CHAPTER 10*

Freshman Framework: Collaboratively Developing a Set of Required Instructional Modules for Freshman Research Scholars

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Introduction

New undergraduates often enter college assuming that they are competent in their ability to perform research for assignments but are actually overconfident and underperform when compared with the expectations of faculty.[1] Freshmen are often overwhelmed by the amount and newness of information resources available to them and find it difficult to navigate, synthesize, and revisit information as part of their research process.[2] This gap in perceived and desired abilities versus actual performance can often frustrate students and instructors, providing librarians an opportunity to offer support.

While this gap exists for many first-year students, it can be pronounced in the case of students participating in undergraduate research programs, where the level of scholarship and academic rigor is elevated when compared to the general undergraduate experience. We can expect students who participate in undergraduate research programs to be more engaged and interested in library resources and information literacy instruction; however, they "may be no more likely to go beyond superficial interrogation of resources for their research projects than they might for a short paper for a course. Though their needs can in many ways resemble those of faculty researchers, such students understandably might not always think like experienced scholars."[3]

Related to the problem of superficiality in novice research, library instruction opportunities often devolve, due to lack of time and instructor collaboration, into one-shot "bibliographic instruction" sessions that end up focusing on the simple rote mechanisms of using the library discovery service and databases, finding resources, and generating citations. While many librarians have been striving for years to break free of these instructional limitations, the Association of College and Research Libraries' (ACRL) *Framework for Information Literacy for Higher Education*[4] has provided an impetus to rethink how we approach library instruction and opens the door for more dynamic collaborative partnerships. The framework has codified a new approach to speaking with students, faculty, and partners about information, research, and how the information literacy is a crucial part of their daily lives.

The focus of this chapter is to discuss how a collaborative project between an undergraduate research office and university library attempts to use the framework to address the potential performance gap in new undergraduates. This gap may be exacerbated in cases where new students often struggle with the requirements of participating in an undergraduate research program. The Freshman Research Scholars (FRS) program at Oklahoma State University (OSU) provides an opportunity for students to engage in original research under faculty mentorship. OSU Libraries has partnered with the Office of Scholar Development and Undergraduate Research to develop required instructional modules for FRS students. These modules introduce freshman researchers to concepts highlighted by the framework, providing an initial grounding in how information is found, evaluated, used, created, and shared. The modules consist of short videos that relay concepts to students in relatable language, rather than jargon, and offer critical thinking prompts that tie into issues that FRS students would encounter as part of their formal research program. We discuss the development and assessment of these modules and their relation to the framework in this chapter.

Background

Oklahoma State University is a public doctoral university in Stillwater, Oklahoma. The university has a high undergraduate enrollment profile (approximately 21,000 undergraduates) and high research activity, which is conducive to participation in undergraduate research programs. The Research and Learning Services division of OSU Libraries connects with students, faculty, and academic support units in an effort to provide information literacy instruction, research assistance, and data management guidance. The unit consists of thirteen full-time employees; eight are academic liaison librarians who work primarily with upper-division, subject-specific courses, while four are dedicated to providing library instruction for first-year courses, partnering with various support units (e.g., diversity office, residential life, university college, undergraduate research, etc.) and initiating undergraduate outreach efforts.

This undergraduate instruction and outreach group has made a concerted effort in the recent past to increase the number and quality of instructional videos and tutorials created and maintained by the library. In the fall of 2015, the library began discussing plans for conceptual "big picture" videos, with work beginning in earnest in the spring of 2016. The plan for these videos was initially inspired by "The Big Picture" videos created by North Carolina State University Libraries, which focus on basic information literacy concepts like citation, source evaluation, and topic selection.[5] Gradually, planning efforts shifted to an emphasis on the then newly adopted framework[6] and its six frames.

The intent of the initiative was to take each of the six frames and explain the concepts in terms understandable and relevant to undergraduate students. Initially, librarians were apprehensive about the lack of a discrete audience that was more defined than the general undergraduate population. Additional context was needed to provide intentional structure and value to the planned videos. It was at this point, during the spring of 2016, a collaborative opportunity with the Office of Scholar Development and Undergraduate Research arose.

