

Fondren Fellow final report:  
The usage of Fondren Library in an age of research-oriented college education

## Overview

What is Fondren Library's role in Rice University's undergraduate teaching practices? And more broadly, how is Fondren, as a research university library, understood in today's pedagogical environment? This research seeks to look at Fondren Library's current practices and their effects and to understand how the library services address key issues—or not—in the research processes and what could be improved to better adjust to today's research practices. More broadly, our research seeks to shed light on what kind of roles that research university libraries can play in today's higher education.

In conjunction with the implementation of the Inquiry-based Learning (IBL) initiative at Rice, especially considering that the initiative has now become a significant influence in how undergraduate classes are instructed and restructured at Rice, the researchers work with participating instructors to study how research skills are currently cultivated through coursework. Specifically, the researchers seek to understand how Fondren's resources—not so much book collections as research supports of all kinds—are utilized by instructors and students as they gain expertise in inquiry-based learning. The results of the research are intended to provide insights into how Fondren, as a research library, could advance its services to better meet the needs arising from today's research-oriented university education goals.

To gain firsthand knowledge about how Fondren's services and resources are utilized in the curricula and practiced by students, during the spring semester of 2019, the researchers deployed a series of research methods, from text analysis to interviews and surveys. Through the process, the researchers familiarized themselves with the IBL-implemented classes, charted the discrepancies between the expectations set in teaching goals and the actual learning practices, and piloted a survey that begins to address such discrepancies. By the end of the study, the researchers offered some suggestions and directions that Fondren could take initiatives towards.

## **Research Process Phase I: Curricular data analysis, library workshops participation, and interview preparation**

With Rice University's recent implementation of IBL, Fondren Library wants to explore ways to develop their learning resources better to meet the students and faculty member's new needs. It was crucial for the researchers to begin the research process by reviewing the existing literature about IBL (Kogan and Laursen, 2014; Lai, 2018) to become familiar with the terminology used as well as significant findings and problems associated with the implementation of IBL. After conducting this literature review, we analyzed materials created by various departments in partnership with the Quality Enhancement Plan (QEP) staff to shape departmental curricula for IBL goals. Among these materials were the QEP maps which provided us with insights into

choosing what departments to focus on for the duration of the study. The biosciences, psychological sciences, and political science departments were selected. These departments had already started making strides in increasing IBL learning in the classroom and have specific needs that have risen from implementing IBL into the preexisting curricula.

To identify these specific needs and determine how the library can play a role, select courses that have implemented IBL learning and are continuing to further IBL in the classroom were identified by the researchers. To do this, the researchers analyzed the 2018 Survey of All Students (SAS) and Rice University's student course evaluations. By analyzing these materials, the researchers were able to better understand the student perspectives on IBL in the classroom and identify key faculty members to conduct further interviews. In addition, the researchers began to preliminarily identify a range of questions that ought to be further pursued with the instructors of IBL courses.

In the meantime, the researchers sought to gain insights into the types of services that Fondren Library provides and an in-depth understanding of how various departments, such as the Digital Media Commons, can contribute to IBL in the classroom. To accomplish this, the researchers extensively explored the Fondren Library website—so as to familiarize themselves with the electronic resources such as handouts—and participated in various Fondren Library workshops, in particular, the Data and Donut Workshop Series and the Digital Media Commons. In doing so, the researchers gained important first-hand knowledge about the style and level of experience of these group and one-on-one workshops, such as the procedure of signing up for different courses, the span of knowledge and skills covered in each session, who the classes are targeted for, and the learning environment in the classes.

The signup process for the library's workshops was easily accessible on the Fondren website. The workshops are usually group-oriented and give hands-on training about using a specific service of the library or introducing the student to a specific skill set such as coding in Python. These group workshops are great for students to get introduced to the library and certain skills that they may need to master for their degree. At the same time, if a student has a particular need or a fixed question, they can sign up for an individual meeting with a librarian that has knowledge pertaining to their specific needs. This also works well if the group workshops do not align with the student's schedule. The researchers found that Fondren's workshops were helpful and accessible. However, finding the workshops on the Fondren workshop requires a little bit of digging around making them go by unnoticed to many students that could potentially benefit by them.

