

CHAPTER 9

UNDERSTANDING AND USING SOURCES: STUDENT PRACTICES AND PERCEPTIONS

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Following a troubling assessment of a writing course in which fewer than one third of students proved competent or above in integrating research, composition instructors and a research librarian created new approaches to teaching research and initiated a study exploring students' information literacies: what students understand and what they don't, what works for them, what doesn't. In part, the study responds to Rebecca Moore Howard, Tanya K. Rodrigue, and Tricia C. Serviss's (2010) call to gather "more information about what students are actually doing with the sources they cite" (p. 179). The study also interrogates approaches for increasing student information literacy (IL) by providing a deeper understanding—from the students' own perspectives—of the ways students interact with and view sources as they are learning to perform academic research and writing.

From a series of studies (e.g., Head & Eisenberg, 2010a; Head & Eisenberg, 2010b; McClure & Clink, 2009; Head, 2008; Head, 2007; Barefoot, 2006; Byerly, Downey & Ramin, 2006; Caspers & Bernhisel, 2005) as well as our own

practice, we know that students struggle with much more than properly documenting their sources. They are also challenged with finding credible and relevant sources for varied purposes; considering ways to use source material for rhetorical aims; knowing how, when, and why to summarize, paraphrase, or quote while retaining their own voice in their essays; and performing other demanding practices affiliated with IL. These are tall orders for students required to develop a sense of the published conversations addressing issues within a given community—and then to contribute to that conversation (ACRL, 2015; Bizup, 2008). Even when we possess relevant expertise, we academics find offering unique contributions to conversations within our disciplines difficult. However, as the new *Framework for Information Literacy for Higher Education (IL Framework)* (ACRL, 2015) suggests, disciplinary faculty and librarians should help students realize that, by researching, they are seeing published work as people's thoughts and voices in conversation. This lesson is a first step toward encouraging students to consider—if not offer—their own thoughts to ideas raised in publications (ACRL, 2015).

All of these aspects are a challenge to teach, particularly in first-year composition courses. With a widespread focus on research in first-year composition, we still know little about what helps students understand the value and practices of academic research and writing. As Rafaella Negretti (2012) states, “research investigating how students learn to write academically has often neglected the students' own experiences” (p. 145). To begin to explore student experiences in researching for the purposes of writing their own argumentative essays, our study first looks at how students consider and discuss issues related to seeking, evaluating, selecting, and incorporating sources into their own texts in progress. Toward that end, we first created Research Diary prompts and analyzed responses from students in two first-year composition sections. These prompts, created by the research librarian and composition instructors, were aimed at raising self-awareness as well as scaffolding research processes. Serving as pre- and post- measures, the first and last diary prompts asked students to report on research practices, how they select what information to include, and how they feel about researching.

We also examined what students in four sections of first-year composition said about their writing and research processes at the semester's end. In essays reflecting on their semester-long research-based project, do they identify smaller research-related activities or other aspects of the course as most useful as they research and write? What specific processes contributed to their final, research-based product?

At a time when national studies are identifying trends in students' use of information, we also aimed to see what pedagogical implications and interventions

our findings from the students themselves might suggest. Through our study, we offer readers an opportunity to see how the deliberate inclusion of reflective writings can provide a clearer picture of student processes and perceptions, with implications for a curricular emphasis on critical, reflexive IL—all made possible at our institution through a collaboration between the university library and the writing program.

REVIEW OF LITERATURE: LIBRARY AND COMPOSITION SCHOLARS JOINING FORCES

In this section, we review literature from library and composition scholars working together to integrate IL while developing curricula, emphasizing rhetorical purposes for using information from sources, and/or helping students work with and understand information from sources.

INTEGRATING IL AND COMPOSITION

Rather than simply focusing on arranging a one-shot library visit for a given class, librarians and faculty can work in conjunction to extend library instruction directly into courses across the curriculum (Artman et al., 2010). Research suggests that faculty can best move beyond treating IL as an “add-on” (see, e.g., Artman, Frisicaro-Pawlowski & Monge, 2010; Mounce, 2010; Jacobs, 2008; Deitering & Jameson, 2008; Brasley, 2008; and Norgaard, 2003) when they tap into the valuable resources available through librarians in their midst. Librarians tend to value these targeted opportunities for building alliances across campus that draw from their IL expertise (ACRL, 2015).

The new *Framework for IL* asks librarians to employ their unique expertise to help faculty build curricula enriched with attention to IL (ACRL, 2015). One approach growing in popularity involves a librarian and an instructor working together to develop online “library guides” offering relevant databases and suitable resources for specific courses, a practice already working well at our institution. Additional methods have been employed at other institutions (Hutchins, Fister & MacPherson, 2002). For example, incorporating values of IL explicitly into library sessions through surveys and “learning circle” reflective activities has proven successful (Holliday & Fagerheim, 2006). Rhea J. Simmons and Marianne B. Eimer (2004) explain how librarians at their institution collaborated with faculty to promote students’ ownership of the processes of finding, identifying, and evaluating sources, especially as students “teach back” to the instructor what they have learned (p. 1–2). Their results reveal the importance of helping students articulate and reflect on

the processes by which they integrate sources into their work. Articulating choices made while researching can help students “begin to recognize the significance of the creation process, leading them to increasingly sophisticated choices when matching information products with their information needs,” and identifying how the efficacy of particular practices can vary from context to context (ACRL, 2015).

