Exploratory Implementation of Flipped Classroom Practices on Library Instruction

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Introduction
General library instruction sessions have changed over the last several decades. Common today are varying degrees of “one-shot” general sessions to continuation sessions that occur at various points through the research process.¹ Librarians work to create detailed outlines, ensuring their instruction session covers all of the necessary information in a logical fashion, the arrival of online tutorials has provided alternate means in the way library instruction can be provided. In the pilot study of this research project, two sections of the same Education course were used. Offering two different deliveries of instruction—traditional “show and tell” and a flipped session with embedded videos into the course management software.

In this exploratory research project, library faculty collaborated with teaching faculty to provide library instruction to students in a multi-section course. Students received either traditional library instruction or instruction through the use of videos in a flipped classroom environment. While both sections came to the library for instruction, one section received a 30-minute traditional library instruction which provided an overview of the research process and the resources available while the second section was allotted the full class period to utilize library resources as they researched various topics with immediate research assistance being provided by the researchers. A survey was administered, and it was determined that both sections (traditional library instruction and flipped library instruction) showed an increase in comfort levels using library resources. Additionally, all students showed success in the short assignment utilized in the course about locating scholarly journal articles. It was decided by the researchers to replicate this pilot study during Fall 2016 and Spring 2017 semesters to gather additional substantive evidence for best practices in library instruction.

Literature Review
Classroom instruction has changed quite a bit in the last decade. More classes are being offered online or in a hybrid design. The idea of providing students with information from a variety of resources has been gaining interest. In 2005, Salman Khan, founder of Khan Academy, stumbled upon the idea of using YouTube videos with his cousins to assist them virtually with their math and science curriculum.² Khan Academy, an educational website, uses the tagline “learn almost anything—for free”.³ “Students or anyone interested can watch over 2,400 videos in which Salman discusses principles of math, science, and economics with a bit of social science thrown in.”⁴ As

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many teachers tend to view themselves as the basis of knowledge in their field of study, lectures and notetaking have proven to be the process of learning in many K–12 classrooms, as well as in higher education. As learning moves toward a student-centered environment, the use of flipped instruction allows teachers, instructors, and librarians to provide more one-on-one instruction. Bergmann & Sams stated how “flipping the classroom establishes a framework that ensures students receive a personalized education tailored to their individual needs” (p.6).

When looking historically at undergraduate classes, large class size has been typical for over a decade and in 2016, the trend in increasing class size continues in higher education. As enrollment continues to grow in higher education funding has remained flat, leading to larger class size with fewer sections being offerings which has become a challenge in higher education. This new learning environment exemplifies the need for innovative ways to deliver content if instructors are to ensure a high level of student learning.

When using a flipped approach to learning, “what is normally done in class and what is normally done as homework is switched or flipped.” Flipping the classroom is driving changes to traditional instruction. The days of standing in front of students, expecting them to take copious notes, while the professor shares content in a lecture format, are rapidly changing. Instead, students are engaged outside the classroom via a video, recorded lecture, or other means of obtaining the information while class time is used for hands-on experience. This has proven successful across many disciplines, including library instruction.

Libraries in general struggle with reaching students to assist them with their informational needs. At Spartanburg Community College in South Carolina, instruction sessions have reached the point where the demand for library assistance exceeds the availability of librarians to teach the library instruction sessions. “One-shot” library instruction sessions are common in institutions of higher learning and with the increase in class size; these instruction sessions are proving to be a challenge due in part to the task of finding a space large enough for auditorium-sized classes. At Lakeside Upper School in Seattle, Washington librarians began looking into flipping their library orientation sessions and answering questions for students while utilizing new technology, such as PollEverywhere.com, to engage their students. By including videos and technology that students are familiar with, schools are seeing success in not only providing sufficient library information but also developing an interest in libraries and their services.

**Methodology**

Within institutions of higher learning, library instruction sessions (often called Bibliographic Instruction Sessions, or BIs) are provided by librarians. These sessions usually include an introduction to the library’s webpage, resources and services available, and an overview of guides or tools available to assist in the research process. Common means of providing instruction consists of librarians demonstrating how to navigate library resources while students replicate the steps and searches at their designated computers. Instruction sessions vary in length depending on time available or the type of research being conducted by the students. Currently, there is not a course designated that would include library instruction, so all instruction sessions are established through one-on-one communication with classroom faculty.

