PRELIMINARY PATHS TO INFORMATION LITERACY: INTRODUCING RESEARCH IN CORE COURSES

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Writing faculty multitask teaching information literacy (IL) skills with academic writing skills through scaffolded assignments that include a formal research project as an assessment tool. However, results from the Learning Information Literacy across the Curriculum (LILAC) Project pilot study illustrate that students turn to the formal research project requirements rather than IL skills as they conduct research.1 This formal research assignment holds the students' focus in such a way they work toward the assignment requirements with rote, quick, research, an approach that hinders their IL skills. Devoting class time to assignments that guide preliminary research and reiterate, through grades, the importance of early research to writing an academic research paper can improve students IL skills.

Studies in information-seeking behaviors emphasize students' reliance on Internet search engines to conduct academic research and indicate a cognitive rationale for these beginnings. J. Patrick Biddix, Chung Joo Chung, and Han Woo Park's (2011) 282 respondents report beginning research with a search engine to construct a source outline and locate initial sources. Twelve of Huri-Li Lee's (2008) 15 interviewees cite search engines as a convenient starting point. Patrick Corbett's (2010) respondents assert the Internet is both more dependable and effective in terms of time and feedback than library research. Conversely, Alison J. Head and Michael Eisenberg's (2009) respondents cite familiarity and habit as their rationale; however, these respondents also indicate they turn to course textbooks before Internet searches. Research also suggests students lack engagement with academic research. Randall McClure and Kellian Clink's (2009) analysis of student source use found 48% of citations in 100 composition papers were web sources. Sandra Jamieson and Rebecca Moore Howard's (2012) Citation Project study finds 77% of citations in 174 papers came from the first

three pages of sources, regardless of source length (p. 4). Head and Eisenberg's (2010) research handout study finds that students rely—from the beginning of a research assignment—on the handout to guide them through how much time to spend on research and requirements for a passing grade. Taken together, this research emphasizes students' reliance on quick Internet research, and quick results from the first few pages of their sources.

Quick research and lack of source engagement prevents students from acquiring and applying IL skills to academic research. The Association of College and Research Libraries' (2015) *Framework for Information Literacy for Higher Education* reframes IL as six threshold concepts—Scholarship Is a Conversation, Research as Inquiry, Authority Is Contextual and Constructed, Format as a Process, Searching as Exploring, and Information Has Value. These threshold concepts reconceptualize IL for higher education to better prepare students to apply IL in a broader range of situations. IL does not benefit only academic research, but professional and personal research as well; therefore, furthering college students' IL skills provides crucial learning and critical thinking necessary beyond the college degree.

SACRIFICING INFORMATION LITERACY FOR FINAL PRODUCT: FINDINGS FROM THE LILAC PROJECT

The LILAC Project is a multi-institutional study of students' information-seeking behaviors. Undergraduate and graduate student participants complete a two-part research session, responding to survey questions regarding their information-seeking training and behaviors and completing a 15-minute research aloud protocol (RAP) session that records screen capture and voice narration. The 2012 pilot study included eight first-year students whose results demonstrate a need for more focused preliminary research instruction in core classes where major research projects comprise a significant final grade percentage.

First-year participants' responses to the questionnaires show that these students perceive their IL skills as above average or exceptional; indeed, 50% rated their ability to locate information online an 8 on a 1–10 Likert scale. The remaining first-year participants rated themselves even higher with one participant ranking herself at 9 and the remaining three ranking themselves at 10. They were all also confident about their ability to evaluate online information, though they did not give themselves such high marks. Only one participant assessed himself at a 10, two participants ranked themselves at a 9, and the remaining six participants divided evenly between 7 and 8 on a 1–10 scale.

Understanding student perceptions of their own abilities is pivotal to furthering IL skills in higher education. Students who perceive their abilities to

be above average may also perceive library workshops as rudimentary instruction and opt to either not attend or attend but not pay attention. Hence, it is essential to understand the differences in IL skills students *perceive* they possess and the IL skills they *demonstrate* when conducting academic research if we are to develop instruction to meet student IL needs. The second part of the LILAC Project study, the Research Aloud Protocol (RAP) begins to examine this gap.

The LILAC Project's RAP component asks students to conduct a 15-minute research session using their own research methods. Instructions offer students the chance to work with a topic for their class or use one of the six suggested topics. In sessions where students use their own topic, they identify the course and their topic; in sessions where students select from the suggested topics, we asked that students identify a class for which they might research the topic. Four first-year participants selected topics to research from the LILAC prompts: Maria[2] elected to research diversity issues; Frank, Paul, and Robert selected historical events; and Jennifer chose healthcare and health issues. The remaining three first-year participants opted to work with topics for their core courses: Robert chose his First-Year Experience class paper, a cultural analysis of Ethiopia; Laura and Heather both selected their composition class research paper topics, obesity and global warming, respectively. The RAP sessions show that students focus on the final product requirements and that this may hinder their ability to develop crucial IL skills, specifically the ability to define and articulate needed information and the ability to locate the needed information efficiently.

