How Serial Solutions Summon Impacts Undergraduate Search Behaviors

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**Abstract**

This research will explore the ways that Serials Solution’s Summon affects how students conduct research with library tools. In a pretest/posttest experiment, researchers will observe and record two groups undergraduate freshman completing tasks through the “think aloud” procedure. One group will use Summon, while another will use a traditional library catalog. After completing the tasks, participants who have used Summon will be interviewed so that researchers may gain a deeper understanding of the search experience. Finally, researchers will analyze both the quantitative and qualitative data with *t-*tests and content analysis, respectively. Because search engines like Google influence the way students search for information, this research will provide valuable information for libraries hoping to adopt web-scale discovery tools, improve library instruction, and craft new methods of remaining relevant, integral resources for students.

**Introduction**

With the improving technologies of commercial online search engines, users often avoid library resources and use only sites like Google to complete their search tasks. Research has suggested that between forty-five and eighty-five percent of users begin their research with products like Google, while only ten percent begin with library catalogs (OCLC, 2005; Griffiths and Brophy, 2005, 539). With these statistics, many libraries have since attempted to remain relevant sources for authoritative information by providing users with search tools similar to Google. Web-scale discovery tools, like Serials Solutions Summon, are innovative, simple-to-use tools that allow users that search for information in similar ways to online search engines.[[1]](#footnote-1)

With the adoption of new discovery tools, some studies have emerged, most of which are usability studies and or evaluations (Dartmouth, 2009; Wrosh, Roger-Collins, Barnes, and Marino, 2012; Wang and Mi, 2012). Others compare the efficacy of library resources with one another and to search engines (Brophy and Bawden, 2005). However, little to no research has been completed about how web-scale discovery tools influence user search behavior. Without this information, it is difficult to assess if Summon is an important resource for users and if it is effective enough to help libraries remain relevant for information and research. The completion of this study will benefit academic libraries considering web-scale discovery tools, as well as researchers seeking to learn more about how different search tools alter the way users search.

**Purpose, Questions, Objectives**

The intent of this experiment is to explore how the Summon discovery tool impacts student search behavior. It will test the Zipf Principle of Least Effort, highlighted by Case (2012), that suggests a person will “adopt a course of action that will involve the expenditure of the *probable least average of his work*—in other words, the least effort” (175). Jansen, Spink, and Saracevic (2000) refer to the Zipf Principle in their own research surrounding user web search queries with transactional log analysis and find that users of the Internet search differently than they do with other types of information-retrieval systems. Based on the results in the literature, Summon is a comparable product to Google and students appreciate its ease of use (Stone, 2010; Timpson and Sansom, 2011). The experiment method, as well as interiews, will be used to learn how students complete tasks in Summon versus a typical library catalog.   
 The research will attempt to answer the central question: “How does Summon impact the search behaviors of traditional undergraduate freshman?” Other questions the study aims to consider include:

* Does extensive searching in Summon alter student perceptions of the search experience?
* Are web-scale discovery tools the most effective ways for patrons to conduct research?
* Can web-scale discovery tools keep libraries a relevant resource in comparison with commercial search engines?

The objectives of the research are:

* To understand if Summon is an easier search tool than the library catalog;
* To gather if students improve their search tactics by using Summon tools;
* To learn whether students would prefer searching Summon over other resources;
* To explore how students perceptions of their search experiences compare with their task completion in searching.

**Literature Review**

Although there is a vast amount of literature surrounding information-seeking behavior and students, no known studies have followed how Summon or other web-scale discovery tools impact student search behavior. Serials Solutions Summon is a relatively new product, so most studies surround the implementation and usability or have compared it with either search engines like Google or other discovery tools (Milberg, 2012; Timpson and Sansom, 2011). Because little research exists about the behavior, the literature here surveys student perceptions of their habits and search experiences, their behaviors using electronic resources, and how the librarians providing these tools perceive and use them.

*Student Perspectives in Searching*

Gross and Sheridan (2012) document their usability testing on library and computer science students and follow the same conclusions about student perceptions that studies like Stone (2010) have. Researchers note that students “have trouble interpreting the screen results and understanding the differences between different formats…They often fail to realize they don’t know” how to search (242). The students were content with the single Summon search bar and confident in their habits, but the researchers observe that none used advanced searching techniques or have any in-depth understanding “of information seeking” (245). While the research findings suggest that there are many more questions to be answered about the relationship between perception and search behavior, this study should be accepted with a critical eye. Researchers test a small, homogenous group, while excluding a significant fraction of their user base, and then imply that these results extend to all populations without any evidence.