There were two hypotheses posed by the researchers—1. students participating in flipped instruction will demonstrate a stronger self-perception of confidence in the use of library resources and 2. students will utilize scholarly resources, resulting in higher success on their final project. The logic for these hypothesis is that students have the opportunity to view the library instruction videos in the flipped environment as many times as needed and thus the time spent in the library setting would be one-on-one with students who were already having a solid understanding of library resources and materials based upon the videos.

The focus of this exploratory research was to analyze student’s self-efficacy and official grades on a research-based project. Students participated in either a traditional library instruction or flipped library instruction ses-
sion. Traditional library instruction was provided as indicated above while flipped instruction was provided via tutorials created by librarians. The videos were embedded into the online content management system (D2L) giving the students an opportunity to view them before arrival in the library. Students, who agreed to participate in the study completed one of two surveys (one for traditional instruction, one for online videos) at the end of the library instruction session. The survey questions were multiple choice with a short-answer conclusion (See Appendices A and B).

The pilot research was conducted during the fall semester of 2015 with Phase 2 conducted in fall of 2016 and phase 3 currently underway spring of 2017. The pilot study used a course in the College of Education, phase 2 used a college writing course, and the current phase is using a capstone course in criminal justice. A research proposal was submitted to the Institutional Review Board (IRB) and students signed letters of consent to participate. All student scores collected from teaching faculty were anonymous since all identifiers were removed.

Setting and Participants
The setting for this research was an academic library at a mid-sized institution of higher learning in western Pennsylvania. Seven-course sections have participated or are currently participating in the research process—two from the College of Education (Fall 2015) and five from the College of Liberal Arts (English Fall 2016 and Criminal Justice Spring 2017). The library instruction sessions were held in the instruction lab in the library. The first wave of participants were Early Childhood Education majors with the majority holding an academic rank of Junior. The second wave were students in an introduction English class and over 90% of the participants held an academic rank of Freshman.

Library instruction sections were 50 minutes in length, which corresponds to the designated class length. Traditional instruction participants received 30—35 minutes of instruction with 15—20 minutes for self-paced searching. Flipped instruction consisted of a brief welcome and acknowledgment that videos should have been viewed and that the entire 50-minute session was for independent searching (with librarians available for questions and assistance).

Implementation of Instruction

Traditional Instruction
Library instruction in the traditional setting followed a general outline, ensuring that the identified key resources and services (as decided upon by the researchers) were covered. Included in the traditional library instruction setting was information regarding the general access and use of the library webpage, including how to navigate the LibGuides pages and the library catalog. The majority of the session focused on accessing the databases, developing appropriate search terms, conducting several searches in selected databases, and evaluating the results. Within the result records, the researchers demonstrated how to extract information to successfully construct citations. Lastly, the use of Interlibrary Loan (ILL) was demonstrate. Following instruction and a period for questions, students were able to use the remaining class time to begin using the library resources for their assigned topics.

Flipped Instruction
Before attending the flipped library instruction session, students in designated course sections were asked to view a series of video tutorials. There were 12 videos available for students to view with an average length between 2—4 minutes. The videos are available on the library webpage within the LibGuides and were also embedded in the online course (D2L) by the professor. Topics covered in the videos included accessing databases, da-
database searching, accessing LibGuides, Boolean operators, developing a research question, search terms, OPAC (parts 1 & 2), and Interlibrary Loan (ILL)/ILLiad. A brief welcome was made by the librarians, and the entire 50-minute session was for students to begin their research projects.

The second wave of research was identical to the first with the addition of a quiz that was embedded into course shell for students receiving flipped library instruction. This quiz was to be completed before arriving at the library. All students participating in this study completed the quiz with a score of 80% or higher.

**Data Collection and Analysis**

**Survey Data**

Data utilized in this research included completed surveys addressing students’ self-efficacy before and following the library instruction session and the final grade on the assignment. The survey consisted of five multiple choice questions with an open-ended call for comments. Students were asked their rank (Freshman, Sophomore, Junior, Senior, Graduate, Other), number of library instruction sessions attended prior to the current session, and to identify their ability to use library resources prior to the instruction session (A = Novice, B = Beginner, C= Intermediate, D = Advanced). The final question of the survey provided students with the following list of items in which they felt they needed further assistance—

a. Knowing where to get help in the library

b. Understanding how to construct a search when doing research

c. Finding books related to your topic

d. Finding articles related to your topic

e. Using electronic databases to locate articles

f. Obtaining library materials not owned by SRU

g. I am not having any trouble with the library

Survey data was analyzed regarding the growth in self-efficacy of library usage before and after instruction as well as areas that need further clarification for future participants. Data was compared by looking at all students receiving traditional instruction verses flipped instruction.