Partnerships

Scholar Development and Undergraduate Research is a divisional unit in Academic Affairs that is organized within the University College. The office reports to the associate provost/associate vice president for undergraduate education and exercises broad purview over the university's undergraduate research activities and coordinates programs for students of all classifications in all academic areas. For many years, Scholar Development's FRS program has provided an entry point into the academic life of the university for approximately sixty incoming freshmen who often take advantage of the office's student grants program and compete for prestigious scholarships.

Though the program has no formal eligibility requirements, FRS attracts a talented and ambitious pool of applicants who are selected during their senior year of high school. Students in the program represent a wide range of majors in all undergraduate colleges and typically have little-to-no experience with research. All students are required to identify a faculty member as a mentor for their research experience and present their insights in a poster session at a peer-level symposium near the end of their first year.

Some of the colleges require their cohorts to participate in a dedicated first-year seminar designed to introduce students to the fundamentals of academic inquiry, from developing a research question to writing a grant proposal, while others provide guidance more informally with small group and individual meetings. Scholar Development hosts a series of workshops throughout the year to provide support and instruction on specific topics, such as complying with university ethics policies, mentoring best practices, and delivering research presentations. Due to variations among the instructional models within the program, no comprehensive curriculum exists for all FRS to develop the information literacy required to design projects independently. Considering the goals of FRS, this video series offered the potential to provide novice researchers with the opportunity to grapple with paradigmatic shifts in their understanding of information as they explore their curiosity and learn to negotiate the academic research environment.

This partnership was not the first collaboration between the library undergraduate instruction and outreach and the undergraduate research units. Previous collaborations have included the development and management of an undergraduate library research award, the ongoing planning of a credit course on information literacy and undergraduate research skills, and the inclusion of one-shot instruction for sections of first-year orientation for freshman researchers. Thus, by the time the videos were under discussion, the two units had developed a rapport and level of trust that was conducive to creative planning.

Discussions between the library and undergraduate research offices led to the development of instructional goals that would guide the continued development of the videos and the expansion of the project. These goals included:

- contribute to bridging the gap between high school and college student research practice;
- expand student understanding of information and its role in academic research;
- assist the FRS program in determining students' research interests and pairing with associated faculty mentors;

- provide another avenue for students and faculty mentors to connect in order to build relationships and understanding; and
- engage students in metacognitive exercises regarding their own research practices, assumptions, and faculty expectations

The alignment of these goals highlights shared learning objectives among these academic units and demonstrates the critical role libraries can play in the implementation of high-impact educational practices coordinated by undergraduate research offices working across the disciplinary spectrum. Such strategic collaboration also leverages university resources to advance institutional priorities, such as retention and graduation rates.

What resulted from this collaboration was a set of modules based on the framework that include videos and sets of questions that build on the video content and connect with the FRS experience. Each video was created with the FRS student in mind and can be used with a general undergraduate audience as well. The videos were scripted by the undergraduate instruction and outreach director and the coordinator for undergraduate research. The library's instructional designer reviewed the scripts to ensure alignment to each of the framework frames. Prior to their involvement in the production of the videos, the library communications office was introduced to the framework through a reading of the frames and discussions with librarians. This was done in order to provide a context and facilitate a better understanding of the content that was to be communicated in the videos. The library communications office then edited the scripts for time and terminology concerns, then produced the videos with the assistance of undergraduate video interns and student hosts. Production of the videos was completed using components of Adobe Creative Cloud, including After Effects, Audition, Illustrator, Photoshop, and Premiere Pro. This process was handled entirely by the library communications office, which has the trained personnel to handle projects with advanced technical requirements.

The series was called Inform Your Thinking[7] and the videos were titled as follows (each title corresponds with the adjacent frame):

- *Who Do You Trust and Why?* (Authority is Constructed and Contextual)
- *How is Your Information Created?* (Information Creation as a Process)
- *Information Has Value* (Information Has Value)
- *It's All About the Questions* (Research as Inquiry)
- *Research is a Conversation* (Scholarship as Conversation)
- *Search Smarter* (Searching as Strategic Exploration)

Each video includes a set of accompanying questions that are intended to facilitate reflective thought regarding undergraduate research within the context of a particular frame. These questions are optional but encouraged, and are not intended as a "check for understanding" based on the content of the videos. The questions were structured primarily by the undergraduate research coordinator, entered into a digital form (Machform), and embedded alongside the video. Questions were designed as prompts for open-ended reflection on the specific knowledge practices and dispositions outlined in the videos' corresponding frames, and employ examples discussed in the video as a starting point for more expansive thinking. Each question invites a narrative response rather than a specific range of "correct" answers, so assessment of student engagement with the ideas addressed in the videos requires a more qualitative examination on the part of librarians and faculty that precludes the use of automated assessment. While these particular questions were written specifically for FRS students, they can easily be adapted to suit a variety of learning environments and contexts.