Focus on the final product occurs throughout LILAC's first-year participants' RAP sessions and offers candid insight into the role an assignment plays in students' research. Frank summarizes his research session in terms of writing a paper on John Marshall, not in terms of information learned or additional research questions; he evaluates his 15-minutes session as complete, stating "depending on how long the paper was, I'd probably get it done based off the patchwork from these websites." Robert avoids visiting *Wikipedia* because he was "dinged in the past" for citing this source. Laura selects specific information during her search to "use as a quote" in her obesity paper. Melinda concludes her RAP session by turning to Google Books and then to the university library databases, articulating her reason for this shift as a quest for the types of sources "teachers want." Focus on the final product in RAP sessions suggests students do not engage with early research, and this lack of engagement may continue throughout the research process if the Citation Project's (2011) initial results and McClure and Clink's (2009) findings are any indication. This focus may also determine students' search terms, leaving them to locate quick information rather than creating effective searches for credible, relevant information.

Focus on the final product removes a critical focus on early research as a narrowing technique. Participants' research does not include reading and engaging with sources; instead, they skim bullets or bolded headings to determine a source's usefulness, copy information from websites based on assignment needs, discard lengthy sources, and avoid visiting websites forbidden in the final product. Laura copies and pastes statistics about an increase in obesity among southern states into a Word document, but she does not read this information and misses an opportunity to consider more focused research. Robert avoids *Wikipedia*, preventing him from gaining a background understanding of Ethiopia, a background essential to writing a cultural analysis. Maria discards a book source simply because it is a book, since books represent more time investment because of length, especially when the book is not a familiar textbook where students can quickly locate information from previous readings. Melinda narrows her topic to global warming and rivers, but she turns to Google Books and the library databases as a rote shift, not an articulated need. Assessing sources in terms of the final product does not further students' understanding of *why* specific sources are appropriate for academic assignments, nor does this focus help students recognize the types of research needed and best methods for accessing the needed information.

Focus on the final product by LILAC first-year participants also leads to rote, superficial searches for information rather than narrowed and advanced searches to work toward a more narrowed research focus. Google searches for information begin with participants searching for their topic at large and using whatever words may appear in that topic. Laura's search for "obesity" returns 345 million results, and Michael's search for "World War 2" returns 136 million. Participants who begin with more words in their initial searches fare no better; Frank's search for "the importance of John Marshall's Supreme Court appointment" yields 3 million, and Robert's search for "cultural analysis of Ethiopia" yields 1 million. These first-year participants do not acknowledge the numbers as they begin working with the results and continue with similar search terms throughout their RAP sessions. Search terms change slightly with new searches, but not in a way that assists in topic narrowing. For example, Frank's search terms change to "the effect of John Marshall's Supreme Court" when his first search does not provide needed information. Robert's search terms change to "Geert Hoftstede analysis of Ethiopia" for the same reason. Laura shifts her focus to "obesity statistics" after determining these are necessary for the final paper. Similar search term changes occur with all first-year participants, and each time searches return millions of results and the students view only those on the first pages of Google—a clear indication these students do not even understand, let alone perceive the need for, more sophisticated search methods.

STARTING ON THE RIGHT PATH: PRELIMINARY RESEARCH ASSIGNMENTS

Students do not enter college with the scholar's curiosity nor with the scholar's sophisticated research skills; thus, determining the amount of information needed may very logically seem to require no more than checking the assignment handout. Head and Eisenberg (2010) find students define a situational context directly from the research assignment. This situational context includes how much time to devote to research, how to meet assignment expectations, how to get a good grade, and how to submit the final paper (p. 5). Immediately, the differences in how students and scholars determine the extent of information needed for a research project creates a significant gap between student products and educator expectations. Such distinct differences need addressing. Scholars do not begin research projects with a formal, final paper in mind, but with a topic or question and an expectation of devoting copious amount of time to researching. Student research needs a similar focus. Educators need to separate the preliminary research and topic narrowing from the final assignment, encouraging a research process that narrows an interesting topic, determines the information needed, and effectively locates needed information. Sandra Jamieson's chapter in this collection emphasizes the lack of student engagement with sources, and this lack of engagement is one area the preliminary research sequence presented in this chapter seeks to address. Beginning instruction with a focus on research, rather than emphasizing the final research project, provides better opportunities to talk about the process of research, foster better IL skills, and encourage better engagement with and comprehension of sources.

Students need opportunities to internalize preliminary research strategies, dialogue with other students, and distinguish differences in preliminary research and research to locate more specific support for an established claim. Separating the preliminary research from the formal research assignment and introducing low-risk, *graded* preliminary research assignments aids students' IL skills while also opening classroom discussions about the research process—laden with struggles, hurdles, complications, intrigues, and successes.