The Fondren Library's services were helpful but underutilized by the student body as the researchers found out. To find out more about this gap as well as explore if there was a similar gap in the library's services and the faculty, the researchers proceeded to conduct semi-structural interviews with select faculty members from various departments.

## **Research Process Phase II: Interviews**

Building on the previous phase of research, the researchers identified faculty members who are potentially suitable for in-depth interviews. The researchers paid particular attention to the

faculty members who have rich teaching experience while being actively involved in the curricula design in the light of their respective departments' inquiry-based learning initiatives.

In total, the researchers reached out to five faculty members. All of them agreed to participate in the research. In the order of the conduction of the interview, they are:

Dr. Leslie Schwindt-Bayer, Professor of Political Science, interviewed on March 6;  
Dr. Dereth Philips, Faculty Lecturer of Biosciences, March 6;  
Dr. Beth Beason Abmayr, Teaching Professor of Biosciences, March 8;  
Dr. Rick Wilson, Professor of Political Science, April 8;  
And Dr. Sandy Parsons, Assistant Teaching Professor of Psychology, April 12.

With each participant, the researchers conducted a 30-minutes to one-hour semi-structured interview. The researchers developed the interview questions and grouped them into three categories, which we termed, respectively, background questions, content questions, and technical questions. First, each interview began with background questions. Aimed at addressing the general teaching experience at Rice, these questions are tailored to allow each interviewee to reflect upon their courses and pedagogical approaches. Many of the questions are based on student reviews of the courses that we studied in the initial phase of the research. Further, the researchers prepared a series of content questions that seek to identify the discrepancies between the instructors' efforts of implementing IBL, such as their modifications of the curricula and teaching practices, and the students' responses to such changes. In doing so, the researchers hoped to gain insights into the shared challenges and opportunities in the implementation of IBL, while best understand their strategies and practices in the context of their individual, daily teaching activities. Finally, based on the information previously gathered around the library services and the IBL initiative prospects, the researchers designed a set of technical questions to solicit discussions about the effectiveness and practicality of particular methods of addressing the aforementioned discrepancies.

In the early stage of interviews, the researchers were suggested that a survey among students would be helpful to gain insights into the skills that the students had and their familiarities with the existing resources. Along with the survey questionnaire design process, in the subsequent interviews, the researchers also asked for feedback about survey questions and permissions for distributing the survey. (The survey will be discussed in detail in the following session.)

Several themes emerged throughout the interviews:

1. The communication between Fondren and faculty members are not always seamless. Faculty members and librarians alike, more often than not, found themselves not knowing who to contact or whose jurisdiction the questions or requests fell in, despite the willingness of communication.
2. A number of existing resources are either under-utilized or not meeting the class needs. For instance, multiple interviewees expressed that the current Zotero handout is too complicated to follow for beginners, despite the resource itself, the handout, is incorporated in the curriculum.
3. One major shared barrier of incorporating the library services into the curriculum is the limitations imposed by class schedule, as far as the current practice goes. On the

one hand, bringing librarians into the class to introduce library research skills would inevitably compromise the time for teaching and discussing the class materials. On the other hand, scheduling collective extra-curricular sessions have proven to be nearly impossible due to students' individual schedules. To overcome this scheduling conflict, interviewees expressed that online learning materials (such as handouts and short video clips) would be most desirable, especially if covering the various technical aspects of making academic inquiries and allowing the instructors or departments to track and evaluate the students' utilization of such materials.

4. Faculty members from different disciplinary backgrounds expressed different concerns and preferences over what to prioritize in making online learning materials. For instance, while biosciences instructors tend to prioritize making lab safety videos, others find formatting bibliographies or effectively locating and using primary resources essential research skills that have been neglected in the existing curriculum.