**Students Receiving Traditional Instruction**

In the traditional setting, there was a total of 74 students (3 sections total) signing consent forms and agreeing to participate. According to the survey results, of the 74 participants, 42 indicated that they felt a growth in confidence in using library services, 34% indicated they were not having any trouble in the library, 19% indicated a need for assistance in finding books for their topic, and 31% marked the box seeking more information on how to obtain library materials not owned by SRU.

**Students Receiving Flipped Instruction**

Of the 45 students participating in this exploratory research project, 53% noted they were not having any trouble in using library services, and 51% felt an improvement in their ability to access and use library resources. As with the students receiving traditional instruction, locating book relating to their topics (43%) and obtaining library materials not owned by SRU (65%) were the highest areas of need.

**Assignment Data**

During the fall 2015 semester, the assignment developed did not accurately reflect the desired outcome of the research. All students participating received full marks on successful completion of the assignment. As this data
did not prove useful, it was determined that an official research-style assignment would be necessary for future studies. This lead to the inclusion of the English course which required a 12-page paper during the fall 2016 academic semester. Final course grades for students participating in the study were as follows: ENGL 102-01 (23 students, Traditional Instruction)—15 A’s, 4 B’s, and 4 C’s; ENGL 102-06 (26 students, Traditional Instruction)—10 A’s, 12 B’s, and 4 C’s; ENGL 102-08 (18 students, Flipped Instruction)—4 A’s, 9 B’s, 2 C’s, 2 D’s, and 1 F. It should be noted that two students in the Flipped classroom were unidentifiable based on their printed name and signature on the consent form and thus removed from the study. In the traditional library instruction classroom 83% (ENGL 102-01) and 84% (ENGL 102-06) of students scored ‘B’ or higher on their research paper whereas 73% of students participating in the flipped library instruction session scored ‘B’ or higher. A potential challenge with the study included video access, as some students verbally indicated during the library instruction session that they were unable to watch all of the videos due to technology issues. As these findings were surprising to the researchers, a future implementation may support these findings indicating that traditional library instruction supports higher writing scores. Listed in Appendix C are charts depicting the demographic and survey results of phase 1 and 2 of the research study.

Summary

Upon review of the data, it is clear that library instruction (in either format) is important and necessary for student success. Based upon the pilot study and phase 2 results the flipped instruction did not significantly increase students’ perception of their ability or the scores from the related assignment. Thus, the researchers are currently conducting phase 3 to discover if students’ benefit more from traditional library instruction or flipped instruction. About the assignment for the English students, the distribution of grades did not support the hypothesis that flipped instruction would show higher scores. In fact, it was the opposite as there were more grades of “A” assigned and no failing grades for students in the traditional library instruction setting.

Limitation of the Study

As library instruction sessions occur in high volume, it has become a challenge to locate one professor who is teaching two sections of the same course and is including a research component in said course. Due to class size, many classes occur in the lecture hall setting, and research-based assignments are minimal. The data extracted to this point is in need of additional points of comparison, thus continuing to provide library instruction in different methods and assessing these methods is necessary. Also, the lack of assignment data from the pilot phase leaves a gap in comparison of phase 1 and 2 and ultimately phase 3 regarding value of instruction relating to successful completion of the assignment. An additional limitation is the survey itself. It is assumed that participants are being honest in their responses to the survey questions.

Future Implementation

As the researchers continue to develop best practices in flipping library instruction, the need to address assessment has arisen. Boles et al.11 pose the important question in the flipped environment, how do we ensure that our students actually watch the instruction video? The use of quizzes or short open-ended questions is a means to determine if students did in fact, view the videos.

The researchers plan to create additional library tutorial videos as a means to providing more research assistance to students in the flipped classroom environment. In addition, based upon the results of phase 3 which is currently underway the researchers may revise the embedded quiz and recruit a teaching faculty for the fall 2017.
Appendix A. Student Library Instruction Survey (Traditional)

The purpose of this survey is to determine the effectiveness of the library instruction session you have attended for this class. Please complete this survey and return it to your professor. We appreciate your cooperation!