The preliminary research assignment I incorporate involves three short, graded assignments: preliminary research, focusing research, and source browsing. Together, these assignments comprise 10% of the students' final grades in research-focused composition courses. Through this recursive sequence, students locate preliminary sources, reflect on research, and develop new search strategies. The stepping stones taught in these assignments are common expectations in composition classes, but students traditionally do not demonstrate proficiency until they submit their research proposals and/or annotated bibliographies. In

contrast, the preliminary research assignment sequence improves IL skills by removing the focus of research from the formal assignment and placing this focus on the research. I theme my course around the broad topic of surveillance and mass media because theming the course creates more cohesive class discussions and collaboration. Prior to the assignment introduction, we read and discuss Gary T. Marx's (2002) "What's New about the 'New Surveillance'?," Anders Albrechtslund's (2008) "Online Social Networking as Participatory Surveillance," and excerpts from Michel Foucault's (1975) *Discipline and Punish*; these works form the foundation for the preliminary research sequence and the beginning of class discussions, emphasizing ways to read complex sources, determine a variety of source types, and articulate relevance to the conversation. From the syllabus and class discussions, students know that their preliminary research begins something larger, yet the absence of final project requirements maintains a focus on the current assignment and the needed research skills rather than the specific requirements of a formal product.

RESEARCH ASSIGNMENT 1: PRELIMINARY RESEARCH

Students begin their research project with the Preliminary Research assignment (see Appendix A) designed to get students reading basic information on a broad topic and thinking about this information. There are no limitations beyond conducting research on surveillance; the research emphasizes reading and thinking, not locating certain types of sources. Students create a map of their search process, keep a list of the search terms and websites, and make research notes. Through note taking, they begin to internalize active research: moving from the passive skimming of webpage headlines to reading the webpage, following links relevant to their research topic, and collecting notes from relevant sources. Active research skills are then reinforced when they turn their notes into an informal two-page analysis. The analysis paper creates an entry point for discussing new knowledge about surveillance, problems they encountered, and questions they have about the topic. At the end of class, I reassign students the same work for researching mass media. In the next class period, students discuss the information learned and intersections between surveillance and mass media students find interesting. The focus on surveillance and mass media leads students to an array of topics, and they declare they want more research on "Twitter surveillance" or "reality television." These broad topics open discussions about what happens when these topics enter Google. As a transition to the next assignment, I google several student suggested topics and ask how they plan to read all the results before the next class. Discussion turns to what students read—Google's first page—and we problematize this approach. Students agree the approach is not the best and admit they know no

other way. This dialogue begins the introduction to the next assignment as students express their need for better search methods.

RESEARCH ASSIGNMENT 2: FOCUSING RESEARCH

The second component of the preliminary research sequence, Focusing Research (see Appendix B), introduces students to more sophisticated search methods with Google—skills that create more efficient searches. This assignment structure follows the pattern set in the Preliminary Research assignment; students receive no parameters on what they can view or the number and types of sources. Again, students construct search maps, record their keywords, jot down questions, and write another two-page analysis of their work for subsequent class discussions. Students become members of topic-related small groups where they discuss their interests in the topic and begin to form a more narrowed focus that combines course theme and student interest. "Reality television" narrows to a focus on children on reality shows; "Google surveillance" narrows to a focus on the newest Google gadget. Students leave class to complete the Focusing Research assignment a second time, using their new topic focus.

Submitting their second advanced search map and analysis leads students to a new class discussion focused on developing a single, focused research question. I show Paul's LILAC session video, selected because Paul asks several closed questions of Google. From this video, we begin a dialogue about good research questions, and we workshop students' developing research questions. The workshop begins with students discussing the merits of their own questions, eliminating closed-ended questions and gathering proposal question feedback from their small groups. In many instances, students select their research question from peer group discussion. The weeks we spend on these first two assignments encourage peer collaboration; students begin their research in the same areas and recognize the benefits of class discussion to their current and future research. Less viable research questions receive less discussion, fewer ideas, and do not engage peer discussion. Students take the weekend and consider the class discussion and their research questions, returning to class with their tentative research question.

When students return with their tentative research question, they vocalize hesitations about *how* they answer this question. Several students confess to typing the question into Google and getting nothing helpful, while others express doubts that anything on the Internet can aid in answering their question. These confessions and doubts lead to discussion about the academic nature of the questions and the need for sources that provide insight into the question rather than an answer. This discussion becomes the introduction to the final component of their preliminary research sequence.