Librarians and writing instructors can work together in numerous ways. One model places an instructor and librarian into a first-year composition course as co-teachers (Peary & Ernack, 2004). Elsewhere, librarians and Multimedia Writing and Technical Communication faculty jointly oversee students assigned to create a library portal (D’Angelo & Maid, 2004). Another model calls for “course-integrated library instruction” in which class assignments are developed by an instructor who works with a librarian to incorporate effective IL practices (Artman et al., 2010, p. 102). Because it allows for a collaborative approach to integrating the mutually informative processes of writing and research, we see particular promise in this final method. And it is one that we collaboratively drew from as we created small, scaffolding assignments asking students to engage with specific aspects of research as they wrote.

FOCUSING ON RHETORICAL USES OF INFORMATION FROM SOURCES

A number of researchers focus on helping students learn to use information from sources rhetorically. Cynthia R. Haller (2010) reports on her case study of three advanced undergraduate students as they approached their research projects. In particular, Haller notes the extent to which the students employed sources to achieve specific purposes for their target audience. Another valuable approach included shared course readings, selected primarily to provide disciplinary-specific knowledge. Drawing from these readings allowed one student to position his own argument in the context of an academic conversation, one in which knowledge claims can be and are disputed. This approach aligns with the *Framework for IL*, which argues the importance of exploring and disputing varied claims as a means to “extend the knowledge in [a field]. Many times, this process includes points of disagreement where debate and dialogue work to deepen the conversations around knowledge” (ACRL, 2015). Librarians and faculty alike can highlight articles offering academic conversations in which varied positions are explored in a well-argued and reasonable manner, helping students to understand academic work and research as “open-ended exploration and engagement with information” (ACRL, 2015).

Such awareness and consideration is the focus of Joseph Bizup’s (2008) work

toward a “rhetorical vocabulary” based on four “functional roles” for using sources: background sources, exhibits, argument sources, and method sources. Helping students identify specific purposes for sources cited in articles can allow them to see and then employ various options for using sources in academic writing.

Including attention to rhetorical reasons for incorporating sources can extend the call in the *Framework for IL* for a dynamic and flexible approach to information use. It can go beyond understanding the purposes, contexts, and audiences for given source material and motivate student writers to consider multiple aims for that source material as it is incorporated for their own purposes into their own work. We can help students with this by highlighting possible contrasts between original purposes for information shared in sources and the specific purposes to which the student writers put that information for their own, perhaps divergent, purposes.

HELPING STUDENTS READ FROM SOURCES

We can help students improve their IL by employing strategies for optimizing an array of reading strategies, not just writing strategies. Toward that end, some researchers focus on student understanding of and engagement with source texts. Working in this direction, the Citation Project researchers analyze research-supported essays from across the nation with an eye to describing students’ documentation practices, ultimately aiming to help students more appropriately work with sources. Citation Project leaders such as Howard, Rodrigue, and Serviss (2010) found that many students are not in fact doing what could be described as writing based on sources; instead “they are writing from sentences selected from sources” (p. 187). Findings such as these make us question the extent to which we are supporting students in reading and comprehending source materials prior to using such sources in their own texts. The student essays the Citation Project researchers reviewed did not indicate that many students were getting a “gist” of their source material or the sources’ key arguments. These researchers therefore suggest that we spend more time ensuring that students learn to read, understand, and employ sources for their own use as writers. Emphasizing academic reading strategies can help address other issues identified by the Citation Project, such as obstacles in understanding scholarly sources and tendencies toward surface-level reading (see Jamieson, Chapter 6, this collection).

Our own study explores in part some of the issues suggested by the studies mentioned above. Below, we share the methods employed to better understand student perspectives on how they learn to engage with source materials.

METHODS FOR EXAMINING STUDENT PERSPECTIVES ON IL

Following others such as Anne-Marie Deitering and Sara Jameson (2008), Stephanie Sterling Brasley (2008), Wendy Holliday and Britt A. Fagerheim (2006), Alexandria Peary and Linda Ernack (2004), and Rhea J. Simmons and Marianne B. Eimer (2004), we—a librarian and writing instructors—collaborated to address IL issues in our first-year composition course. To begin our effort, we worked to develop curricula focused on improving students' understanding of research practices and strategies for integrating research into their own writing. Specifically, we hoped that by asking students to explicitly reflect on their research processes, they—as well as we—could identify misunderstanding or confusion and address issues as, rather than after, they occurred.

Among the four instructors participating in our study, two worked closely with the librarian to develop Research Diary assignments, detailed in the “Research Diaries” section below. From these two instructors' courses, we collected and analyzed student responses. All four instructors were asked to collect students' final research-supported essays along with reflective essays in which students discussed the writing and research reflected in their work.

RESEARCH DIARIES

Following the work of composition scholars such as Robert Detmering and Anna Marie Johnson (2012) who argue the value of student reflections, we solicited students' perspectives through what we refer to as Research Diary prompts in two of the four course sections. Working together, the two instructors and the librarian established a “loose” class focus: population growth, a theme general enough to allow for students to investigate issues from disciplinary perspectives or personal interest. Modules were designed to enhance learning related to research processes and research-supported writing. For instance, the librarian selected relevant readings written for the general public such as news articles (from *New York Times* and *New York Times Room for Debate*) and magazine articles (from *National Geographic* and *New Yorker*) that addressed specific concerns of population growth. We decided in the early stages of the semester not to use academic peer-reviewed journals because many journal articles are too specialized or complex for students at large. We preferred more accessible articles allowing students to concentrate on *processes* of using material. We agreed that after students experience reading and responding to these more accessible articles, they can next focus on finding information from more scholarly, though less widely accessible, sources.