1. For what class was the library instruction held?__________________________

2. Status (please select one):

3. Was this the first library instruction session you’ve attended?
   a. Yes_____ b. No_____ c. If no, how many sessions?_____

4. Prior to coming to this library session, how would you have ranked your knowledge of doing research in a library?

5. After having attended this library session, how would you rank your knowledge of doing research in a library?

6. After attending the instruction session, where are you still having problems in the library? (Check all that apply).
   a. ___Knowing where to get help in the library
   b. ___Understanding how to construct a search when doing research
   c. ___Finding books related to your topic
   d. ___Finding articles related to your topic
   e. ___Using electronic databases to locate articles
   f. ___Obtaining library materials not owned by SRU
   g. ___I am not having any trouble with the library

COMMENTS:
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(Please continue comments on the other side if necessary)
Appendix B. Student Online Library Instruction Survey (Flipped)

The purpose of this survey is to determine the effectiveness of the library instruction sessions you viewed for this class. Please complete this survey and return it to your professor. We appreciate your cooperation!

1. For what class was the library instruction held? __________________________

2. Status (please select one):

3. Was this the first library instruction session you’ve viewed?
   a. Yes_____ b. No_____ c. If no, how many sessions?_____

4. Prior to coming to this library session, how would you have ranked your knowledge of doing research in a library?

5. After having watched this library session, how would you rank your knowledge of doing research in a library?

6. After watching the instruction session, where are you still having problems in the library? (Check all that apply).
   a. ___Knowing where to get help in the library
   b. ___Understanding how to construct a search when doing research
   c. ___Finding books related to your topic
   d. ___Finding articles related to your topic
   e. ___Using electronic databases to locate articles
   f. ___Obtaining library materials not owned by SRU
   g. ___I am not having any trouble with the library

COMMENTS:
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Appendix C

Question 2: Status (select one): Freshman, sophomore, junior, senior, graduate, other

Pilot Study: Flipped Instruction

Pilot Study: Traditional Instruction

Question 3: Was this the first library instruction session you’ve viewed?

Question 3A: If no, how many sessions? ** Ledger indicates red as having 2 instruction sessions and purple indicates having 3 instruction session.

Pilot Study: Flipped Instruction

Pilot Study: Traditional Instruction
Question 4: Prior to coming to this library session, how would you have ranked your knowledge of doing research in a library? Novice, beginner, intermediate, advanced

Pilot Study: Flipped Instruction

Pilot Study: Traditional Instruction

Question 5: After (having attended this library session or watching the instruction session) would you rank your knowledge doing research in the library as: Novice, beginner, intermediate, or advanced.

Pilot Study: Flipped Instruction

Pilot Study: Traditional Instruction
Question 6: After (attending or watching) the instruction (session or videos), where are you still having problems in the library? (Check all that apply):

a. Knowing where to get help in the library
b. Understanding how to construct a search when doing research
c. Finding books related to your topic
d. Finding articles related to your topic
e. Using electronic databases to locate articles
f. Obtaining library materials not owned by SRU
g. I am not having any trouble with the library

Pilot Study: Flipped Instruction

Pilot Study: Traditional Instruction

Question 2: Status (select one): Freshman, sophomore, junior, senior, graduate, other

Phase 2 Results Flipped Instruction

Phase 2 Results Traditional Instruction

(2 sections of traditional instruction)
Question 3: Was this the first library instruction session you’ve viewed?
Question 3A: If no, how many sessions? ** Ledger indicates blue as having 1 session, red as having 2 instruction sessions, purple indicates having 3 instruction sessions, and aqua indicating 5 sessions.

Phase 2 Results Flipped Instruction
Phase 2 Results Traditional Instruction
(2 sections of traditional instruction)

Question 4: Prior to coming to this library session, how would you have ranked your knowledge of doing research in a library? Novice, beginner, intermediate, advanced

Question 5: Question 5: After (having attended this library session or watching the instruction session) would you rank your knowledge doing research in the library as: Novice, beginner, intermediate, or advanced.

Phase 2 Results Flipped Instruction
Phase 2 Results Traditional Instruction
(2 sections of traditional instruction)
Question 6: After (attending or watching) the instruction (session or videos), where are you still having problems in the library? (Check all that apply):

- a. Knowing where to get help in the library
- b. Understanding how to construct a search when doing research
- c. Finding books related to your topic
- d. Finding articles related to your topic
- e. Using electronic databases to locate articles
- f. Obtaining library materials not owned by SRU
- g. I am not having any trouble with the library

Phase 2 Results Flipped Instruction

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Phase 2 Results Traditional Instruction

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Notes

4. Ibid, p.2