In the context of the FRS program, faculty leading first-year seminars were invited to embed the video series as complementary instruction within existing the existing curriculum. Based on discussions in planning meetings, the instructors' initial reception has been positive, but more detailed feedback will have to wait until the conclusion of the pilot phase. In addition to augmenting existing FRS seminars, the videos also provide an opportunity for students without a seminar to accomplish similar learning objectives. In the pilot year, all FRS students will be asked to watch and respond to each of the videos regardless of their enrollment in a program seminar. Responses will be received and reviewed by librarians, recorded for participation by the undergraduate research office, then provided to each student's faculty mentor to facilitate discussion among all parties about topics as they relate to the specifics of their research experiences.

Since the start of this project, the undergraduate research coordinator has transitioned to a similar role at a different institution and established an alternative model for implementing the video series. Where the FRS model demonstrates the ability to offer large-scale instruction to students working outside the structure of a seminar, this alternative incorporates the videos into small, themed seminars scheduled throughout the academic year. The students participating in these seminars include all classifications, but are intended to provide a similar introduction to academic inquiry as the FRS program. In these seminars, students will watch the videos in class, free-write responses to the questions individually, then discuss their responses as a group. Though the library is not currently involved in the implementation of the video series in these seminars at the new institution, discussions are underway that promise more coordinated collaboration.

Reflection

The alignment of library and undergraduate research objectives capitalizes on expertise in both areas and provides students with opportunities for both information literacy and institutional awareness. A major intention of the collaboration is to foster critical thinkers who are empowered to leverage university resources in order to accomplish academic objectives in the advancement of personal and professional aspirations. For example, these modules intend to facilitate an understanding of the nature of scholarly conversations through the process of self-reflection *and* the investigation of ongoing research at Oklahoma State University in order to experience the local and global nature of how knowledge is exchanged and built. The scalability of the online video format promises to expand inclusivity and promote diversity in undergraduate research activities by providing informal introductions to critical concepts while directing students to key university resources. With ever-increasing attention on retention rates and ever-present budgetary concerns, this project demonstrates how universities can make efficient use of resources to make progress toward some of the institution's strategic and tactical goals, which include "[providing] support for research, scholarship, and creative activities" and "identify[ing], recruit[ing], develop[ing], and mentor[ing] potential scholars."[8] Still, even though this partnership has been fruitful, the implementation of the modules has required even more buy-in and collaboration from each of the colleges on campus, due to the decentralized manner of implementing the FRS program. Thus, the effort to fully and effectively incorporate the project into the FRS program long-term will require negotiation and tailoring of content so that the programmatic goals of each college are satisfied. This effort is just beginning, but promises to offer challenges that result in better instruction.

Assessment

Planning for assessment was a vital component of project development. The concurrent reflective questions as well as feedback from instructors and faculty mentors will be used as assessment tools. The purpose of assessing the project's effectiveness is threefold: to ensure that the project goals are met, to inform a course of action with students, and to facilitate an iterative approach to the continued use and improvement of the instruction.

Student answers to the reflective questions will be reviewed by a librarian, the overall FRS coordinator, college-level FRS coordinators, and faculty mentors. Based on the responses and feedback from stakeholders, the project has already positively contributed to the instructional goals outlined previously. Feedback from students has been positive thus far and the content, activities, and reflective questions have been well received. The modules have recently been implemented in the Special Undergraduate Enrichment Programs (SUEP) Research Seminar Series at the University of Colorado Boulder, where students were queried about the content and instructional approach. One student responded that "The Inform Your Thinking Videos have been very thought-provoking in the way that they prompt the viewer to completely reevaluate what they do with new information when they receive it. The videos encourage one to think in different ways and to question their own thoughts and those of others. I really enjoy the use of animations in balance with the interview-style discussion and think they do a great job of presenting the content." Another student noted that "The videos have been helpful in changing the way I approach, read, dissect, and analyze scholarly works, and the discussion-based format has provided me with a strong foundation for research and scholarly work."