5. Nevertheless, a range of common interests emerged among the interviewed faculty members. In terms of making online learning materials specifically, they are concerned with the interactive-ness and accessibility (using Rice-related references and settings rather than producing generic introductory materials, for example), simplicity, and feedback mechanism (such as quizzes). These aspects are crucial for the utilization and incorporation of such materials in the teaching activities.

6. Moreover, many interviewees talked about individual cases that they have encountered where students were not familiar with basic library services, such as using interlibrary loan, suggesting book purchases, and consulting the reference desk. Librarians we have talked to are equally frustrated by such facts. The researchers believe more efficient and practical channels of institutional communication should be in place to cover such needs.

### **Research Process Phase III: Survey design, distribution, and analysis**

As mentioned in the previous section, it was suggested that an anonymous survey among students would be helpful to cover the gap between the instructors' perceptions of what the students know and what the students in fact master. In the process of survey design, the researchers consulted the Office of Institutional Effectiveness and incorporated the feedback into the revision. Several interviewed faculty members, as well as librarians who instruct library courses, also provided useful insights into the survey questions. The final version of the survey bares the intention of reflecting these inputs as much as possible. Given the scope and the limit of time of the research, the researchers pilot the study by sending out the survey through the faculty participants who agreed to encourage the students to partake. Participation of the survey was completely voluntary. To maintain the anonymity of the survey, faculty members are only provided with aggregated results. For the original survey questionnaire, see appendix.

The survey was sent out to three courses instructed by participating faculty members, one from the psychological sciences department and two from the biosciences department. A total of 36 usable responses were obtained from the survey, all of which came from students who, at the time of research, were taking classes in the biosciences department.

The researchers divided the survey into four primary sections, respectively, collecting literature, proper citations, data visualization, and poster presentations, and analyzed the trends in each

section. A common theme among the collecting literature section was the general lack of knowledge about the resources that Fondren Library had to offer. For example, more than half of the students were unaware of how to use Interlibrary Loan to request materials that the Fondren Library did not have readily available (Figure 1).

Q4 - I know how to use Interlibrary Loan to request materials from non-Rice libraries.

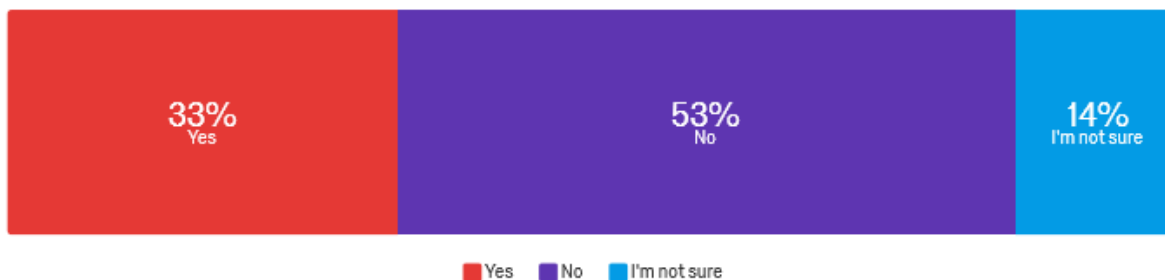
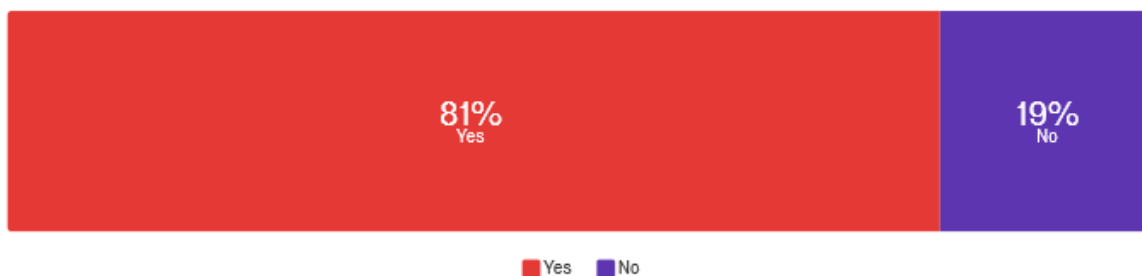


Figure 1 A large proportion of students were unaware of requesting library materials outside of the library ultimately limiting their research endeavors.

