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GOOGLE FORMS IN LIBRARY INSTRUCTION: CREATING AN ACTIVE LEARNING SPACE AND COMMUNICATING WITH STUDENTS

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ABSTRACT

The many programs offered through Google's G Suite for Education have steadily found their footing across the varied fields of librarianship, including instruction. One such program that has potential in encouraging and developing information literacy skills in undergraduate students is Google Forms. From the observation of a Google Form activity used in four sections of a 100-level History course, utilizing Forms during one-shot instruction can create active learning experiences, be a valuable tool in aiding the continuation of a lesson after a completed one-shot, and can play an important role for the librarian when assessing if learning outcomes have been met. These experiences assist in creating a more robust learning environment for students and inform librarians of potential changes to improve their role as an instructor.

Keywords: Google Forms, G Suite for Education, information literacy, active learning, assessment, library instruction, one-shot

INTRODUCTION

The usefulness and need for cloud computing applications are numerous whether it be in an academic, personal, or professional setting. The ability

to immediately access, share, and collaborate on information from any internet-linked device feeds into our growing technological (and cultural) need to keep connected and organized at all times. As

librarians continually attempt to stay abreast of new Web 2.0 technologies, it comes as no surprise that these applications have found their way into our own instruction. In particular, G Suite for Education has become a valuable resource as higher education institutions continue to transition their online communication needs to Google. The demand for this resource is abundantly clear as more than 70 million people use the education platform currently (Viswanatha, 2017). The many functions available in G Suite for Education are practical options to utilize, with their cost-free and easy-to-use design. Their integration into the many fields of librarianship has been a growing trend. Of particular interest is the application of Google Forms in library instruction. With a focus on incorporating the Association of College and Research Libraries (ACRL) Framework for Information Literacy for Higher Education (2016), librarians have become more aware of creating an instructional environment that encourages students to become metacognitive learners. The Framework provides “interconnected core concepts, with flexible options for implementation, rather than on a set of standards or learning outcomes, or any prescriptive enumeration of skills” (ACRL, 2016). Since many institutions are already familiar with how to utilize Google Forms as a survey or assessment tool, the goal of this study was to incorporate a Google Form into a library activity to not only assist the students in their learning process and address key information literacy standards but to also evaluate how well the learning outcomes were met. The librarian also theorized that using Google Forms would allow for a

tidy and less time-consuming in-class activity in comparison to a paper worksheet that often gets left behind by students. Using formulas to evaluate student submissions in addition to evaluating the Instruction Session Assessment Survey data, this research demonstrates the benefits of using Google Forms during library instruction and addresses the challenges instruction librarians may face when incorporating them into their own lessons. In particular, the librarian observed that Google Forms can assist in creating an active learning environment and create opportunities to communicate with students after an instruction session has ended. The findings can aid other instruction librarians as they consider implementing new types of activities in their own instruction, especially when highlighting key information literacy frames.

CONTEXT

The application of using Google Forms in library instruction was used in four sections of History 115 (HIST 115) at the College of Charleston (the College) and was made accessible to students on a tab on the course LibGuide. A Springshare product, LibGuides is a user-friendly content management system used to “curate knowledge and share information” with library users (“LibGuides,” 2017). Library instruction sessions are typically taught using the one-shot method, which was the case for the sections of HIST 115. The focus of HIST 115 was on Pre-Modern History; two sections used the lens of travel and intercultural contact, and the other two used the lens of folktales and legends. The librarian created course-specific LibGuides and supplied the

learning outcomes on the “Welcome” tab. Students were told the learning outcomes at the start of each session which implied students would learn:

1. How to generate keywords and design an effective search strategy for [their] topic[s].
2. How to utilize the Discovery Service to search, narrow, and find peer-reviewed journal articles that [they] will need for this course.
3. How to evaluate the authority the author of a source has, in addition to the quality of the information [the source] provides.

The majority of students in the HIST 115 courses were undergraduate freshmen, and in total, 103 students attended the sessions during the Fall semester of the 2017–2018 academic year. The librarian created, delivered, and evaluated all lectures and activities during the one-shots.