The nature of the design of the reflective questions assisted students in relating the instruction content to their personal lives and experiences, specifically their research experiences and assumptions. These questions have provided a platform to facilitate a shared understanding between students and faculty mentors concerning the nature of research and role of information in the research process. Stakeholders and students cited an increase in the shared understanding of research expectations and the students' role in academic research. Additionally, student responses were used to guide students to the proper faculty mentors and to determine if additional intervention was warranted. Faculty and instructors have also expressed the usefulness of the activities in placing the library in a more relevant context for FRS.

In an effort to continuously improve the program's effectiveness, each iteration of the program will use feedback and assessment results to shape instruction and recommended use of the videos to faculty. In the future, we envision implementing additional assessment of student research skills throughout their tenure in the FRS program to determine the long-term effectiveness of the program, as well as to provide further information concerning student understanding of information and research to their faculty mentors. Qualitative data analysis will likely be used to categorize and assign themes to student responses in order to better understand students' thought processes, as well as to guide and adjust the course of the program. Depending on the quantity of data, funding, and available staff, this process may occur through the assistance of graduate teaching assistants or the use of qualitative data analysis software such as NVivo. Additionally, the program hopes to expand use of the videos and reflective questions to cater to a variety of students outside of FRS and tailor instruction accordingly.

Recommendations/Best Practices

In general, collaboration between the library and undergraduate research office seems to be a natural fit. The library stands to gain from an explicit connection to the recruitment and retention efforts that are often built into the undergraduate research program structure. Shared goals and outcomes between the two units can ease the burden of independently handling costs and juggling staffing needs by encouraging joint projects. Additionally, combining complementary skill sets and communities of practice can increase efficiency and maximize efforts to reach students in meaningful ways. Still, it is beneficial to realize that each unit is distinct and will bring their own priorities, timetables, and relationships to the conversation. This is why constant communication and goal-setting is vital to a successful project.

Specific to this project, developing video-driven content can be a daunting endeavor, as it requires a good deal of planning and promotion, and should be relatively long-lasting in its utility and appeal in order to avoid repeating the labor-intensive process frequently, especially in instances where library instructors do not have immediate access to a multimedia production team. Accordingly, it is vital, in a collaborative effort, to obtain feedback early and often from the various stakeholders involved in the development of the project. This feedback should be iterative and involved at every stage of the process. The process of obtaining feedback should continue once the content is published. The authors intend to use instructor and student feedback to inform next steps and continue to shape the project into the future.

Recommendations include: strive to maintain relevance when creating video content; keep the videos under five minutes (shorter, when possible); use students wherever possible in the process (especially as hosts); and avoid over-explaining concepts. You do not need to attempt to cover every possible nuance of the ACRL frames. Work with your students to incorporate and articulate what seems natural and relevant to their lives and programs. This, of course, depends on your students and the culture of your institutions. Various aspects of the framework may not be as vital to your students as they would be for others. Additionally, rather than attempt to explain concepts in detail, provide opportunities for students to discover through self-questioning. The incorporation of questions into these instruction modules builds on the video content and encourages students to find their own connections and have deeper conversations concerning the material.

Conclusion

Undergraduate research offices offer the library many potentially fruitful collaborative opportunities. The project outlined in this chapter was the culmination of smaller, successful partnerships that established trust and rapport between the two entities. Thanks to this high level of comfort, the resulting modules were thoughtfully planned and implemented, with relevance to students as the highest priority. Collaborating with partners allows for the library to exist outside an instructional vacuum, connecting with students within the context of their academic experience. As undergraduate research opportunities continue to gain prominence and influence on campus as high-impact educational programs that attract and retain students, librarians should make every effort to connect to these units, not only to support their endeavors, but also to drive opportunities to inform and enable students.

Appendix 10A: Reflective Questions from *Inform Your Thinking* Modules

The following questions are from the *Who Do You Trust and Why?* module:

- How do you negotiate disagreements among experts—that is, what determines who has authority when the conclusions of experts differ?
- What can you do when confronted with information that disagrees with your own perspective?
- How do you determine the level of expertise needed to establish authority; or, when do you need to consult academic and other sources?
- What role does evidence play in determining the authority of experts; or, how do you know when to trust the evidence provided?
- What role do various types of expertise (academic/professional training, experience, etc.) have in establishing authority—that is, in what situations are different types of expertise needed?
- What is the significance of the age and location of information to its value as an authoritative source?
- What value do non-academic sources have in academic conversations?