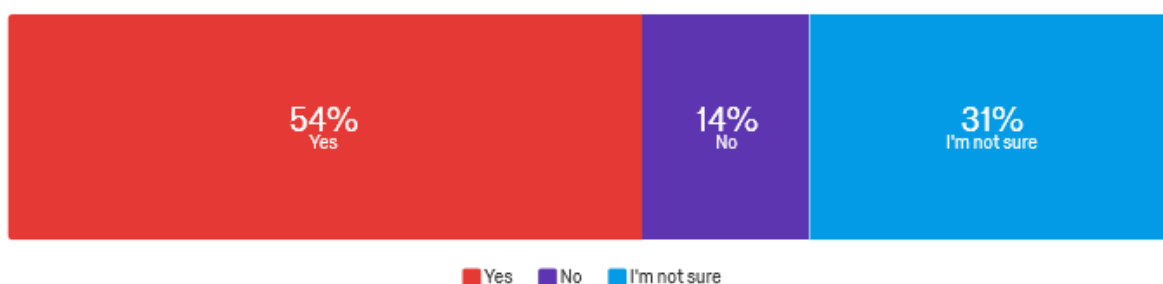
Similarly, library services such as OneSearch and various library skills such as accessing “Rice Full Text” research articles and setting up search alerts in databases to follow keywords and authors, went underutilized by students as the survey reported a majority not knowing how to use these library functions. This lack of foundational knowledge on how to utilize basic library functions highlights that there is a major disconnect between the library and students that need to be improved upon.

The responses from the remaining three sections—proper citations, data visualization, and poster presentations—had more positive trends as the majority of students claimed that they were able to use citation managers, implement and arrange various data visualization, and create effective poster presentations. However, it is important to note that despite the positive feedback, the majority of students said they could benefit from training in each respective area (Figure 2).

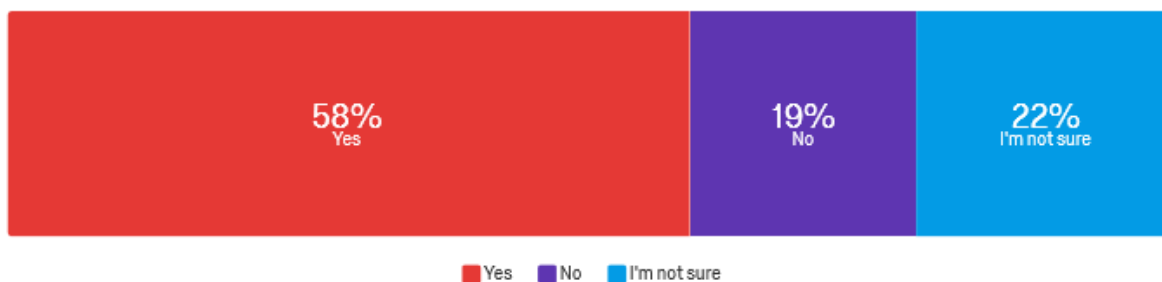
Q25 - I could benefit from training on effective poster design.



Q18 - I could benefit from training on effective data visualization.



Q6 - I could benefit from training on effectively collecting peer-reviewed articles.