ASSIGNMENT 3: SOURCE TRAILS

The Source Trails assignment (see Appendix C) comes at a research stage where students need the bridge from Google to more sophisticated academic research. Lee (2008) discusses ways research participants use the concept of shelf browsing in the physical library to locate additional research materials. Participants in his research study knew "books on similar topics were shelved nearby and browsing after retrieving one book on a specific topic gave them the opportunity to discover other books on the same or closely related topics" (p. 214). The concept of shelf-browsing adapts for online research in a similar way, and the Source Trails assignment uses a series of workshops to teach techniques for reference browsing. The first workshop for this assignment teaches students to use the bibliographies of relevant sources to create a list of other relevant materials. Students generate a list of pseudo-citations that provide abbreviated, necessary information (title, author, year, journal) and include the author of the originating source so students can return to the original reference page when more information is needed. Students download or print sources to read and annotate, and noting the location in the pseudo-citation helps them to organize their research. During the second workshop, students learn the use of the databases' "related articles" feature, add relevant titles to their bibliography, and locate available sources. In the third workshop, I introduce Google Scholar, and students search for sources unavailable through the library using Google's "related" and "cited by" features. The previous process repeats, and only a few listed sources remain. For these sources, students learn to use the interlibrary loan feature and make requests for the remaining sources. Students turn in an in-progress list of their source trails; I do not give a specified number, though most students submit, on average, 15 sources for this work.

NEXT STEPS

After submitting their source trails, students take part in a class workshop for library database immersion. Students use the class period to research their topic while familiarizing themselves with the library databases. The goal is not to locate further information, though students perceive this as the task; rather, the goal is for students to discover what they know about the college's library databases and what they need assistance learning about the college's library databases. I prepare students for the upcoming library workshop by bringing them to the understanding that vast differences exist between Google searches and library database searches. Students show an improvement in IL skills by beginning this work

using more advanced search terms than just the one or two words connected to their topic; they employ strategies learned in the Source Trails workshops. Students also begin to generate questions for the upcoming library workshop. These questions better engage students in the upcoming library workshop and help librarians shape the workshop. At the end of this class period, students submit the questions they have regarding library research skills, and I pass these along to the librarian leading the workshop. In turn, this leads to a library workshop that better develops the students' IL skills.

The library workshop takes place during the next class period. This workshop requires a huge commitment from the librarians leading the session; the workshop is not a traditional one-shot session, but rather a session focused on just-in-time instruction, answering student questions and building from knowledge and obstacles that arose during the class workshop. This does, however, provide the librarian more insight into where students are struggling with IL skills. Students attend this workshop humbled by the experience from the previous days, and some even admit the college's library database is much more complex than their high school's database. The workshop is guided by the students' questions from the previous class period but includes additional information the librarians know will further expand students' IL skills. For example, one student question regarded generating better keywords, which led to the librarian teaching the class how to read the Library of Congress Subject Headings (LCSH) listed within an individual result and how to combine and narrow multiple LCSHs to locate new material. Such a specific area of instruction does not come up in one-shot library workshops, but proved timely and useful to the students while also expanding their IL skills and abilities within the databases.

After the library workshop, I reassign the second and third research assignments, Focusing Research and Source Trails, with a restriction on students only using the library databases. This not only furthers students' familiarity with the library databases, but also reiterates the role these two assignments play in recursive research. At the conclusion of these next steps, students have approximately 25 sources beneficial for their research.

The next steps resemble more traditional composition courses. I present students with a hybrid research proposal and annotated bibliography that draws from materials previously submitted rather than beginning from scratch. They repurpose and revise in-class short writings for the formal product and present a bibliography and rhetorical summaries for Internet and library sources. The bibliography also includes current Source Trails sources, a book reference, and interlibrary loan requests for unavailable sources. The bibliography and proposal are the capstone project for the course.

PRELIMINARY IMPROVEMENTS TO INFORMATION LITERACY

The Preliminary Research sequence succeeds in improving students' IL skills because it shifts the research focus away from a formal research paper and allows students to focus on the research as a separate assignment. The sequence reinforces steps common to research projects: narrow the topic, create a focused research question, and use a variety of sources. Taken all at once, this information overwhelms students, especially when presented with the assignment that comprises a significant percentage of the course grade. However, working through early stages of research as separate assignments improves students' IL abilities while also helping students learn ways they can conduct more efficient research for all academic papers.

The first assignment, Preliminary Research, introduces students to three of the *Framework for IL* threshold concepts—Information Creation as a Process, Information Has Value, and Authority Is Constructed and Contextual; simultaneously, this assignment builds the classroom scholar community and helps students begin to think through semester research topics. Class discussions allow students to take risks and learn that these risks have no grade-related repercussions.

For example, one student discusses information learned through *Wikipedia*, though he must admit he did not include any of the information in the assignment. Other students admit to the same omission or admit including *Wikipedia* but fearing a reduced grade. Class discussions about the role *Wikipedia* can have at different stages of academic research encourage students to take the site into consideration as a resource while understanding why educators frown on its inclusion in academic papers. The conversations further students' understanding of authority as contextual and information as having value by acknowledging that *Wikipedia* does contain helpful knowledge for topic narrowing while also illustrating the differences in constructing authority in academic writing as significantly different than *Wikipedia's* constructed authority. These discussions build confidence in risk taking and discussing stumbles as well as successes, a necessary discussion for building IL skills through the subsequent assignments.