Wu and Chen (2012) perform a similar study using interviews with graduate students at a research-oriented university. In this study, researchers evaluate and compare the perceptions of graduate students by discipline: humanities, social sciences, and science and technology. Similar to Gross and Sheridan (2012), they find that seventy percent of users perceive that they understand how to use databases for searching, although the most significant problem for participants is their “inability to retrieve relevant materials” (647). This may be connected to the statistic that only one of the eighteen participants acknowledge having formal library training (647).Wu and Chen’s interview method provides an comprehensive approach to how graduate students feel about—and use—electronic resources and may be an appropriate method for other search behavior research.

While the study by Atkinson and Figueroa (1997) is outdated by technological standards, its findings are significant for this field of research. This unique study surveys two hundred undergraduate and graduate business students about their search behaviors and then documents observations by librarians of these behaviors. Two important conclusions from the data collection are that there is no indication that electronic resources have altered student search behavior, and that the online resources “have had an impact on user expectations,” such as less patience for thorough searching and higher expectations of the performance of search tools (72). The findings from this study merit more research on the changing user expectations, especially in relation to web-scale discovery tools.

*Changing Expectations and Behaviors*

At the University of Huddersfield, Martin Philip (2010) presents a usability study comprised of focus groups, questionnaires, and search tasks to assess how university students use Summon. Philip reveals that most students use the discovery tool in the same ways they search the web. Responses indicate their preference for quick, easy searching with an extensive result list. Philip (2010) recognizes that while this may be what students want, it is also Summon’s downfall. Users generally prefer Google, but choose library tools to locate relevant, quality results—a task that participants do not accomplish through Summon. The problem arises when students are unable to retrieve the results in as efficient manners as they do with search engines. As a result, the study recommends that libraries solve this by including Summon in library instruction.

Griffiths and Brophy (2005) document research of two user studies—the EDNER and EDNER+— in the United Kingdom. These studies, lasting from 2000-2005, evaluate how students use search engines and library OPACS. Their findings show that students prefer Google, rarely use academic resources, and are challenged to find relevant information and sources. While over one-fourth of the participants use the library catalog monthly, few know how to evaluate the quality of information they retrieve (547). Similar to Atkinson and Figueroa’s (1997) conclusion about changing expectations, Griffiths and Brophy (2005) determine that the use of search engines is greatly altering what students expect from the library. While the researchers do not clearly identify *how* search engines impact expectations, they do make a valid point: it is the duty of the library to react to these changing perceptions by finding an efficient manner to provide the quality information not found on Google.   
 Augustine and Greene (2002) carry out a study comprised of students performing search tasks and share one intriguing behavior: that students prefer to repeat searches in an internal search engine rather than navigate multiple pages to find the information they need. Further, the researchers are disheartened by the consistency of issues students face in researching, such as difficulty interpreting the results of a query and understanding different formats. One value of this study is that the researchers constantly refrain from making assumptions about student search behavior and instead consider that student confusions may arise in how the library presents the resources. These issues are comparable to another study by Meadows and Meadows (2012) that identifies the most popular search term on the library site as *facebook.com*. However, unlike this study, Meadows and Meadows (2012) fault the student search behaviors rather than the library’s site.

Majors (2012) carries out a significant study that compares multiple discovery systems at the University of Colorado. Here, researchers test undergraduate students in task-based, “think out loud” assessment, a methodology where participants complete tasks with the discovery tools and then verbally express their reactions to the process (189). While Summon performed better than most other discovery tools, only two-thirds of the students rated finding items as an easy task. The largest issues were the confusing vocabulary and the misconception that Summon would retrieve results outside of library holdings. Although researchers here focus on the usability of the products rather than the search behaviors of the students, the particular method is one other studies can utilize, because it allows researchers to observe student search behaviors while simultaneously getting firsthand accounts of student opinions and experiences.

While students generally perceive tools like Summon to be beneficial for their searching, the results from these studies complicate the discussion. Summon is a comparable library resource to Google, but it still constitutes many challenges for students. Because there are so many types of search behaviors and many complications that arise in the search process for students, further research is needed to understand how to improve either the library tools or library instruction. When researchers can observe that students are able to efficiently and successfully search for information with web-scale discovery tools, then libraries can feel comfortable as relevant resources for their users.

*Librarian Perceptions and Experiences*

Currently, some research exists to document how librarians perceive the tools for their students and use them in their instruction. This research provides a beneficial perspective for the conversation, allowing researchers to have a comprehensive understanding of how web-scale discovery tools are changing the libraries today.