The Research Diaries consisted of 10 assignments across a 16-week semester. Main goals of the prompts included helping students reflect on optimizing keywords in their searches for information; assessing sources of different types (academic, popular); reading and understanding shared pieces; citing and annotating resources; integrating key aspects from shared sources into their own quotes, paraphrases, and summaries; and linking source material to their own thinking and writing. Each prompt was a low stakes writing assignment asking students to engage with information or an information resource. Equally important, instructors could review students' work as students drafted and revised to identify how they were interacting with specific types of information.

To get a baseline picture of students' practices related to academic research, the first prompt, for example, asked about existing research approaches and attitudes:

- What is your process for doing research on an academic topic about which you know very little?
- How do you decide what information to trust when you are doing research?
- Do you enjoy the research process? Does it frustrate you? Please discuss your answers.
- These same questions were asked in the final Research Diary module so we could identify what, if anything, changed.

Following Haller (2010), we saw value in asking students to incorporate sources as a class by working first from shared sources. This approach allows students to share multiple and appropriate options for working with the same material. To mimic an organic research inquiry process, we provided articles covering population-related issues that students might find interesting even outside of the classroom before prompting them to follow up with relevant articles they found on their own.

In addition, Research Diary assignments prepared students to optimize a library instruction session since students had already begun searching for materials relevant to the focus of their essays and were able to raise challenges that they were encountering. Responses to prompts also provided access to students' individual research-related thoughts and processes so instructors and the librarian could discuss misunderstandings and questions about researching in context. Instructors and the librarian were able to see where and when the students experienced misconceptions about the search process; they were also able to see firsthand what resources students were locating and using to support arguments in their texts. In short, the Research Diaries provided instructors and the librarian with information that could assist them in identifying problems with students' research processes *as they occurred*, rather than after the assignments were due.

REFLECTIVE ESSAYS

From the 53 reflective essays provided by students who gave informed consent in the four target classes, we analyzed responses to determine what students reported had been helpful to them in completing their research-supported projects. After collecting quotations from students' reflections and gaining a general sense of the data, we identified six themes related to what most helped the students in working on research integration.

RESULTS AND DISCUSSION: STUDENT PROCESSES AND PERCEPTIONS

Here we report on our analysis of Research Diary responses from the two sections in which the diary prompts were embedded along with our analysis of the reflective essays gathered from the four sections of first-year composition.

RESEARCH DIARIES

While final reflective essays, discussed below, provided insights into students' views of learning to research and write, Research Diary prompts and assignments focused explicitly on smaller, individual steps, aspects that academic writers typically take into account when researching. Although prompts were designed to model and teach strategies and to allow students to practice aspects of the research process, for the purposes of this chapter we focus on responses to the pre- and post-semester prompt that provided insight into students' evolving research processes and perceptions. From students' responses to the open-ended questions about how they approach finding research on topics about which they know little and then determine whether to trust the sources they find, we are able to note a number of changes students made in their research repertoires from the beginning to the end of the course.

Evaluating Credibility of Sources

We were particularly interested in students' decision-making processes in determining which information to trust and use. One pre- and post- prompt asked students how they determine which sources to trust. Figure 9.1 shows a comparison of the frequency with which particular factors were mentioned by students at the beginning of the semester compared to the frequency of these factors appearing in their responses at the end of the semester.

Based on categories established for a previous study analyzing criteria students used in selecting sources for their essays (Westbrock & Moberly, unpublished

mss.), we coded student responses to the prompt asking them to report factors they consider when determining which information to trust. Students' open-ended responses were coded using the following categories:

- **Support/Relevance**—Signified that retrieved information was relevant to student's argument.
- **Occurrence**—Indicated inclination to trust information appearing on multiple sites, regardless of the source.
- **Credibility**—Indicated inclination to trust information from sources establishing credibility through author's organizational affiliation, nature of website, author's professional reputation, or presence of cited material.
- **Access**—Referred to considering information trustworthy depending on *where* they found it, for instance, in books or through the library, or from where they initially accessed it (e.g., through a Google search).
- **Rule**—Indicated evaluating information students considered absolutes, often affiliated with terms such as “always,” “never,” and “only,” such as a stated willingness to “*only* trust sites that end in .gov” or to “*never* trust Wikipedia.”

Taking these categories into account, the main changes in students' reports occurred in the categories of “occurrence” and “rule” (see Figure 9.1). At the beginning of the semester, 21% of students included criteria referring to “occurrence.” By the end of the semester, only 6% of students showed preference for selection based primarily on popularity. Of course, using “occurrence” as a criterion is not necessarily ineffective (e.g., we are more likely to trust study results when multiple, *trusted* researchers report similar results), we note that students' mention of occurrence was the primary factor that decreased with extra research instruction.

We believe this finding should be problematized and discussed explicitly with students. It is neither a positive nor negative result but one that invites discussion of source reliability, purpose, and context. As the *Framework for IL* suggests, authority is constructed not solely by expertise but in light of “information need and context” among different communities with different values and purposes (ACRL, 2015). Simply noting that many websites, for instance, say the same thing, is not enough. We need to help students ask questions. Connecting the criterion of “occurrence” to questions of authority and context can help students become more nuanced in their selection of reliable sources. Students can learn to consider that despite the frequent occurrence of a given piece of information, they should also apply other criteria such as checking the credentials and affiliations of those providing information, along with context.