Through the assignment and corresponding class discussions, students begin to test their own authority, offering suggestions to peers when they have information related to a peer's early topic. At the early stage of the Preliminary Research assignment, such information is offered up with the qualifier "I read somewhere," before peers encourage the student to locate the specific source and share the information to the collaborative online space students use to share their research. Such actions are peer-motivated and peer-supported, encouraging

students to show *how* they develop authority on even a single piece of information, encouraging peer support through the creation of information and individual authority, and emphasizing the value of information from specific sources. This assignment allows for early emphasis on the *Framework for IL* in ways that help students to better internalize IL skills without the daunting fear of a final grade for a lengthy research paper.

Through the Narrowed Focus and the Source Trails assignments, students begin to shape their broad topics into focused research questions that guide their semester research and writing; simultaneously, they work toward internalizing another American Library Association (ALA) concept—searching is strategic. Students begin to shape their broad topics into questions that will shape their semester research. For instance, the topic "medical surveillance" becomes the question "how does medical surveillance protect us?" Not long into frustrating Google searches for their questions, students begin to reconsider what, more specifically, they need to ask Google. Medical surveillance becomes a single search with over 13 million results; medical surveillance protection becomes a separate search with over 6.5 million results. These activities take place through Google because students already use the site for everyday and academic research and are more receptive to learning how to use Google more efficiently and are more receptive to advanced strategies on a familiar site.

Effective Internet search techniques, such as including phrases in quotation marks and incorporating Boolean Operators to further narrow or broaden results, parallel those students will learn for library databases, thus the library databases become less intimidating for students and more risks are taken with library database searches when assignments make this turn. These strategies teach students how to narrow their topic while also teaching them how to think more critically and strategically about the questions they need answered and the search terms that will help them answer these questions, encouraging both brainstorming for research terms and refining existing search strategies. "Medical surveillance," now enclosed in quotation marks to indicate a phrase to Google now returns under 400,000 results before strategic thinking about the topic narrows the search terms to "medical surveillance" AND "United States." Though Google automatically combines search terms, I prefer to encourage students to use this Boolean Operator with Google to better prepare them for the library databases, thus helping students understand the benefit of search strategies before applying them to the unfamiliar and less forgiving library databases.

Teaching students to use the bibliographies of relevant sources and the related research aspects of Google Scholar and the library databases adds another layer that emphasize additional methods for developing effective search strategies and also introduce students to the *Framework for IL*'s threshold concept that

scholarship is a conversation. Students relate to this activity often through their covert use of *Wikipedia* as a starting point for academic research; knowing they cannot use *Wikipedia*, students learn from a peer or are self-taught in the skill of locating academically acceptable sources through references on a *Wikipedia* page. Miriam Laskin and Cynthia R. Haller's chapter in this collection further emphasizes the need to teach source trails, as junior-level students in their study still do not engage in this type of research. Thus, students know how the process works, but the Source Trails assignment makes this process a more sophisticated research activity that illustrates how and why specific sources are cited. Students are familiar with the sources they use for the Source Trails assignment through their readings in the previous assignments; therefore, they have a basic knowledge of how the sources are used in the article's content. When considering sources for the Source Trail assignment, students give consideration to how the source relates to their own research as they begin to frame their research in the scholarly conversation. Understanding the relationship between a source and their own research leads to interrogating their sources' sources and considering how their own research enters this larger conversation.

A student researching police surveillance with an emphasis on the African American community, is an excellent example of Source Trails at work. A source she described in her final project as "influential to her project" mentioned a source that argued the Rodney King case was instrumental to the rise of hip-hop. With no knowledge of Rodney King, the student identified the source as potentially useful to her research and, through this additional source and further research about Rodney King, revised her research question to the role of the Rodney King video in implementing police car surveillance cameras. The Source Trails assignment illustrates how scholarship builds a conversation between scholars and how students can strategically locate relevant sources through the references contained, which teaches students to search more effectively and efficiently, thus furthering their ability to meet the *Framework for IL*. Further, students are not looking quickly for the specific number of sources required for a course paper since the paper remains unassigned, but continue looking for more information on their focused research questions. Students learning to locate information more efficiently also begin to expand their ability to meet each IL threshold concept outlined in the *Framework for IL*, while engaging with more complex, interest-driven research rather than seeking sources that assist in meeting assignment guidelines. Students focusing on research itself, not a specific number of sources for a final paper, spend more time reading sources relevant to their specific research interest. Students recognize the Source Trails assignment as work that will help them answer their question, and they recognize the strategy of following the conversation through cited sources as a strategy they can implement for other academic research.

Acknowledging that a single source will not answer their question leads students to think more critically about the breadth and complexity of information. They create new searches, repurpose old searches, and discard located and read sources based on their current research needs. They begin to articulate an understanding of research as a process of inquiry—a process motivated by curiosity when the subject engages them. Sources providing no information relevant to the research question do not enter the annotated bibliography and are not quote mined for the final paper. My students are not at a point where they necessarily articulate a need for theory in their research; however, using Foucault's theory in class readings and discussions provides an understanding of how theory can apply to the work. Two students in the pilot implementation of this sequence located and incorporated the work of Deleuze and Barthes in their research, works they located through their source trails and recognized, after reading, as pertinent to their own research.