LITERATURE REVIEW

Utilizing the many programs of G Suite, previously branded as Google Apps, has been a growing trend in librarianship (Denton, 2012; Booth, 2011). Less than a year after Google announced updates to the then relatively new Google Apps for Education at the EDUCAUSE 2006 annual conference (“New and Noteworthy,” 2006), librarians were recognizing the value of certain programs in terms of teaching information literacy. McPherson (2007) observed that the flexible file formats of Google Docs and the collaborative writing options allowed a teacher or librarian to improve, and engage with,

a student’s information literacy skills. Pang (2009) reiterated McPherson’s sentiments and expanded on Google Doc usage within higher education. In the more recent past, multiple library departments continued to use G Suite applications. The University of Dayton libraries took advantage of Google Sheets to perform a library-wide physical item inventory (Boman & Voelker, 2017). New York University Abu Dhabi used a combination of Google Forms and Google Sheets to collect and evaluate user count data when they transitioned to a larger physical library space (Lindsay, 2016). The libraries at the University of Colorado Boulder utilized the Calendar feature of G Suite to manage their Research Consultation requests and appointments (Kuglitsch, Tingle, & Watkins, 2017).

The literature on the use of Google Forms is predominantly geared towards it being a worthwhile tool when it comes to surveying and assessment. Whicker, Shields, and Chadwell (2012) suggest using Google Forms “to create a pretest or posttest to assess student learning outcomes” (p. 18). Frutchey (2012) put this into practice by creating a Form to assess his own instruction or interaction he had with a patron. Koury and Jardine (2013) continue this conversation and stress how “Google does all the work” of organizing and interpreting the data you collect from assessments (p. 166). They also discuss how “[s]tudents appreciate the anonymous nature of the surveys,” which can be shared with students through their email or in class (p. 166). The value of using Google Forms in this capacity is clearly evident because it makes the task of assessing students easier; it allows for

organized, immediate feedback to be returned to the instructor.

Djenno, Insua, and Pho (2015) discussed the valuable role Google Forms can play in assessing and surveying students after a library session. However, they also briefly describe a pilot program, executed in 2013, that explored using Google Forms “as a way of incorporating active learning during information literacy sessions” and to replace a traditional paper worksheet (Djenno et al., 2015, pp. 9–10). From the review of the literature, this appears to be one of the only published examples of Google Forms being used as a tool for active learning in library instruction. Given that librarians in academic institutions often serve as faculty members, it was necessary to explore the role of Google Forms in higher education as a whole. In a study conducted in 2010, Kim (2011) provides clear results of how utilizing Google Forms multiple times during his business statistics classes improved student engagement. Not only did he observe that students were actively engaged with each mini-lesson preceding the Form activity, but from surveys after the class, he learned that students generally enjoyed using Google Forms throughout the class. An important distinction, of course, is that Kim taught an entire course and his classes ran 75 minutes. Incorporating Google Forms into library instruction would mean adapting for shorter periods of instruction and in one-shots, but Kim’s study shows that there is great potential in using Google Forms in the classroom. Outside of this example in higher education, the literature, again, primarily focuses on using Google Forms as a survey and

assessment tool (Haddad & Kalaani, 2014; Henrie et al., 2015).

However, in 2016, three years after the initial pilot program of Djenno et al. (2015) and six years after the experiences of Kim (2011), Google updated the functionality of their forms (“New Google Forms,” 2016). The updated Google Forms are more education-friendly with quizzing, assignment, and presentation templates. It also allows for more options in the distribution of the results, a participant or creator-friendly design, and an option to revert back to the old version of Google Forms, if desired. With these updates, Google Forms are no longer just an excellent tool for assessment, but they have created more opportunities to engage with students during and after instruction.