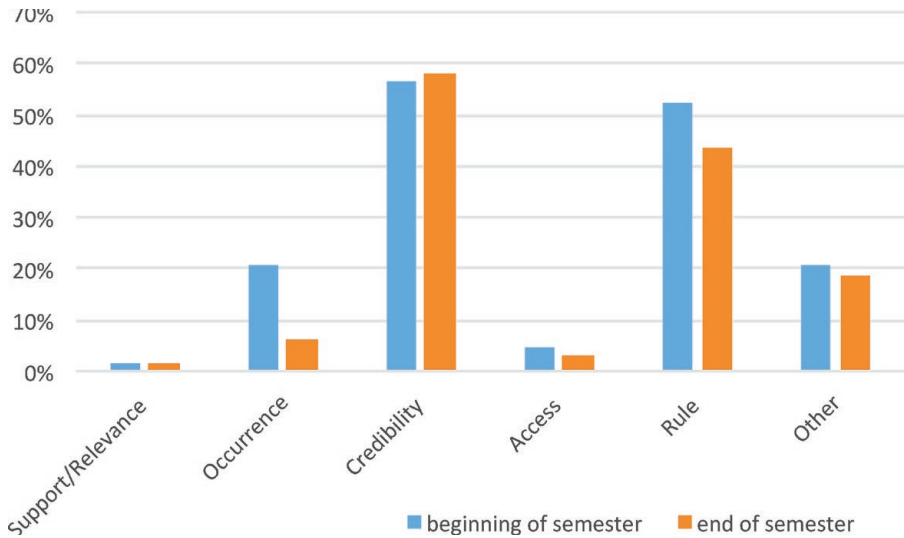


Figure 9.1. Students' criteria for evaluating information at beginning and end of semester.

Students' reported reliance on a "rule" such as "trust only web sources ending with .gov" decreased just slightly at the semester's end. At the beginning of the semester, 52% of students referred to a "rule" as key when selecting sources; somewhat fewer—44%—referenced a "rule" at the end of the semester. We see an important opportunity to discuss this finding with students in a more complex fashion as well, following the call in the *Framework for IL* to encourage students to "monitor the value that is placed upon different types of information products in varying contexts" and to see research practices as dynamic, requiring flexibility and open minds (ACRL, 2015). We see value in exploring rules students have learned from prior classes, with attempts made to examine possible rationale for rules they have learned such as not using *Wikipedia* as a source. Understanding reasons behind rules that might apply appropriately in some contexts but not others can allow students to overcome fears about *Wikipedia* and instead feel free to use it as a starting place, finding leads to relevant information and to sources cited by named authorities.

With respect to trustworthiness of sources, students at the beginning as well as the end of the semester mentioned trying to select sources that were credible more than they did any other factor. However, rather than simply listing credibility as a factor, students at the end of the semester tended to mention more concrete elements related to credibility (such as the professional affiliation of the author, the presence of cited material, and so on) as factors they consider when selecting sources. The *Framework for IL* suggests such elements are useful for

novices to learn about, though more experienced researchers learn to take into account how “authority” can vary by community, context, and need (ACRL, 2015).

Although at the semester’s end somewhat fewer students mentioned “access” (where they started their searches) as a factor they consider when selecting sources, students who mentioned access at the semester’s *end* tended to provide more specific examples of where they began their searches (e.g., Academic Search Premier, Google, Google Scholar). Similarly, some students mentioned trusting information solely because it appears in a book or through other resources offered by a university library, a notion that we also hope to dispel. Of course, library-affiliated search engines such as Academic Search Premier can lead students to popular if not questionable sources, and even a general Google search can yield scholarly materials.

A reduction in reporting “access” as a factor important to search strategies isn’t necessarily seen as an improvement; however, the specificity in students’ responses related to access is an indication to us that students at the semester’s end might have added more resources as access points to their research toolbox. Students can also learn that despite starting searches via a library-provided database, results will not necessarily provide more reliable information than would a general Google search. Nonetheless, we do see library-provided databases as a good first step in intentionally selected starting points that are perhaps more nuanced but a little less easy to access than Google. We see promise for future research that tracks whether students move to more sophisticated sources, more relevant to specific disciplines, as they enter and move through their majors.

Overall, the key finding related to evaluating sources is that by the end of the semester, many students had learned to problematize their evaluation processes, learning to take multiple factors into account while beginning to understand the assertion from the *Framework for IL* that authority is constructed in and dependent on context (ACRL, 2015). But this is only a beginning. The challenge is to build upon this beginning, which is difficult to achieve in a single composition course.

With more explicit discussion and instruction, students can tap into more finely nuanced and multiple criteria for determining the value of sources for their own uses. Moreover, as the *IL Framework* reminds us, students who are used to free if not relatively easy access to information might think that this information does not possess value, leaving them confused about the need for following intellectual property laws or respecting the work it takes “to produce knowledge” (ACRL, 2015). Students might also not appreciate the potential value of adding their own thoughts and voices to ongoing conversations through their own written work.