PRELIMINARY SUCCESS

The preliminary research sequence precedes an annotated bibliography and a proposal for a more formal research project the students might undertake; these documents form the capstone project for the semester, thus further emphasizing the *Framework for IL*'s threshold concepts of Research as Inquiry and Scholarship Is a Conversation while simultaneously enhancing the students' critical thinking skills. The annotated bibliography includes rhetorical summaries for 10 academic sources and 10 Internet sources; also included are the students' 10 most current Source Trails and at least one book reference and one interlibrary loan request. The proposal includes a brief statement of the students' narrowed research topics, an analysis of the primary materials for the research topic, and an explanation of why their research is important to an academic audience. The proposal does not include requirements for any source use, thus leaving students to decide which sources need inclusion based on their research topic, their understanding of IL skills, and their comprehension of class discussions about research. The goal for the capstone is to keep the students' focus on research related to their topic. In the pilot semester (n = 25), 23 students submitted a proposal that met the assignment guidelines, and an analysis of the sources used in the proposals illustrates the ways students incorporate research into a formal assignment following the Preliminary Research sequence.

Two students (8%) included *Wikipedia* citations in their paper. The first included the *Wikipedia* page for "Syndromic Surveillance," presenting the definition for her research topic in language more accessible to a broader audience than the reference on the Center for Disease Control (CDC) webpage. The

definition preceding the *Wikipedia* citation is the student's own work, but clearly draws more from the Wikipedia language than the more complex language on the CDC page, and the student acknowledges this use, risking the reduced grade for using *Wikipedia* instead of deceptively citing the CDC page and not acknowledging knowledge gained from *Wikipedia*. The second student included a link to the *Wikipedia* page for "Computer Surveillance," not as a component of his analysis, but rather as part of a brief narrative describing how he used the *Wikipedia* page to focus this broad topic to his narrowed topic of Twitter's privacy policy. In each proposal, the selected *Wikipedia* pages reflect the discussion during the Preliminary Research sequence about the appropriate use of *Wikipedia* and its place in academic work. The use of *Wikipedia* in both proposals also illustrates the students' acknowledgement of the *Framework for IL* threshold concepts of information as having value and scholarship as a conversation. Though the students elect to use *Wikipedia* for their proposals, their strategic use and honest citation of the *Wikipedia* pages illustrates partial success for teaching IL strategies and the *Framework for IL* through the Preliminary Research sequence.

Four of the students (16%) included at least one source from a scholarly journal article available through the library databases, and though this number is significantly smaller than anticipated, these students chose scholarly sources because of relevance to their paper, not because of assignment requirements. Two other students (8%), as mentioned earlier, made attempts to apply Deleuze and Barthes to their primary material analyses. These sources served as theoretical frameworks in other scholarly articles they used, and the students, recognizing the potential role the theory might play in their own research, sought out these works and took the risk of incorporating them into their own research. These academic and theoretical sources again emphasize the students' increased understanding of scholarship as a conversation and information as having value. In each case, the students present information relevant to their research because of the informational value and the connection to their own research, not because of the need to meet specific source requirements.

A final success of the Preliminary Research Sequence is demonstrated through the way students used common Internet sources in their work. With no source requirements for the proposal, students' inclusion of sources demonstrated their critical thinking and their progress with the *Framework for IL*'s threshold concepts. The semester theme of surveillance and mass media purposely led to research topics that both engaged students in their research and required more skillful IL skills since, in the words of one frustrated student, "everybody's analyzing Beyonce's music, not her Twitter feed!" Thus, class discussions about the

relevance of the sources selected, contrasted with the *publisher* of the sources selected, anticipated and acknowledged the use of common Internet sources. In their proposals, five of the students (21%) made use only of Internet sources that comprised their primary materials—Twitter feeds, YouTube videos, news stories, and images. In four of these proposals, students also relied heavily on the class readings and discussions but did not include secondary sources to expand their argument; only one student used only the primary materials and did not incorporate any form of secondary materials. Six of the students (24%) incorporated common Internet sources that supported their argument, but did so with targeted source selection. For instance, two students writing on search engines and surveillance both located and used policies from the search engines discussed in their proposal. In one instance, this included analysis of the differences in Google, Yahoo, and Bing's privacy policies and results to a common search across all three search engines. Another student, writing on government surveillance of Internet searches, located and incorporated Google's transparency report to use as evidence in his argument. Two students (8%) relied on reliable Internet sources viable to their topic, such as the FDIC information on phishing scams in a proposal about advance-fee email fraud scams and an online English translation of a 1936 internal Soviet memo about the task of the Glavit. In both cases, the students were able to locate, read, and comprehend the importance and relevance of these sources to their research; however, neither student was able to incorporate the source itself beyond a mention and discussion of the importance of the source.