*Figure 2 Many students felt that they could benefit from further training on effectively collecting peer-reviewed articles, data visualization, and poster design despite their knowledge in each of the topics.*

Since most students were unaware of basic library features, the researchers believe that positive trends in the survey regarding proper citations, data visualization, and poster presentations were a result of the student's learning in the classroom. Most classes teach students exactly what they need to know in these three areas to succeed in the course as the researchers discovered during the interviews with the faculty members. However, with most students saying that they could benefit from additional training, the library's sources can prove to be beneficial in meeting the needs of these students.

## **Suggestions, discussions, and directions**

The faculty interviews combined with the survey sent to students offered the researchers valuable insight into future directions that the library can engage in to fully maximize its resources. Although the survey only involved a small sample of the university's population, the researchers believe that pilot studies, such as focus group interviews and more specifically designed surveys, among relevant students as well as faculty members should be deployed when Fondren takes initiative in tackling the manifested issues. This information can ultimately help Fondren Library create specific modules and direct their resources towards what exactly students need. Indeed, pilot studies could be crucial to the understanding of the ground on which new initiatives are implemented and making such efforts more effective in addressing the most demanded requests. For instance, when creating online learning modules about making academic posters, instead of solely set out from the rich teaching and software (as well as hardware) resources that Fondren has to offer, Fondren could benefit from a pilot survey among students in disciplines where making posters are an integral part of their studies. As an example, the survey could be designed in such a way that it allows students to rank the skills they hope to learn, what they struggle with, and the formats they would like such tutorial materials to be shown—handouts, videos, and so on. In other words, the way library service could be reconsidered as an interactive process that extends beyond the reference desk—and efforts of making such interaction happen could be vital to how Fondren being an indispensable part in the students' learning experience.

At the same time, the researchers feel that Fondren could benefit and more effectively advertise its services and resources from making a “trick list.” The idea of such a list is that it could be less systematic (as opposed to mapping out the entirety of the library, which can sometimes be intimidating) yet practical and interesting enough for students to learn about the range of knowledge and skills that they can acquire from Fondren. Following the survey results, some of the sample entries could be on Interlibrary loan, setting scholar and keywords alert in databases, making posters more accessible and inclusive, among others.

A common trend in both interviews and survey results was the unfamiliarity of the resources that the library has to offer. To make these resources better known to the faculty, the library may want to send the point contact librarian to each department every semester or academic year to teach the faculty about what the library offers as well as get feedback on what each department needs specifically. On the other hand, to make these resources known to the students at an early point in their university career, the library may want to consider doing a library tour during orientation week for the freshmen. These suggestions may help spread awareness about what the library provides and increase the usability of the library's resources.

When interviewing faculty about the resources the library has to offer, many expressed interest in the creation of online-based learning modules. These hold lots of potential for connecting the librarians' expertise—their knowledge and skills on a variety of scales, from information literacy to the technicality of software—with the pedagogical imperatives in the light of the IBL initiatives. The library, with its existing resources and infrastructure, could find itself more relevant to the classroom if it could develop needed online learning materials. In the creation of said online learning modules, the researchers believe it is important to collaborate more closely with departments, especially active teaching faculty members. We have found that both sides,

Fondren librarians and teaching faculty members, expressed tremendous interests in learning what is needed and what could be done; what is needed is thus an effective channel of communicating this mutual need—and potentially productive partnership.

Finally, the researchers believe that what is truly needed, and what the implementation of the IBL initiative opens up for, is an opportunity of reconceptualizing the relations between Fondren Library and Rice's teaching practices. After all, the question posed for Fondren is not anymore what it could do for students as receivers of knowledge but for students as independent inquirers and researchers in-training. The researchers believe that Fondren could take the various kinds of discrepancies in and frustration from the daily operations as an opportunity to refine its role in today's research and pedagogical environment. As the Information Literacy Librarian Joseph Goetz puts it in his discussion with the researchers, the challenge is rather to change the view of seeing Fondren library as "shelves of books" or a "container" where knowledges, skills, and tools are passively stored; instead, Fondren could play a more active role—as a "leverage mechanism" that brings in and channels research resources in practical, accessible, and creative ways.