Based on what this aspect of our study has taught us, a challenge for composition courses is to uncover the strategies for determining selection-processes *already used* by students entering the class, to discuss strengths and weaknesses of various strategies, and to promote new strategies, particularly encouraging students to employ a combination of criteria before being persuaded that a source is reliable or appropriate for their purposes. Leading students to more finely nuanced objectives can allow students to learn exceptions to general recommendations for researching.

Reporting on Steps in Their Research Processes

When asked, “What is your process for doing research on an academic topic about which you know very little,” students reported using an average of three steps in their research processes at the start of the semester compared to the 2.4 average at the end. While a number of students reportedly employed somewhat fewer steps in their process, the quality and purpose of the steps tended to reflect more critical evaluation of source locations and source types as well as a more cogent rationale for exploring and using particular steps. For instance, at the start of the semester, students attest to using the library as a way to simply “locate further information about my topic” or “find sources that grab my interest.” At the beginning of the semester, only 4% even mentioned using the library for rhetorically rich purposes such as “locating supporting evidence” or strengthening their arguments to persuade diverse readers. At the semester’s end, however, many refer to more critical decision-making points within the steps they report, such as the need to “explore reliable sources,” “make comparisons between source types,” and “garner credible information.” At the end of the semester, when explaining steps used during the research process, one student mentioned the need to consider multiple perspectives while another cited the importance of sufficiently informing herself enough about the topic. The degree of insight offered by a source as well as its professional affiliations also factor into the steps students described as part of their seemingly new research repertoire. When reporting on steps they used in the research process, some students at the end of the semester also discussed the value and importance of making critical choices about information they consider relevant to their *argument* (not just relevant to their topic) as well as about information to better lend credibility to the content and nature of their arguments.

At the end of the semester, many of these students additionally discussed taking the step of using library resources to examine their topic in depth and help them sort through “good” and “bad” information (without tending to expand on how they determined what qualifies for “good” or “bad”). In discussing their research process steps, a number of students also mentioned beginning to see

value in obtaining articles from sources other than websites, and some cited Google Scholar as a more useful option to a general Google search because of its emphasis on peer reviewed content.

These self-reported changes in student thinking and behavior likely explain the increase in library use they cited as part of their research process: at the beginning of the semester, only 29% of students include mention of the library (physical or online) as part of their research process. At the end of the semester, 52% of students include using the library as an aid to their research processes. Since we aim to encourage students to tap into the resources our university offers them, we were pleased with this result, which indicated that students reported being more willing to seek additional help when needed, as the *IL Framework* recommends (ACRL, 2015). At the same time, we do not want students to think that they can only get valuable information from or through a library. The positive news for us here is that students by the semester's end tended to indicate a broader repertoire as they worked through their inquiry processes.

Expressing Attitudes toward Researching

By the semester's end, sentiments toward researching reflected some diminishing student frustration, particularly as a result of, as one student put it, "adequate guidance, and new and efficient techniques that make research easier and less frustrating." Overall, 31% of students reported a change in attitudes toward research, typically because in the end, they reported finding the process less frustrating or because they found it easier due to the strategies learned. Although some students reported more frustration in the end because they were more aware of the complexity of researching (not necessarily a negative finding), more students mentioned feeling better equipped to navigate through the research process and attested to enjoying it more because of the potential to discover new or even "exciting" information. While quite a few students reported positive changes in their attitude toward research, 22% revealed that in the end they found the process both enjoyable and frustrating depending on the nature of the topic and the time it took to locate relevant and credible information.

Moreover, students at the semester's end reported more willingness to locate information. Some also mentioned being intrigued by the prospect of learning about a new topic. Still, students stated that they found it daunting to sift through information to locate optimal material for advancing their arguments. Many students mentioned that their interest in the topic, not surprisingly, can impact their feelings toward research. Twenty-eight percent of students at the end of the semester mentioned "interest in the topic" as a primary motivator in their quest for information. Educators have long discussed the value of finding topics that could interest and engage students (Schraw & Lehman, 2001; Wade,

1992; Dewey, 1913); student responses to the motivation question support its importance. We hope that learning to appreciate their increasing abilities to find information they are curious about will motivate students toward what the *IL Framework* advocates: “asking increasingly complex or new questions whose answers in turn develop additional questions or lines of inquiry” (ACRL, 2015).

STUDENTS’ REFLECTIVE ESSAYS

One important goal of this study was to better understand students’ perceptions of their own writing and research processes, particularly what they reported as most helpful to their learning and to their completion of the final research-supported essay. The reflective essays allowed students—in their own words—to contribute to our research and our understanding of their IL practices.

From our analysis of reflections, following Creswell (2007), who advocates for allowing themes to emerge (based more on perspectives of participants as opposed to researchers), we identified six key categories that students described as helping them develop as researchers: specifically, learning to

- Interact with source material.
- Improve general writing processes.
- Use library resources.
- Scaffold the research process.
- Enhance audience and rhetorical awareness.
- Develop more sound research processes.

In the following, we describe each theme, report how many final reflective essays out of 53 mentioned the given theme as helpful to them as developing researchers, and highlight students’ voices through quotations.