Overall, the Preliminary Research sequence did not perfect students' IL skills and their use of sources in the capstone project; however, the ways students handled source inclusion without any requirements to guide their decisions demonstrates a keener understanding of source use in academic scholarship. Early conversations about *Wikipedia*, for example, made students more aware of why the source is less acceptable in their capstone project and students were able to use more sophisticated sources, whether academic or targeted and specific Internet sources. The number of students using academic sources in their capstone projects was smaller than anticipated; however, the greater take-away from those who did use academic sources is that with better instruction, guided by the *Framework for ILs*, these students begin to recognize the role of scholarly research in academic projects independent of project requirements. In a similar way, this instruction improves the Internet sources selected for academic projects as students come to understand the role of sources in their research and learn to look more critically at the sources they read for preliminary research and the sources they use for academic writing.

KEYS TO SUCCESS

The assignment sequence presented above is not the only option for incorporating successful preliminary research into a course. Patrick Corbett's (2010) "What about the 'Google Effect'?" presents a similar approach to focusing students on the research task separate from a formal writing task. Corbett incorporates more formal writing assignments throughout the semester, but focuses these on the work completed with the narrowed research. The build up to more formal research, Corbett reports, allows students "to take chances with their ideas that they otherwise would not have taken for fear of a harsh evaluation" (p. 273). The chances Corbett's students willingly take reflect the chances my own students take during their preliminary research when the current research assignment, not the final, formal paper is at stake. Other sequences can aid the teaching of IL and helping students internalize a more robust process that moves from initial curiosity to narrowed research questions. Rachel Rains Winslow, Sarah Skripsky and Savannah Kelly's chapter on Zotero in this collection offers other ways of thinking about source use and offers another layer for teaching source browsing, specifically. These varied research assignments can each assist students in taking risks with early research—research that greatly benefits students when the final product becomes the later course focus.

The Preliminary Research Sequence engages student in research separate from the formal assignment, which furthers students' IL skills by building on their everyday research skills. Library databases do not need to be the starting point for academic research; such a new method of research at the beginning of an academic project can intimidate students, especially those in core classes conducting academic research for the first time. Preliminary research that begins with the students' existing IL skills boosts confidence by reassuring them that they do know how to begin research. Confidence in the research starting point encourages students to try new things. Similarly, scaffolding the assignments so that students learn more efficient methods for searching Google well before beginning any required library research further boosts their confidence, while also teaching students how to locate information more effectively. Starting with Google also builds confidence in reading comprehension as students begin with more general sources and the knowledge they must discuss their findings in class. The more students internalize information from sources, rather than just annotating or copying it for later use, the more confident they become in their research and defining their own next steps.

The Preliminary Research Sequence also teaches students the recursive nature of research and strategies for later research. I encourage students who find themselves stalled by a portion of their final research assignment to return to the Narrowed Focus and Source Trails looking specifically for information related to this

stall. Taking this smaller question through the research helps students locate more specific information for the paper and further emphasizes their ability to recognize the need for new information as appropriate in the midst of writing the paper.

CONCLUSION

The academic research paper remains the most common assignment in higher education and access to more information quickly does not make locating research easier for students. If anything, the abundance of readily available information makes the research process more difficult, adding additional pressure to the task of writing the 8–10 page assignment with the appropriate number and type of sources. Delaying the formal assignment and incorporating a series of preliminary research assignments furthers students IL skills by emphasizing research as a way to find a narrowed topic and sources from which students select the most appropriate to their work, not the first few they locate. Alone, delaying the formal paper does not help students understand the importance of early research; students also need the work put into this early research to reflect in their semester grade a percentage that emphasizes the importance educators place on conducting in-depth research to find the paper topic. As long as educators emphasize only the final product, both in the classroom and the grading scheme, students will continue research with that emphasis in mind. Showing students the importance of preliminary research will not instill in them the scholar's passion for research, but may, for the duration of the semester, engage them with a topic narrow and interesting enough to instill in them IL skills beneficial to their academic, professional, and everyday life.

NOTES

1. This research was supported in part by a Conference on College Composition and Communication Research Initiative Grant.
2. All names are pseudonyms.

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APPENDIX A: PRELIMINARY RESEARCH ASSIGNMENT

Goal: Locate research on surveillance and write an informal analysis of your findings.

Task: Search for sources you would use to discuss the topic of surveillance. As you search, create a map of your search that includes specific information on search engines you use, keywords, usefulness of the search, websites visited, key information learned, questions raised, problems encountered, and any other information relevant to the search. [You should be able to hand your map to a peer who can completely retrace your steps and learn the same things you learned.]

Time frame: Long enough to be able to discuss the topic knowledgeably in class.

Task Part 2: Using your search map, write an informal analysis of the information search. Your analysis should discuss what you learned, where you learned the information, effectiveness of keywords, problems encountered, questions

raised, relevance and credibility of sources, and anything else you found relevant to your search. This should be approximately 2 pages of text.

Formatting: Double-spaced, 12 point font. Include a paper heading that includes your name, my name, the course number and section, date. Use the assignment number and title for the title of your paper.