METHODOLOGY: DATABASE ACTIVITY, HIST 115

The four sections of HIST 115 at the College received a comprehensive library instruction session per the request of the faculty but with a focus on finding relevant peer-reviewed articles using the library’s Discovery Service — a single, unified search box on the library website for searching a variety of library resources. The assignment was an analytical essay where the final draft would require students to have one primary source and at least three peer-reviewed secondary sources. The faculty ensured that students would come to the library instruction with their chosen primary source and their desired research topics. With this in mind, the librarian created two course LibGuides and developed two Google Forms. These LibGuides and

Google Forms were identical except for the title, which reflected the focus of the class: folktales or travel. The librarian created a “Library Activity” tab on the course LibGuide that housed the Google Form activity embedded into the page in addition to explaining the goals of the activity.

The class navigated to their course LibGuide and received an overview of researching skills and how to apply those skills to navigate library resources. This provided students with the tools to engage in the research process. Given that the College uses G Suite for Education, students were required to sign into their college Google Accounts in order to access the Form. The questions intended to indirectly expose students to each of the ACRL information literacy frames, as shown in Table 1. The frames of focus for the activity as a whole, however,

were Research as Inquiry and Searching as Strategic Exploration.

The tangible goal of the activity was for students to find at least one peer-reviewed article to use in the analytical paper, thus working toward a requirement for the assignment. The Framework-designed goal of the activity was for students to refine their information literacy skills and improve their abilities as a researcher by searching and evaluating sources. While the students only had to find one article during the class period in order to complete the activity, the librarian instructed them to continue their searching to find additional sources that may be useful when writing their essay. Both the librarian and professor assisted students throughout the activity. The Form automatically emailed a copy of the answers to the student upon submission, and

TABLE 1 Correlation between Google Form Activity Questions and ACRL’s Information Literacy Framework for Higher Education.

REQUIRED ACTIVITY QUESTION	ACRL’S INFORMATION LITERACY FRAME
1. Brainstorm keywords that fit within your topic.	<i>Searching as Strategic Exploration; Research as Inquiry</i>
2. Complete at least three searches. What terms did you use? How many results did you get? If you needed to, how did you refine your results?	<i>Searching as Strategic Exploration; Research as Inquiry</i>
3. Select a peer-reviewed article relevant to your topic. Who is the author? What makes them an authority on this topic? How do you know it is peer-reviewed?	<i>Authority is Constructed and Contextual</i>
4. In at least one paragraph, evaluate your source. What does it discover or address? How is it important? Are there gaps in the discussion? What words can you add to your keyword bank?	<i>Scholarship as Conversation; Information Creation as a Process</i>
5. Provide the Chicago citation for your source.	<i>Information has Value</i>

the librarian viewed individual responses through the editing page of the activity. As the sessions concluded, students had the option to complete a Library Instruction Assessment survey.

ANALYSIS

Measuring learning outcomes

In order to evaluate if students successfully met the learning outcomes presented at the start of the instruction session, the librarian created formulas

to calculate the success rate based off the answers supplied on the Google Forms as described in Table 2. The librarian evaluated all 103 student submissions including only partially completed Google Forms. Of the 103 submissions, 30 of the Google Forms had one or more answers missing, with 47% of those students stating that they ran out of time. The other incomplete submissions stated that they could not find a source/ felt confused (20%) or did not offer a reason for not finishing the activity (33%).

TABLE 2 Measured success of student understanding of learning outcomes.

LEARNING OUTCOME	SUCCESS FORMULA	SUCCESS RATE (OUT OF 103 STUDENTS)
How to generate keywords and design an effective search strategy for your topic.	Students successfully generated keywords if they supplied three or more terms or phrases. (Q1)	85%
	Students successfully designed an effective search strategy if they listed appropriate search strategies ^a in their searches. (Q2)	69%
How to utilize the Discovery Service to search, narrow, and find peer-reviewed journal articles that you will need for this course.	Students successfully utilized the Discovery Service if they explained how they limited their results. (Q3)	78% 89% (89 students)
How to evaluate the authority the author of a source has, in addition to the quality of the information it provides.	Students successfully evaluated the author if they found and shared information that discussed his or her credentials and authority ^b . (Q4)	67% 77% (89 students)
	Students successfully evaluated the source by explaining what the source discusses and how it relates to their topic. (Q5)	60% 78% (78 students)

Note. Q# = question from Google Form Activity. Bolded percentages represent the success rate within the students who provided an answer to that specific question.