Interacting with Source Material

In final reflective essays submitted along with their final research-supported projects, many students reported valuing instruction in learning to evaluate, integrate, and cite sources for their academic writing. This theme emerged as the most often mentioned, noted in 44 of the 53 reflective essays. Students described as most helpful activities such as learning to identify trustworthy sources, selecting relevant information, and integrating quotations and summaries into their writing. As one student explained, “[Research-related assignments] have made me read more into the articles/sources so I can understand my topic more and really pick out what I want to use in my essay. Research, for me, has been a big improvement and the audiences can trust my work.” (In sharing

quotes from students, we present them precisely as they were offered in students' documents.) This quote highlights student awareness of valuing outside sources: to help a writer learn more about his or her topic, to provide a writer with key information to strengthen an essay, and to build credibility. The quote also resonates with the *IL Framework* statement that "Information possesses several dimensions of value, including as a commodity, as a means of education, as a means to influence, and as a means of negotiating and understanding the world" (ACRL, 2015).

Another student wrote, "I do pay a lot more attention to how credible my source is. I used to just worry about the information that I was being given, but now I look at if they cite their sources and if they have education in the specific area or if it is biased or not." We see this student as recognizing that information is not useful merely for being related to one's topic; according to the *IL Framework*, information should also come from a reliable source suitable for a given purpose (ACRL, 2015). Still another student wrote, "I have gone from just throwing out random facts I have heard to actually researching and writing down multiple sources then choosing from the most relevant ones." We see this remark as providing evidence of a student's increased awareness of the importance of care required in selecting from a range of sources, each with potential strengths and weaknesses. This student's comments suggest other practices advocated by the *IL Framework*, including "monitor[ing] gathered information and assess[ing] for gaps or weaknesses; organiz[ing] information in meaningful ways," and "synthesiz[ing] ideas gathered from multiple sources" (ACRL, 2015).

Other students mentioned learning to integrate and cite sources as helpful for displaying multiple perspectives in the midst of their own informed views. One student explained, "Since I got into [the composition course] I was able to figure out how to [incorporate an opposing viewpoint into the essay] and still be able to get my point across and have the readers on my side and not the opposing side like I feared." Other students also mentioned valuing their new abilities in presenting an opposing or counterargument without losing an audience's support. We are encouraged by the learning such comments represent, comments that connect to themes shared in the *IL Framework*, which encourages researchers to "maintain an open mind and critical stance" as well as "seek[ing] multiple perspectives during information gathering and assessment" (ACRL, 2015).

Though not all students commented on this aspect of integrating research, most students mentioned learning to cite sources as helpful, with some students able to make connections between learning to cite material and a writer's credibility. As one student stated, "In high school we were never taught to do in text

citations . . . and I never knew how easy it was. With these citations my paper makes me sound like a more reliable source than just some random person that thinks they know what they're talking about." This quotation suggests that extra practice and conversations about citation help to do more than demystify citation rules; they lead to increased confidence in writing and new awareness of how to enhance a writer's ethos. Moreover, as the *IL Framework* suggests, the citations play a role in academic conversations: "Providing attribution to relevant previous research is also an obligation of participation in the conversation. It enables the conversation to move forward and strengthens one's voice in the conversation" (ACRL, 2015). We appreciate seeing evidence that students can learn to recognize real purposes for citing, such as nodding to others involved in discussing an issue.

Improving Writing Processes

As the second most common topic to come up in students' responses related to what helped them develop as researchers, 32 of 53 students discussed benefits of their writing processes changing during the course. As one student wrote, "I used to just type it out and do all of the processes within a week and hope that it was what the teacher wanted, but now I know that it takes much more time." Our hope is that students making this type of comment will keep this in mind as they approach academic writing in the future. Another response showed that, as one student put it, "I learned that [I] have to [do] constant research and do revisions in order to make my paper better." This student's comment also reflects growing expertise in researching. As the *IL Framework* states, "Experts are . . . inclined to seek out many perspectives, not just the ones with which they are familiar" (ACRL 2015). The student's response also demonstrates something we noticed in other reflective essays: discussions of research as it relates to the writing process and written products, with research prompting more writing and more writing prompting further research.

Using Library Resources

As the third most popular theme to emerge as an aid to completing the course's final essay, using library resources encompasses activities such as learning about new databases for finding sources, gaining practice in using databases, and discussing purposes of databases and various search engines. Thirty-one of 53 students explained that learning about and using databases, search engines, or the library website aided in their completion of the research-supported, argumentative essay.

A number of students spoke of their transformation as researchers during the course of the semester due to increased awareness of resources available to them. For example, one student wrote, "Before this year, to do my research,

I would just type in the topic to Google and then just look and look until I found what I needed, but what I learned is that there is specific sources (ex. the . . . library website) that will help you narrow down your search.” Another student explained, “I used to get on Google type what I was looking for then hit on the first link, but now instead of doing that I go to academic search premier or CQ researcher those two websites are my favorites to gather information.” Some students noted that particular databases were useful for specific reasons, such as finding relevant peer-reviewed articles and providing information about an author’s credibility. By the end of the course, some reported a new awareness of the care required to sift through information whether using academic databases or Google. Many students mentioned appreciating being explicitly taught how to use academic resources and when and why to use them as well as knowing that Google was not the only option for finding information. Other students mentioned the value of noting where a source is published and with which type of domain (i.e., .com, .edu, .gov, and .org) as a means to comprehend the context for information presented. At the same time, some students did not show much awareness of the role or value of databases, with one such student stating that “information [from databases] is correct and it will look better on a paper to a teacher verses a Google website.” At the least, students showed that they were beginning to think of research as inquiry and that seeking information from multiple sources was a useful, if not desirable, option.