Stefanie Buck and Margaret Mellinger (2011) survey how librarians not only use, but also teach, Summon in the academic library. After emailing surveys to sixty libraries around the world, they share that fifty-six percent of librarians are pleased with Summon, although students are generally more satisfied (14). This statistic demonstrates a discrepancy between the student and librarian opinions about web-scale discovery tools, which merits more research. Most librarians cited their issues as the tool delivering too many—often irrelevant—results and being too complicated for basic searching. However, librarians appreciate Summon as a good “starting point” for research that provides users with an interdisciplinary list of results for any search (10). Buck and Mellinger (2011) suggest more information is needed to better comprehend how librarians adapt to this new tool in libraries and teach their skills to users.

Contrary to the tone of librarian ambivalence towards Summon in Buck and Mellinger’s (2011) study, Boyer and Besaw (2012) acknowledge that one hundred percent of the librarians in their study found Summon to be a useful, important search tool. Further, the librarians admitted that they appreciated the tool the more they worked with it. These findings are important for the subject; if librarians change their perceptions of the tool the more they know how to use it, then students may be more inclined to use tools like Summon, rather than Google, for their research needs. Unfortunately, there are problems with this research: the small sample of librarians, and the failure to track how individuals progressed in the three parts of the study. While this challenges the significance of the results, the findings are critical for research on search behaviors—with more understanding and use, a patron may more efficiently search for the most relevant, authoritative information.

While some studies track how search engines like Google influence student search behaviors (Rieger, 2009), only Atkinson and Figeuroa (1997) deliberately considered the impact of new library tools. Surprisingly, no research has suggested that library resources, such as Summon, can change the ways students search. However, because the literature argues that users are changing perceptions of the ways they search and their expectations of tools, the study outlined here is necessary for the topic of student search behaviors. By researching how Summon may impact the way students search, librarians will be better equipped to improve library search tools and instruction.

**Methodology**

Because the research seeks to answer how the discovery tool influences the way users search, the proposed methodology will be a pretest/posttest experiment, but will be a mixed methods approach for more in-depth research. Quantitative methodology—more specifically, a pretest/posttest experiment allows researchers to analyze how users make decisions in their search processes before the implementation of the discovery tool and after. According to Creswell (2009), “the basic intent of an experimental design is to test the impact of a treatment (or an intervention) on an outcome” (146). The expectation is that by introducing a new method of library searching similar to successful web search engines, students will not only improve their searches, but have improved experiences with library research. This methodology is found regularly in usability tests, as well as research surrounding information-seeking behaviors (Daniels and Yakel, 2010; Churkovich and Oughtred, 2002; Pendell and Bowman, 2012).

To gather a sample of qualified candidates, researchers will post flyers around high-traffic areas at the University of Pittsburgh one month before the anticipated start of the experiment. To ensure an adequate number of responses, users will be rewarded with a gift card to a popular restaurant for each phase completed and will receive the incentive after full completion of the experiment. Researchers will screen for traditional, freshman undergraduate students and aim for a variety of majors and backgrounds. Further, participants must have no formal library instruction from University of Pittsburgh ULS.

The researchers will gather a total of twelve individuals who will be randomly separated into two groups—one that will search Pittcat+, which is the specific Summons discovery tool for the University of Pittsburgh, and another who will search Pittcat Classic(the library catalog for books and other materials) alongside a list of database holdings for journals. Each test will include a list of tasks (ten for the pretest and five for the posttest) that will slightly increase in complexity. There is an expected one hour-one and a half hour duration for the initial test and thirty to forty-five minutes duration for the posttest. The tasks will remain the same for both groups and range from locating peer-reviewed articles to an eBook to materials about a specified subject.

The participants will be asked to “think aloud” during their test so that researchers may record both their actions and responses to the task with a camcorder. The “think aloud” procedure “entails observing and recording how users’ interact with the library Web site in attempting to perform certain tasks” (Cockrell and Jayne, 2002). Researchers will be present to record the test, answer any non-research related questions, and jot down any notes. Another difference between the two tests is that the group using Pittcat+/Summon will complete a semi-structured exit interview lasting approximately thirty minutes. Based on the results from the literature review, researchers can see that student perceptions are often related to their search behaviors. By interviewing participants in the group using Pittcat+ about their overall reactions to using the product, researchers will be able to get a more complete understanding of their search behaviors.

The duration between each test will be approximately three weeks —to allow for time to code and analyze the data after the pretest and to encourage the participants to remove themselves from the experiment. Researchers expect that participants may use the products outside of the tests and will inquire about it in the interview.

