster University, "Fact and Figures," Webster University, accessed May 30, 2015, <http://www.webster.edu/admissions/undergraduate/facts.html>.
5. Webster University. "Webster University Mission Statement," Webster University, accessed May 30, 2015, http://www.webster.edu/faculty/faculty_resource_guide/welcome/mission.html.
6. Megan J. Oakleaf, *The Value of Academic Libraries: A Comprehensive Research Review and Report* (Chicago, IL: Association of College and Research Libraries, American Library Association, 2010), 29–32, accessed May 1, 2015, http://www.acrl.ala.org/value/?page_id=21.
7. Raya Fidel, "Are We There Yet? Mixed Methods Research in Library and Information Science," *Library & Information Science Research* 30, no. 4 (2008): 266–267, doi:10.1016/j.lisr.2008.04.001.
8. Richard A. Krueger and Mary Anne Casey, *Focus Groups: A Practical Guide for Applied Research* (Thousand Oaks, CA: Sage Publications, 2015), 4–5.
9. Barney G. Glaser and Anselm L. Strauss, *The Discovery of Grounded Theory: Strategies for Qualitative Research* (Chicago, IL: Aldine Pub. Co, 1967), 101–109.
10. Krueger and Casey, *Focus Groups: A Practical Guide*, 21–22.
11. *Ibid.*, 85.
12. Emma Marsden and Carole J. Torgerson, "Single Group, Pre- and Post-Test Research Designs: Some Methodological Concerns," *Oxford Review of Education* 38, no. 5 (October 2012): 593, doi: 10.1080/03054985.2012.731208.
13. Megan Oakleaf, "Staying on Track with Rubric Assessment: Five Institutions Investigate Information Literacy Learning," *Peer Review* 13/14, no. 4/1 (September 2011): 20–21.