The following questions are from the *How is Your Information Created?* module:

- How do you tend to react when you encounter inaccurate information online that has been shared as factual?
- What measures do you take to ensure that the information you create and/or share is accurate? Do these measures differ depending on the purpose of your information; for example, something shared via social media versus a research paper?
- Identify a scholarly journal in your major or area of interest. Search for the homepage of this journal and attempt to locate information on the aim and scope of the journal, article submission instructions, and information for authors. What methods are in place to ensure the publication of high-quality research?
- Do a Google search for "fake peer review" or "peer review fraud." What are some ways that peer-review has been manipulated and why might this happen? How can fraud damage the research community and the individuals involved?

The following questions are from the *Information Has Value* module:

- How do you acknowledge the value of information in your own research?

- How would your personal and academic research be affected if your access to information was restricted or limited?
- What kind of information is valuable to you in your daily life? How about in your coursework? Is there a difference in the type of information you value in different settings?
- Review recent news regarding research at Oklahoma State University. What are some examples of research at OSU that could be considered "valuable"? How is the value of this research demonstrated? See http://www.vpr.okstate.edu/ for examples.

The following questions are from the *It's All About the Questions* module:

- The decisions we face often come in the form of yes-or-no questions: "Should marijuana be legalized?" But in answering these questions, more questions arise: "How does the legalization of marijuana affect violent crime, the economy, public health, or any number of issues (or topics)?" A simple question can then lead to many complex questions like branches on a tree—that's research! What is a decision you or your community faces that requires a yes-or-no answer? What additional questions arise?
- It's easy to feel overwhelmed when you start to think about all of the questions that can come from even simple yes-or-no questions. But this is where you come in. Focusing on your own interests and experiences, how can you narrow your questions to a set of closely-related questions? Can you write a question that brings all of these together?
- You can imagine the conclusions one reaches in making a decision will depend, in part, on the questions they choose to ask. For example, someone asking questions about economics might reach a different conclusion about the legalization of marijuana than someone asking about public health. How, then, do research questions reflect personal and/or cultural values?
- Like a "reboot" of a popular movie, researchers often revisit ideas with new information, resources, technology at different times and in different cultural settings. Imagine a research question, then consider how someone at a different time or culture with access to new information might ask the same question. What variables might affect the question?

The following questions are from the *Research is a Conversation* module:

- What are some types of problems confronted in everyday conversations that might apply to scholarly conversations as well? Imagine and share some creative solutions to these issues.
- How do you decide to trust what you hear in a conversation, and how might those strategies apply to scholarly conversations?

- Conversations with new people or about unfamiliar topics can be difficult. How would you prepare for and approach a potential faculty mentor with questions about a topic on which they are an expert? How does your access to student resources work to your advantage in preparing for this situation?
- Scholarly conversations are often formal (academic journal articles), but more informal conversations are increasingly accessible through blogs, social media, and in the news. Can you identify some experts or organizations in your area of interest who are informally conversing on their topics of expertise?
- Who at your institution is participating in scholarly conversations that interest you? How did you go about finding them?

The following questions are from the *Search Smarter* module:

- Explore the research guides available through the library. Who is the subject specialist librarian for your major or area of interest? What databases and/or journals would be relevant to your own research? Research guides are available at http://www.library.okstate.edu/research-guides/subject-lists/
- Based on your own interests or class assignment, write a basic research question (example: How has climate change impacted the risk of water-related illnesses in developing countries?). For help with research questions, see our video at http://info.library.okstate.edu/informyourthinking/questions
- Use your research question above to build a set of search terms, synonyms, and related words that can be used to search for information (example: climate change, global warming, water, illness, disease, developing countries, water quality, etc.).
- Using these terms, explore one of the databases you discovered above. Try a few searches, using different combinations of terms each time. How does changing your terms alter your list of results? How does having a variety of search terms help you?
- Using the same set of search terms, compare your database search results with Google and Google Scholar results. Do you see the same articles popping up in the results? Why or why not? Are you able to access the full text of articles through Google or Google Scholar? Why or why not?

Notes

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