^aAppropriate strategies included, but were not limited to, using Boolean operators, phrase searching, truncation, and subject searching.

^bTo evaluate authority, students had to include information about the author, including, but not limited to, education, expertise, or other publications.

Library instruction assessment

Upon completion of the instruction sessions, students were given the opportunity to complete an optional Library Instruction Assessment. The librarian designed the assessment survey in Springshare's LibWizard, a multipurpose tool that allows the operator to "quickly and easily assess learning and gain immediate insight into user understanding" (LibWizard, 2017). Using this tool for assessment is the current practice of the Research and Instruction Librarians at the College. Since 103 students were part of the instruction sessions, the hope was to have at least 10 responses, roughly 10% of the population size; the librarian received 12 (N=103; n=12).

When asked to summarize the most important points covered in today's sessions, student feedback reflected key skills that related to Learning Outcomes and key Information Literacy Frames. There was a focus on searching skills (Searching as Strategic Exploration), where to conduct library research (Research as Inquiry), and how to find and identify parts of a citation (Information has Value). Of note, students stated:

- "Today was very helpful, the most important point covered was that of how to keyword search and truly narrow down your search."
- "I feel like the most important thing that I learned today was how to search using and, or, and not. I learned how to use filters to ensure that I've found the best sources to use."

- "How to use the library for resources. How to find peer-reviewed articles. How to get a citation from the articles."
- "You can use the [databases] to cite your sources, though it's not always correct so be careful."
- "How to find real and correct articles for information. How to know if an article is peer-reviewed. How to search using keywords with the library's database. The layout of my course's library page and how to navigate it."
- "We found out about how to find scholarly articles and limit and refine our search with keywords — the activity really helped!"

Additionally, the survey asked two ordinal scale questions (one being poor, four being excellent) to assess the student's overall feeling of the session and the usefulness of the information. Compiling those responses, 75% of students gave the overall instruction session a rating of four (excellent); the remaining 25% gave an overall rating of three. One hundred percent of the students found the usefulness of the information to be excellent.

DISCUSSION

The initial goal of using Google Forms was to help simplify the in-class activity and to provide an opportunity to better measure if the learning outcomes had been met. Considering the experience as a whole and the analysis of the Google Form

submissions and the Library Instruction Assessment surveys, the librarian observed that despite certain challenges with time and functionality, the goal was met, particularly when being able to measure learning outcomes. The Database Activity also successfully served as an active learning tool that connected students to the two primary frames of focus—Research as Inquiry and Searching as Strategic Exploration—and provided the unexpected benefit of serving as a communication tool after the instruction session concluded.

Learning outcomes

Post-session assessment surveys are an option when measuring the success of learning outcomes during a one-shot, but those results do not always show the full picture of the session's finer details. Evaluating the answers students provided on their Google Forms created an opportunity for the librarian to better reflect on their own instructional pedagogies. Taking the results from Table 2 into consideration, students were generally successful in meeting the proposed learning outcomes, but there is always room for improvement. Students connected with generating keywords and using the Discovery Service. However, it would be beneficial in future instruction sessions to allocate time to discussing or practicing how to create effective search strings and evaluating authors and sources. This would increase a student's connection to the learning outcomes and assist in linking the instruction to the ACRL Framework, thus cultivating

key information literacy skills. It is possible that students did not share the exact search string they used to get their results, and clear instructions in class and on the Form would assist in combating this issue. Moreover, completing the Form with students during the session would serve as a practical example as they complete their individual work and also aid in ending any potential confusion concerning the activity. Student comments on the Assessment survey supported this idea.