This methodology will create a mass of data—from the tasks completed for each group to each participant’s responses during the tests to the information collected in the exit interviews. To analyze and code this data, researchers will attempt to answer questions such as:

* Where participants face problems in completing the tasks,
* How long it takes to give up or complete a task;
* How they respond to finding/not finding an answer;
* When they do not understand how to use a tool;
* The comparison between their comments and their actions;
* And, their method, if it is of particular interest.

The data will be coded from the tasks, the video recording observations, and the final interviews. The data analysis will follow the five steps of data analysis procedures outlined by Creswell and Clark (2007). Further, because there are quantitative results from two different groups , *t-tests* will be used. Denscombe (2010) recommends the *t*-test for researchers “who wish to compare two sets of data to see if there is a significant difference between them” (256). For the qualitative analysis, researchers will utilize mostly content analysis. Because content analysis is “independent of theoretical perspective or framework” and also can be utilized in quantitative work, this will be beneficial to analyzing the many types of data gathered (Julien, 2008). All information will be organized, backed-up, and stored via Microsoft Excel.

**Ethical Issues**

Since the researchers are using personal interviews and detailed observations of human participants, some areas of the experiment may raise ethical issues. Because both the experiment and the interviews will be recorded, it is of utmost importance that participant anonymity is kept. To remain an ethical experiment, the researchers will gather consent forms from each participant and fully explain the details of the experiment. Although this may conflict with how the participants act, researchers will remind participants of their anonymity and explain that they are merely using and not evaluating the product. Further, the data collected here will be kept private via a secured external hard drive used only for this study. If there are any conflicts or issues, the participants have the option to review their part in the study and erase any or all of their recordings.

**Practical Aspects**

Because the researchers will attempt to gather participants from flyers, a possible constraint may be the lack of responses from participants. In the event that this occurs, researchers will attempt to change the incentive or personally recruit participants in high-traffic areas during busy times. Further, the study will need to begin in the first weeks of fall semester, when participants are new freshman and unfamiliar with the library search tools.

The funds necessary for completion of the study are reasonable; researchers will provide participants with a monetary incentive. To defray other costs, researchers will rent recording equipment and use Excel, as stated above, both of which are available free of cost from the University of Pittsburgh. A timeline is outlined below:

* August 20-September 20: Recruit and screen participants
* September 8-Begin testing each group of participants (4 per week for a total of 3 weeks)
  + This will allow for 8 hours of the test per week and 15-30 hours of coding
* September 29-Begin posttest for each group of participants in the same order to allow a
  + three week break between tests for each participant.
* October 15- Begin organizing and analyzing coded data; data will be coded as tests and interviews are conducted
* October 29-November 20-Write up the methodology and findings

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**Word Count: 3298**

Appendix: Search Strategies

**Databases Consulted:** Google Scholar, Library Literature and Information Science Full Text (H.W. Wilson), Pittcat+

**Key Terms:** Search Behavior, Student Search Behavior, Student Searching, Student Information-Seeking Behavior\*, Summon, Serials Solutions Summon, Usability, Assessment, Web-Scale Delivery System, Discovery Tools

**Issues Arising from the Topic:**

Although this proposal uses a significant amount of material from the initial literature review, some research was necessary to add more information about search behavior in general. The issue of locating literature about student search behaviors with library tools was prevalent, simply because many of the library tools are still new. To rectify this, the literature review, as well as other information throughout the proposal, cited more broad studies and research on information-seeking behavior, search behavior, and the comparisons of library tools with Google.

Appendix: Pretest Task Questions  
*(Draft)*

1. Please find information about the women’s suffrage movement in France from the 20th century.
2. Please locate two peer-reviewed articles discussing global warming as a conspiracy.
3. You need to find a newspaper source, in Spanish, about European cruises.
4. You want to find an eBook source on urinary tract infections in teenage girls.
5. Please find an audio source about fair use.
6. You want to find trade articles on corporate governance that have are current (after 2009).
7. You once read a short story about boys who drowned in a sea of light. You know the story is by Gabriel Garcia Marquez.
8. You want to find a new, popular title out in the mystery genre about spouse murders.
9. You’re doing a paper on Venezuela after Hugo Chavez’s death. You need to find sources from three journals, but the sources must be about different subjects, like technology, international relations, religion.
10. You’re trying to find information about trauma in literature. More specifically, you’d like to learn about trauma brought on by large-scale genocide, like the Holocaust.

1. Web-scale delivery tools are defined by Julie Gross and Lutie Sheridan (2011) as a way of “combining access to both library catalogue and journal database content in one search tool” (237). [↑](#footnote-ref-1)