## Appendix: Survey Questionnaire

### Fondren Usage Survey 2019S

#### Survey Information

Do you know that Fondren Library hosts much more than bookshelves? As librarians at Fondren, we want to know about your experiences using--or having trouble exploring--the library's other resources. We are piloting this survey in collaboration with teaching faculty members to find out where we can improve. This voluntary survey will take approximately 5 minutes. Your responses are anonymous and for library research use only. If you have any questions or suggestions, please don't hesitate to contact the Information Literacy Librarian Joe Goetz at [jgoetz@rice.edu](mailto:jgoetz@rice.edu). The survey starts on the next page. We appreciate your thoughts and input!

#### General Information

What is your year of study?

- Freshman
- Sophomore
- Junior
- Senior
- Other

For a class in which department are you taking this survey?

- Biosciences
- Psychology
- Other

*Display This Question:*

*If What is your year of study? = Other*

*Or For a class in which department are you taking this survey? = Other*

You selected "other" in the questions above. Can you tell us more about how you accessed this survey?

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#### Collecting Literature

I have used [Fondren Library OneSearch](#) to find library materials.

- Yes
- No
- I'm not sure

I can find research articles and connect to "Rice Full Text" using Google Scholar from off campus.

- Yes
- No
- I'm not sure

I can select and search a subject database (such as Biological Abstracts, PubMed, PsycINFO, Anthro Plus, Literature Online, etc.) for research articles.

- Yes
- No
- I'm not sure

I know how to use Interlibrary Loan to request materials from non-Rice libraries.

- Yes
- No
- I'm not sure

I know how to set up search alerts in databases to follow keywords and authors.

- Yes
- No
- I'm not sure

I can distinguish a peer-reviewed article from other articles.

- Yes
- No
- I'm not sure

I could benefit from training on effectively collecting peer-reviewed articles.

- Yes
- No
- I'm not sure

Additional comments? (Are any of these tools/services new to you, or is there anything you wish to explore more?)

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### **Proper Citations**

I know the standard citation styles of my field (e.g. APA, MLA, Chicago, etc.).

- Yes
- No
- I'm not sure

When I don't know how to cite a source, I know where to find the guidelines.

- Yes
- No
- I'm not sure

Which citation manager do you use (Select all that apply):

- EasyBib
- EndNote

- JabRef
- Mendeley
- ReadCube
- RefME/Cite This For Me
- RefWorks
- Zotero
- Other
- None

Additional comments? (Are any of these tools/services new to you, or is there anything you wish to explore more?)

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### **Data Visualization**

I struggle with conveying my data or analysis through graphs, charts, and tables.

- Yes
- No
- I'm not sure

I know how to use software such as Tableau or Excel to create data visualizations.

- Yes
- No
- I'm not sure

I know how to select among formats such as line, bar, or pie charts for data visualization.

- Yes

- No
- I'm not sure

I could benefit from training on effective data visualization.

- Yes
- No
- I'm not sure

Additional Comments? (Are any of these tools/services new to you, or is there anything you wish to explore more?)

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### **Poster Presentation**

I know the core sections that make up an academic poster are: title, author list, background, method, conclusion, reference, and future work.

- Yes
- No
- I'm not sure

I know how to adjust a powerpoint into a poster size.

- Yes
- No
- I'm not sure

I know how to import a data visualization into a poster.

- Yes
- No
- I'm not sure

I know how to choose colorblind-friendly colors for my data visualizations or posters.

- Yes
- No
- I'm not sure

When making a poster, what are the techniques that you struggle with (such as adding gridlines and ruler views, changing margins in a text box, moving objects in fine increments)?

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I could benefit from training on effective poster design.

- Yes
- No

Additional Comments? (Are any of these tools/services new to you, or is there anything you wish to explore more?)

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