Google Forms for active learning

Students actively engaging with resources they will undoubtedly continue to use as they progress in their education is a vital part of library instruction. Active learning allows students to connect and “seemingly comprehend more when they have agency in the learning process” because they can “make meaning and demonstrate what they know in authentic ways” (Udvari-Solner & Kluth, 2018, p. ix). The Database Activity reinforced the lecture and allowed students to search for and evaluate sources that directly related to their topics. Having the opportunity to justify why the source they selected was significant to their arguments allowed them to draw conclusions and think critically about their research process, a step that students sometimes overlook. One student addressed this on their submission by saying, “I thought this would be a good article but it ended up being about something completely unrelated to my topic.”

While reviewing the learning outcome results is one way to evaluate connection with the lesson and activity, the librarian observed in the instruction session that the students remained engaged, stayed on task, and asked relevant questions pertaining to the instruction session. While they were not required to participate in group discussions, students felt comfortable discussing issues and collaborating with their peers. As students left the session, many of them acknowledged the usefulness of the activity as it directly applied to the essay they were working on during the semester. The faculty member also appreciated that the students received hands-on practice with library resources, and they had a record of their activity to refer to at a later point in their research process. It is worth noting that using Google Forms in this one-shot required making changes and restructuring the original lesson plan. However, this appeared to be a worthwhile compromise when evaluating what students said they learned from the Library Instruction Assessment survey and considering their satisfaction as a whole.

Google Forms as a communication tool

Librarians frequently leave instruction sessions wondering if students have fully connected with the information delivered and practiced with them, especially in a one-shot setting. Students are more successful in their researching after attending a library instruction session and more likely to consult with a librarian upon having a classroom visit (Spievak and Hayes-Bohannon, 2013). This does not change the fact that a librarian may not see a

student again after an instruction session, or if they do, it is at the eleventh hour when the student is looking for immediate assistance and not a lesson on information literacy. Additionally, while we can see the strengths and weaknesses of instruction through anonymous assessment, the opportunity to connect with students who still struggle eludes us. Since the Database Activity required students to log in with their college Google Accounts, their email addresses were kept with their submissions. This allowed the librarian to connect with students after each library session to address direct concerns or to assist in providing clearer understanding of concepts addressed in the learning outcomes. Several students included questions or simply expressed frustration over not finding sources on their submitted Form. Despite walking around and talking with each student as they worked, it became apparent that some students still did not feel comfortable asking questions while in the classroom. Communicating through the Form allowed the librarian to administer one-on-one help to these students, which was an unexpected benefit of using Google Forms. For example, one student expressed that she could not evaluate the article she located because the full text did not appear to be available. Upon seeing this response, the librarian contacted the student and discussed the options she had in requesting the article through Interlibrary Loan. Furthermore, the librarian recognized that should a trend arise in the student responses that reflected a learning outcome not being met, the issue could be presented to the faculty member for remediation.

While the previous observation demonstrated how the librarian could actively pursue engagement with students by directly viewing the Form results, having a record of student responses also allowed for deeper discussion when meeting with students one-on-one. Multiple students scheduled research consultations following the instruction sessions. Being able to refer to the Form they completed in class helped remind each student what the instruction session discussed and reconnected them to the content. Strengthening these student-librarian relationships also encouraged students to continue consulting with a librarian when they had questions or simply wished to verify that the work they did on their own was satisfactory.

Challenges of using Google Forms

While creating and editing Google Forms is intuitive, there are limitations to its design. The Database Activity utilized paragraph-style questions to allow students the space to reflect on their research process and critically engage with sources and databases. However, this decision was also made because it was the most logical option in the predetermined selection of question types. This selection includes short answer, paragraph, multiple choice, checkboxes, dropdown, linear scale, multiple choice grid, and checkbox grid. Additionally, students are limited in how they can format their answers which made their responses muddled and cumbersome to navigate. In particular, the inability to easily make lists, tables, or italicize hinders the student's capability to easily answer certain

questions. This also made assessing the learning outcomes using formulas challenging. It is possible to tack on additional questions at the end of the activity that directly assess the learning outcomes, but if students are not finishing the original activity questions, then there is the likelihood for a gap in that assessment.