Turn in:
- A hard copy of your search map
- A printed copy of your information analysis
- Final Reminders and Assessment
- This is your homework and attendance verification for class.
- To receive an "adequate" rating, your information search must demonstrate you completed the search *and* familiarized yourself with the websites in order to write the analysis, but the familiarization and analysis are relatively superficial.
- To receive an "above average" rating, your information search must demonstrate that you delved further into the search (e.g., visited links beyond the first page of Google) and further explored the links to write the analysis.
- To receive an "outstanding" rating, your information search demonstrates a broader search for understanding of surveillance (relying on more than just Google for your search) and further research when needed (knowing who compiled the page, potential bias of the page, etc.) to write your analysis.

APPENDIX B: NARROWED RESEARCH ASSIGNMENT

Goal: Locate research on a course-related topic of interest and write an informal analysis.

Task: Select a topic of interest related to our course theme and use Google's advanced search options to locate relevant research to your topic. As you search, create a map of your search that includes specific information on your advanced searches (e.g. tell me what exact phrases you searched and/or what words you omitted), usefulness of the search, websites visited, key information learned, questions raised, problems encountered, and any other information relevant to the search. [You should be able to hand your map to a peer who can completely retrace your steps and learn the same things you learned.]

Time frame: Long enough to be able to discuss your topic knowledgeably in class.

Task Part 2: Using your search map, write an informal analysis of the information search. Your analysis should discuss what you learned, where you learned

the information, effectiveness and/or ineffectiveness of advanced searches, problems encountered, questions raised, relevance and credibility of sources, and anything else you found relevant to your topic research. This should be approximately 2 pages of text.

Formatting: Double-spaced, 12 point font. Include a paper heading that includes your name, my name, the course number and section, date. Use the assignment number and title for the title of your paper.

Turn in:

- A hard copy of your search map
- A printed copy of your information analysis
- Final Reminders and Assessment
- This is your homework and attendance verification for class.
- To receive an "adequate" rating, your information search must demonstrate you used advanced search features and familiarized yourself with the websites in order to write the analysis, but the familiarization and analysis are relatively superficial.
- To receive an "above average" rating, your information search must demonstrate that you delved further into the search (e.g., visited links beyond the first page of Google) and further explored the links to write the analysis.
- To receive an "outstanding" rating, your information search demonstrates a broader search for understanding of your topic (relying on more than just Google for your search) and further research when needed (knowing who compiled the page, potential bias of the page, etc.) to write your analysis.

APPENDIX C: SOURCE TRAILS ASSIGNMENT

Goal: Learn to read a bibliographic entry, use the library's Interlibrary loan system, and expand your research on your specific surveillance and mass media topic.

Task: You will search for additional scholarly sources related to your research using four methods: reference pages from current research, the library's book and journal databases, Google Scholar's "cited by," and Google Scholar's "related articles." You will locate at least ten new sources, create progressive citations (author, title, year, search location) from these sources, and request unavailable articles through Interlibrary Loan.

Time frame: This week's lab will be a hands on workshop on using the features and the Interlibrary loan request page. You will submit your progress on this assignment at the beginning of class Wednesday and Friday.

Research Components (Complete in the order provided)

Bibliography Trails: Begin your source trails with the bibliographies for the research you collected during the library database workshop. You want to use the sources you've read and rated as helpful to your research. Look through the bibliographies and/or notes where the author(s) provide bibliographic information for their references. Mark all sources that have titles that indicate they may be helpful to your research, and indicate with your markings whether these sources are books, scholarly journal articles, or websites. Your focus for this assignment is on the books and scholarly articles.

Once you have marked these sources, create a progressive citations bibliography, listing the source in which you found the new sources as the location. Include at least the author's name for the location, but if you have more than one source from the same article, list the first few words of the title as well.

Library Searching: Use your progressive citations to locate the sources you have access through via the university databases. Some of these may be readily available through the databases, but others will require you to use the library's search option. When you search, you will sometimes receive a list of scholarly articles related to your search. If you receive such a list, add relevant articles to your progressive citations and include related by with the location (article author and title you were searching).

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Formatting: Double-spaced, 12 point font. Include a paper heading that includes your name, my name, the course number and section, date. Use the assignment number and title for the title of your paper.

Turn in:
- A hard copy of your progressive citations bibliography progress (Wednesday and Friday)
- A printed list of your outstanding ILL requests (either with your progressive citation bibliography on Friday or with your research proposal on 15 March).
- Final Reminders and Assessment
- This is your homework and attendance verification for class both Wednesday and Friday.
- To receive an "adequate" rating, your information search must demonstrate you are actively working toward your Source Trails by submitting your Bibliography Trails list Wednesday and your library research by Friday.
- To receive an "above average" rating, your information search must demonstrate you are actively working toward your source trails by submitting your Bibliography Trails and library research by Wednesday

and your Google Scholar research by Friday.
- To receive an "outstanding" rating, your Source Trails assignment is complete and submitted Friday with your "Outstanding Requests" printout.