

Evaluating the Searching Abilities of OU Health Sciences Center Students

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## **Introduction**

University libraries need to teach library instruction courses so that students may learn to search for reputable and relevant information. This is even more true among health sciences libraries, as the health care field must be focused on evidence-based practice in order to deliver positive outcomes to patients. Many libraries question the effectiveness of their own instruction framework, and therefore conduct evaluations so that they may improve. The literature is replete with examples of other institutions' evaluations of their library instruction methods. By examining this literature, the OU Health Sciences Center may design an effective study of their own practices. The literature consulted encompasses significant topics, including: the reliability (or lack thereof) of students' perceptions of their searching abilities, comparisons of online vs. face-to-face instruction, the creation of online tutorials, and the efficacy of participating in multiple instruction sessions.

## **Literature Review**

### **Student Perceptions**

In the literature there are multiple references to students' perceptions of their searching abilities, and how these perceptions are often incorrect. Many librarians receive feedback from students, as well as professors, wondering why they spend time teaching students to search, as many of these students feel that they already know how to successfully retrieve information. Lawrence and Levy (2004) found that asking students to complete a survey both before and after instruction allowed students to realize their perceptions of their searching abilities were incorrect. In their study of over 200 students, 53% to 63% asserted that they already knew each skill that would be taught. Despite the students' early feelings that they were capable searchers,

the post-instruction survey revealed that “between 71% and 95% of students [learned] something about each skill” presented in the instruction module (2004, 76).

The researchers concluded that librarians should be aware that students do not have a reliable understanding of the gaps in their knowledge, and that they should teach instruction despite student protests (Lawrence and Levy 2004, 80). In other studies, researchers did not include a pre- or mid-instruction assessment, though they stated doing so would have been beneficial, as they discovered it would be useful to understand the students’ perceptions before moving forward with instruction (Minuti et al. 2018, 129).

Librarians in Australia studied the effectiveness of their instruction as part of evidence-based medicine coursework. In this study, the researchers assessed the perceptions of all students in the study, then they taught information retrieval to the intervention group (Ilic, Tepper, and Misso 2012, 193). The intervention group reported an increased confidence in their searching abilities. Additionally, they demonstrated solid understanding of the concepts, via a test given immediately after instruction was taught. However, the researchers found that, over the course of 6 months, the students forgot much of what they learned. Despite this lack of retention, these students perceived that their searching abilities remained the same over time. Therefore, the researchers concluded that the students’ “confidence should be viewed with caution, since it does not necessarily correlate with a higher competency” in information retrieval (2012, 194).

### Face-to-Face Instruction

Historically, instruction was taught in a classroom setting, with students and librarians engaging directly, face to face. However, in recent years, many institutions have moved to online methods for delivering instruction. Those who still teach instruction in a classroom setting have

done so for reasons beyond mere retention of knowledge. Researchers in Buffalo, NY teach their instruction sessions as a part of interprofessional education sessions (Aronoff et al. 2017, 376). These sessions are intended to serve two purposes: to teach students to retrieve information so that they may utilize evidence in their clinical practices, and to encourage students of different professions to collaborate and improve outcomes for their patients (2017, 376). This collaboration was fostered through group assignments utilized during classroom instruction sessions. Additionally, the researchers found that they not only improved students' searching abilities, but they proved to their fellow faculty members that librarians deserve to be included in interprofessional discussions (2017, 382).

In Aronoff's study, a flipped-classroom method of instruction was utilized. The literature reflects that such methods for instruction are common. Some institutions developed online tutorials that were utilized in conjunction with face-to-face instruction. Using the "see-one, do-one, teach-one" model, students observed how to search and then practiced their own searching, both through the online tutorial. Then students came to the classroom session, where they worked on searches together, teaching one another what they learned (Minuti 2018, 121). Students were given a week to complete the online tutorial, then librarians took 3 days to assess the students' performance, so that they may address gaps in the students' knowledge during the classroom session (2018, 124). Unfortunately, the librarians discovered that the students did not retain most of the information covered in instruction (2018, 124).