Secondly, utilizing paragraph-style questions on the Google Forms also requires more time to simply read through a substantial amount of submissions. Adding the time spent reaching out to students who expressed confusion or had noticeable errors is also a factor to take into consideration. The librarian taught the four HIST 115 sessions within a matter of two weeks; reviewing and contacting students in a timely fashion, in addition to other job responsibilities, took a concentrated effort. While the process was worthwhile given the chance to continue a lesson after a session had concluded, neglecting to reflect on the amount of personal time involved in this process would be careless.

In that same vein, one-shot instruction sessions have their own time constraints, all of which should be carefully considered. Even though the librarian observed that the students were comfortable using an online platform to submit their work, there were still issues with students completing the entire worksheet in the allotted activity time. The librarian considers this to be a combination of technology issues and unrealistic time allotments for the worksheets. While the Google Forms platform cannot be held responsible for over-planning on

the librarian's part, the technology issues likely impacted completion. In every HIST 115 instruction session, there were students who did not remember their login information to access their college Google Account. Most frequently, these students have their login information saved on their personal computers and needed to sync or reset their passwords. In some instances, students had their laptops with them and the librarian permitted them to use their device during the class. An immediate solution is to not require them to log in with their college Google Account and simply have them enter their email directly on the Form itself (an option that is available when designing the Form). This does open the librarian up to the possibility that anyone who comes across the Form Activity embedded on the public LibGuide could complete the activity and skew the assessment.

Finally, when considering the challenges technology brings, it is also important for librarians or instructors to remember an obvious fact: in order to use Cloud Computing Services, students need a stable internet connection. Additionally, to successfully participate in online activities, each student will require access to a computer. While the HIST 115 sections meet in a library computer classroom and therefore did not face the latter challenge, the threat of a weak internet connection is always possible. To this end, the librarian had a Word version of the Google Form Worksheet ready to photocopy in case of a technical emergency. This does raise the question: if technology can fail, why shift from a print worksheet in the first place? While there is

no simple answer to this question, the observations from the Database Activity suggest that the benefit of having even the chance to engage with students, both in the classroom and afterward, is enough of a reason to attempt something new in terms of instructional design.

CONCLUSION

The methods for developing a student's information literacy skills during instruction is certainly an area of librarianship that continues to see considerable growth. From the initial research detailed here, there is still room to expand the use of Google Forms in the development of information literacy. Overall, utilizing Google Forms in library instruction was a positive experience for both the librarian and the HIST 115 students, but there are immediate changes to implement when using the Database Activity in the future. It would be ideal to incorporate an optional space for students to ask questions or share any roadblocks they experienced in their research. This would make identifying questions or problems when reviewing the results easier for the librarian. The other consideration for the future is to keep it simple; the librarian plans on adjusting the scope of the activity in order to assist students in completing the worksheet in its entirety. While the focus of the lecture and demonstration portion of the instruction session was on Research as Inquiry and Searching as Strategic Exploration, carrying this focus into the actual activity will also allow students to have a better understanding of key information literacy concepts.

While Google Forms is a proven tool for collecting data, its services extend beyond assessment. Its role in library instruction provides a way to create an active learning environment so that students leave instructional sessions with concrete skills and resources, in addition to meeting the student learning outcomes. Furthermore, the ability of librarians to connect with students upon seeing their completed Google Forms allows the librarian to construct a valuable bridge with students outside of the classroom. The data collected from student submissions also play a valuable part in what librarians can change to improve their role as instructors. Finally, the challenges Google Forms present undoubtedly need addressing but are not insurmountable when considering time management, technology issues, and what questions to include. New tools and methods are finding their way into the classroom in order to improve the student's experience and create an engaging environment, and their arrival assists in developing metaliterate learners. It is safe to assume that as technology continues to advance and cloud computing apps improve, the usage of these free services in the classroom will continue to find their place.

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