Learning through Scaffolding the Research Process

Twenty-eight of 53 students addressed the value of a sequence of assignments leading up to the final essay, with one student stating, “Every assignment we did in class or online was like taking little steps closer to where we needed to be in writing our final draft.” Not only did students regularly mention specific helpful assignments (such as the annotated bibliography, topic proposal, audience analysis, and extended outline), but some students mentioned how helpful it was to have most of the semester to work on a final essay because they didn’t “have to rush last minute to finish a paper.” One student responded that “the way the instructor laid out the assignment and gave us small work to do throughout the process it made it much easier to write.” Not only did students find that the sequencing and scaffolding of the entire process was beneficial, but by bringing up assignment sequencing in their responses, these students seemed to follow the *IL Framework’s* assertion that each small supporting piece of the assignment informed the essay and allowed them to approach “complex research by breaking complex questions into simple ones, limiting the scope of investigations” (ACRL, 2015).

Enhancing Audience and Rhetorical Awareness

More than 40% of students (23 of 53) mentioned audience or rhetorical awareness as something that helped them during both writing and research processes. Many students talked about audiences and rhetorical considerations as new developments in their writing. One student writes, “The most important thing that I’ve learned this semester is how to write as a reader; to maintain a constant consideration of the reader. This has improved my writing process and the writing itself.” As seen above, this increased awareness of audience also impacted students’ research decisions and practices. We believe, as a number of students reported, that the deliberate inclusion of Research Diary questions about audience and argumentation within various supporting assignments throughout the research and writing processes helped students to reach this conclusion.

Developing Sound Research Processes

Overall, many students reflected on changes they had made in their research and writing processes by the end of the course; many of these students included statements such as, “Before English 111, I used to . . . but now I . . .” Fifteen students discussed how learning more academic strategies aided them as researchers. Commenting on the usefulness of initially identifying a research question, one student wrote, “I think having a specific question to be answer while looking for a source was very helpful. I don’t think I ever had a specific question while looking for a source . . . this was a new method that will improve my writing if I continued to do it.” Although we often assume students know, as the *IL Framework* puts it, that “the act of searching often begins with a question that directs the act of finding needed information” (ACRL, 2015), the reflections from students indicate that some have not previously been strategic in locating information but instead have simply collected information that might have some—any—connection to their topics, and not necessarily searching information for their purposes for writing, such as persuading readers.

Learning to make distinctions among source information and types is not an easy process. One student commented on this in the reflective essay, stating, “I liked how the [final essay] challenged my research skills to look for more information than I had to in the past.” The *IL Framework* emphasizes the benefits of learning that “first attempts at searching do not always produce adequate results” along with benefits of observing the “value of browsing” as well as “persist[ing] in the face of search challenges,” knowing when the search task for one’s purpose is complete (ACRL, 2015). Also, mentioning learning, a student writes, “The research that I did helped me so much in not only to make my paper more appealing but I learned so much about this topics that I’ve been trying to learn about for many years.” It seems, then, that slowing down the assignment pacing

and dedicating time to explicit instruction on research (through Research Diaries, class discussions, library instruction, and supporting assignments) helped students understand research as an opportunity to learn much more about a topic of interest to them and then to use that information for a purpose. When we look at students' responses in the writing process and research process categories, we see students beginning to understand research as a strategic exploration, with purpose in each iterative step as indicated by the *IL Framework* (ACRL, 2015). Many students said they found learning to research just as important or helpful as learning to write as well as a process to invoke throughout writing projects, not just as something to take part in during the invention or concluding stages of writing.

Finally, one of the most surprising results from our analysis of students' reflective essays is how often students talked about research as a rhetorical act. Students explained that they now have explicit *purposes* for selecting sources, such as becoming knowledgeable about a topic, displaying ethos and appearing credible to their readers, and better understanding others' perspectives and opposing arguments. In fact, several students mentioned appreciating new abilities to incorporate an opposing or counterargument, rather than ignoring it as they had in the past. Additionally, students talked about research as a way to learn about a topic and carefully present a sound argument, rather than simply a method for "proving a point." In fact, students' reflective essays suggest many students began to understand research as a complex, iterative process integrated with writing itself. Since the course was designed with this intent, it was encouraging to see students viewing these as joint, recursive processes, equally integral to the creation of knowledge, a tenet of the *IL Framework* (ACRL, 2015).

IMPLICATIONS AND CONCLUSION

One of the most striking aspects of our exploration of students' perspectives on research-supported writing is that there is so much more to learn about what is happening "behind the scenes" and that what we stand to learn is worth the additional effort of tracking students' research processes, beliefs, and attitudes. All too often, we learn about students' IL exclusively from a final research-supported essay. As instructors have long known, however, what students do in their final products is not necessarily an indication of what they *can* do. Final products tell us little of the struggle or the logic behind any problems we might identify in the research-supported work itself. Yet tracking students' practices through interim, reflective products, as we did, allowed us to identify patterns, allowing instructors to know where students experience the most difficulty and how they gain the most. We suggest this is necessary but not sufficient.

Research Diary responses indicated great value in providing 1) space for students to reflect and report on their research practices and 2) interventions to allow a behind-the-scenes look at students' thinking about research as it is happening (Ritchhart, Church & Morrison, 2011; Wallace, Flower & Norris, 1994). Participating instructors mentioned throughout the semester how student responses helped them gauge where students were succeeding or facing challenges in researching. And a primary purpose of the Research Diary assignments—supporting students' learning *as* they researched—was also achieved. Students reported their perceptions as well as behaviors had changed, largely toward positive ends, by the semester's end.