At some institutions, librarians split PubMed instruction into multiple modules, assigned each group of students a module, and asked these groups to instruct the rest of the class on their given topic. The librarian instructors found varying results with each group of students taught: some were "collaborative and engaging" while other groups were unwilling to cooperate without

intervention (Turner et al. 2017, 295). This resulted in class presentations of varying quality; some groups needed a librarian to contribute so that the class received all relevant information. The efficacy of this flipped-classroom model is mixed. Students reported that they enjoyed learning from each other, but some stated that they only learned their assigned module and didn't gain much from the other groups' presentations (2017, 296).

Researchers at LSU also used a flipped-classroom format, but incorporated history of medicine into their instruction. Each group was assigned a different case study from a historical text; they were then encouraged to search for current literature outlining how to treat such a case (Timm et al. 2012, 259). By utilizing the history of medicine into their instruction, the researchers reported that the "students are totally engaged in the process" of searching (2012, 262). This engagement resulted in better searches and stronger group presentations (2012, 260). Additionally, student feedback on these sessions was very positive (2012, 263).

### Online Instruction

In order to transition to online learning, many universities created their own web tutorials. Some were created as the sole form of instruction, while some were utilized in conjunction with face-to-face instruction. Creating these tutorials was a difficult task, and all reported that the process took longer than anticipated to complete. One key reason that contributed to the difficulty was the frequently-changing nature of online databases (Gravett and Gill 2010, 69). The researchers attempted to make the tutorials specific, guiding users on what buttons and links to click and what search boxes to utilize. However, changes made to the databases resulted in outdated information on the screencast (2010, 69). Additionally, the

researchers needed to be mindful of e-copyrights, seeking permission from the databases when displaying them in the tutorial (2010, 69).

Other difficulties in creating tutorials occurred based on the technologies used. One institution recorded their audio and video, only to discover their chosen technologies could not be combined and incorporated with their screencasts (Gravett and Gill, 2010, 69). Even when the correct technologies were identified and utilized, web pages had to be created to properly display the tutorials. One institution found that a combination of LibGuides, LibWizard, and Adobe Captivate yielded the best results for tutorial creation (Minuti et al. 2018, 121). This institution opted to create two separate tutorials, one aimed at first-year students, and the other focused on those in the second year (2018, 122).

While these papers discuss the creation of the tutorials themselves, far more of the literature is focused on evaluating online methods for instruction. Kratochvil (2013) outlined in his paper how he assessed student feedback after participating in a semester-long instruction course. He found that most students appreciated the semester-long format, as the “gradual releases of the study materials” motivated them to continue learning about searching (Kratochvil 2013, 61). His course was not required, so continual engagement in learning was imperative for students to be willing to complete the course. Most students, 93.8%, also reported satisfaction at the flexibility experienced in e-learning (2013, 61). While the benefits of the course were significant, not many students chose to take the course. Kratochvil concluded that the librarians in his institution must do a better job of publicizing the course to students and faculty (2013, 66).

Meanwhile, Schimming (2008) assessed the outcomes of online learning to determine whether students obtained a comparable level of knowledge as those taught in face-to-face sessions. In her study, both instruction formats covered the same material: PubMed, keyword

searching, Medical Subject Headings, and field-specific searches (Schimming 2008, 218). After instruction, the students were given a PubMed skills assessment, and asked to complete a survey about the method of instruction. She stated that scores on the skills assessment remained the same despite the method of instruction; however, student satisfaction was significantly higher in the online courses (2008, 220). Furthermore, she reported that students in her face-to-face class questioned the necessity of taking an instruction course, while “students who completed the online tutorial rarely commented that the PubMed training or skills assessment should be optional” (2008, 220).

Other papers came to the same conclusion as Schimming: that online instruction is just as effective as face-to-face sessions. Researchers at Duke University had similarly satisfying results in their student skills assessment. However, they found that more of their students could identify key concepts in a clinical question than could perform an effective search of those terms (Tuttle et al. 2009, 205). This was not surprising, however, as their tutorial focused heavily on creating clinical questions (2009, 202). The researchers found that, should time permit, a follow-up session should be scheduled to reinforce concepts with which the students struggled (2009, 206).

### Multiple-Session Instruction

One concept resonated across the literature: teach multiple instructions sessions. In many of the studies that focused on only one instruction session, researchers stated in their “next steps” that they would like to expand their instruction into an additional session. However, some papers focused on the benefits of multiple sessions, rather than merely mentioning them as a future action their institution could take. At the Einstein College of Medicine, instruction is “embedded into the curriculum at the beginning of the first and second years of medical school” (Minuti et

al. 2018, 120). Librarians initially taught different information in the second year than what was covered in the first year. However, they found that the students did not retain what they learned the first year, so they now require second-year students to repeat the modules covered in the first year (2018, 129). The librarians hope that this iterative process will enable the students to retain what they learn. They plan to design a questionnaire “to measure students’ perceived retention of the EBM skills covered;” this questionnaire would be distributed at the beginning of the third year (2018, 129).

To ascertain the effectiveness of repeated instruction, Pell (2017) analyzed the data set for his instruction sessions. This data set was made up of attendance records for his sessions as well as grading rubrics and assignment scores on assignments given in the course in which his instruction session is embedded (Pell 2017, 108). He compared the assignments scores of students who attended both sessions to the scores of students who attended one or none of his instruction sessions. Pell reported that “students who attended both library instruction sessions were likely to score above the median assignment score” (2017, 109). He also observed that students who attended both sessions were more likely to retrieve literature reviews related to their assignment (2017, 109). Pell acknowledged that the results of this study prove a correlation between session attendance and assignment scores, but do not prove that session attendance is the sole cause of higher scores. Students who put forth the effort to attend these sessions are also more likely to put in the effort required to excel in their assignments.

### **Conclusion**

There are many studies and evaluations performed on the subject of information retrieval in the health sciences. Some focus on students’ perceptions, some on the method of delivery, and



still others on the frequency of instruction. Student perceptions of their searching abilities tend to be inaccurate and cannot be trusted as a measure of their searching ability. The method of delivery for instruction does not appear to matter; students who learn via online tutorials perform equally well as students in face-to-face instruction. Additionally, studies show that students need repeated instruction training to retain information. These studies have been conducted so that each institution may provide the best instruction possible, in keeping with the trend of evidence-based practice in libraries. The literature overwhelmingly supports the importance of teaching students to retrieve information, though each institution may choose to conduct instruction in a slightly different manner. These differences in methods make it necessary for each institution to examine their own effectiveness. For this reason, the OU Health Sciences Center has chosen to evaluate their instruction practices.

### **Purpose of the Study**

Students at the OU Health Sciences Center (OUHSC) must rely on internet searching to perform in their coursework. The reference and instruction librarians in the OUHSC library (Bird Library) seek to ascertain how students perceive their ability to search for academic information, and how this perception changes after attending a library instruction session. Bird Library employees have heard via word-of-mouth that many students search for materials as they would search on Google; in fact, many students use Google for scholarly information. This study is an evaluation of these students' abilities to search and the effectiveness of Bird Library's instruction sessions on OUHSC students.

The information gathered will be used for two primary purposes: to determine whether it

would be of value to establish a department-wide framework for in-class instruction, and to assess what, if any, changes should be made to the current instruction curriculum. To gather this information, Bird Library has crafted a survey to administer to students. The survey will be conducted in two parts, first to students who have not attended a library instruction session at Bird Library, then the second part will be completed by students after they participate in library instruction.

### Research Questions

1. To what extent do students believe they are effective in performing academic searches?
2. Are students aware the library offers instruction session appointments? What methods of informing users about instruction would you find most successful?
3. After participating in a library instruction session, how do students' perceptions of their ability to search change?

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