Students' reflective essays also have important pedagogical implications concerning the ways in which we approach IL. First, with respect to assigning large research-supported essays, we saw reflective evidence for the value of breaking into steps and scaffolding research processes and assignments. Doing so, our students indicated, aids them in understanding research and writing as involved processes, and research and writing as intertwined, recursive processes in keeping with the *IL Framework* (ACRL, 2015). Second, students' reflective essays indicate student interest in learning to use library resources such as databases to locate credible information and to develop their own ethos as they work toward knowledge-making (for more on supporting such work, see Yancey, Chapter 4, this collection). When offered explanations for finding scholarly sources, students indicate they will choose to use these resources rather than using Google alone. And some mentioned that when they do use Google, they will do so more strategically.

Breaking the research process into intelligible steps also proved useful. Students indicated that including smaller assignments, such as those allowed for in Research Diary or journal entries, proved beneficial. Such assignments can prompt students to engage with sources, for instance, by reflecting on how they might use specific source material within their own texts through questioning: Can the overall argument of the article be used to support or counter a main claim in the student's own text? Can source material be used to provide background on the topic? Katt Blackwell-Starnes (Chapter 7, this collection) offers additional strategies for assignment-sequencing for supporting the research process throughout a project.

Overall, we see much evidence that students are making attempts at integrating sources into their essays but that they struggle to do so, particularly in recognizing when to cite—and how. Fortunately, the Research Diaries and reflective essays provide insights into these struggles. Students reported appreciating using a shared text for rehearsing strategies for drawing information out through summary, paraphrase, and quotes, and for practicing weaving material from that source into their own writing.

The shared text approach points to yet another implication: the need to provide more time in class for students to engage with the sources they are locating before and as they are writing their research-supported work. There are multiple ways to do so in addition to those already mentioned (Milloy, 2013). When students have engaged deeply and rhetorically with source materials, they will have a greater sense of the conversations concerning their given topics, an aspect emphasized in the *IL Framework* (ACRL, 2015). Students can then approach taking their own stance on a given issue with an informed opinion and with greater confidence.

Based on our library and writing program collaboration, we additionally argue that the importance of library and cross-curricular partnerships cannot be overemphasized. Considering the theme of this collection—*Information Literacy: Research and Collaboration across Disciplines*—we would add that IL is not just for Writing Studies faculty. As Miriam J. Metzger, Andrew J. Flanagan, and Lara Zwarun (2003) report, students across the curriculum find most of their research from online sources. We therefore encourage instructors across the curriculum to work with librarians on finding ways to optimize that practice (for more on strategies for encouraging all disciplines to improve informational literacy, see Rolf Norgaard and Caroline Sinkinson, Chapter 1), this collection.

As mentioned earlier, when we maintain boundaries between the research that students do to write and the writing that students do based on research, we are emphasizing them as distinct practices rather than showing how they can work together in an integrated process. Librarians working with writing faculty can strengthen what we can offer students with respect to writing and researching (and researching and writing) and how we offer students access to IL.

In our case, learning occurred not just among the students but also among the librarian and instructors. As one instructor put it, “I realized from the results how much we are asking of students” when we ask them to integrate material from sources into their texts. This instructor is committed to breaking down assignments as the participating librarian modeled in the Research Diaries so that students are able to practice various moves related to research and writing from sources. The writing program, also, is sharing key results so that first-year composition instructors know what types of research practices students might be employing (such as including information because it is simply “on topic” as opposed to, for instance, being able to support key arguments or provide necessary background information for target readers). The writing program is also highlighting other aspects that our study suggests students might find challenging (such as summarizing), the importance of slowing the writing/research process down by taking students through specific steps, the advantage of having

students work from common sources, along with emphasizing the value of helping students initially focus on specific databases rather than sending them out to the online library “cold.” Additional benefits of librarians and instructors in composition and beyond are addressed in this volume (see, for example, Scheidt, Carpenter, Fitzgerald, Kozma, Middleton & Shields, Chapter 10, this collection; Winslow, Rains, Skripsky & Kelly, Chapter 14, this collection; and Bensen, Wu, Woetzel & Hashmi, Chapter 19, this collection).

Moreover, at our institution, more librarians are now taking our results into account as they revise library session visits and targeted online guides. They are also more attuned to the rhetorical purposes to which the information students seek can be applied and to working more closely with students in considering how to determine the potential value of sources once found.

Like James Elmborg (2006), we strongly recommend the practice of reflection, in this case, reflection occurring as students are conducting research and writing based on sources. We learned much from student writing prompted in Research Diaries; we also learned much from reflective essays that were written after the final research-supported essays were completed. We encourage instructors to create these types of opportunities to learn more from the students themselves the challenges and points of confusion with integrating research into texts. Doing so can help instructors assist students at the point of need and change the ways instructors subsequently work with students learning to understand and use sources.

Our collaboration demonstrates the mutual benefit of addressing IL as integral to academic writing generally, and it puts the emphasis on student learning (Hutchins, Fister & MacPherson, 2002). The mutually informative position that information literacies and academic literacies are fundamentally intertwined leads us to conclude that a reflective posture on the parts of students, the instructors, and the librarian worked together to garner the insights we have gathered from our results, insights that allow us to see hard work, confusion, and confidence as students gain expertise in academic research and writing.

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