Just-in-Time Instruction, Regular Reflection, and Integrated Assessment: A Sustainable Model for Student Growth

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Inspired by our conversations at a Council of Independent Colleges Transformation of the College Library workshop, we have worked since 2009 to improve information literacy instruction for and outcomes of a major research project in a 200-level elective literature class. Results from a fall 2011 course that combined an embedded librarian approach to class instruction with repeated just-in-time instruction and regular reflections yielded rich information about the students' information-seeking processes and confirmed both the efficacy of thoroughly collaborative instruction and the importance of reflection to encourage improved student research processes. After providing context on the pedagogic uses of reflection and for the course and project, we will discuss the potential implications and limitations of this type of project for promoting information literacy.

Reflection in an Information Literacy Context

As a strategy for building information literacy skills, librarians have for years advocated the practice of reflection, defined by Moon as "a form of mental processing …that we use to fulfill a purpose or to achieve some anticipated outcome. It is applied to relatively complicated or unstructured ideas for which there is not an obvious solution…."[1] The use of reflection as an aid to learning in general, particularly when learners grapple with complex ideas and experiences that require on-going processing, dates back to John Dewey's early twentieth-century theories and has been integrated into educational standards from the 1980s forward.[2] Moon notes that reflection promotes deep learning, explaining that "If learners are required to represent their learning in some meaningful activity, they will have been forced to adopt a deep approach to the learning in the first place—or to upgrade their surface quality learning into more meaningful material." She goes on to assert the importance of metacognition, or attention to one's own thinking, to this process, citing previous scholars who have argued that instruction requiring metacognition is more successful than instruction focused solely on technique.[3]

Exercises involving reflection that accompany complex research tasks seem particularly appropriate. Consider, for example, Rodgers' explanation of how and why reflection works as an aid to metacognition: "The function of reflection is …to formulate the 'relationships and continuities' among the elements of an experience, between that experience and other experiences, between that experience and the knowledge that one carries, and between that knowledge and the knowledge produced by thinkers other than oneself."[4] Given the emphasis in the *Information Literacy Competency Standards for Higher Education*[5] on "lifelong learning" and "self-directed investigations" as well as improved research ability for academic situations, re-

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flective practice seems a crucial strategy by which to encourage information literacy.

Clearly, regular reflection on research practices can promote metacognition about these practices and improve student practice. Yet despite the routine endorsement of reflection as an aid to learning, the literature in field does not show much use of reflective journals for assessment of information literacy learning.[6] Some research has been done. Gilstrap and Dupree used Critical Incident Questionnaires rather than journals to get qualitative information from students about their learning. Though their data were not as rich as lengthier journal responses, kept over weeks or a semester, would have been, Gilstrap and Dupree nevertheless found that, "when evaluating students, using methods that focus on quality in education, critical reflection analysis tends to support why and how learning is taking place as opposed to measuring only learning content."[7] In short, analyzing student reflections can aid those attempting to instruct in attending to the conditions in which learning occurs with an eye to improving the likelihood of learning in future projects.

Others have more directly used reflection to assess student research experiences. For example, Bordonaro and Richardson had students keep research journals, submitting three entries over the course of the project. Students were directed to explain their source selection, search process, and outcomes and to comment on search failures and dead-ends, as well as "to record thoughts, hunches, notes, and reflections about the whole process of finding and using information."[8] Most students reflected on process and content separately. Some were able to reflect on the two together, and in Bordonaro and Richardson's estimation, understand why they should pay attention to "both process and content during the course of their research."[9]

Similarly, Diekema, Holliday, and Leary used research logs and reflective papers, all responding to detailed prompts, in a problem-based learning exercise. Although the authors do not specifically discuss reflection as a technique, students' written journals and reflective papers clearly revealed information about their search processes and metacognition that would have been difficult, if not impossible, to learn by other means.[10] Most recently, McKinney and Sen studied students in a business intelligence module at the University of Sheffield and mapped the students'

reflections onto the SCONUL Seven Pillars framework. Based on their results, McKinney and Sen also endorse the use of reflection in information literacy assessment.[11]

Class Description

English 231 (Young Adult Literature) focuses on 19th and 20th century American fiction for and about adolescents. Fulfilling a general education requirement, English 231 is also an elective for other courses of study; it attracts 30-32 students from all years and majors. The culminating project requires students to choose a censorship or challenge case to study in which a young adult novel has been recommended for removal from a public or school library. Students must fairly represent all stakeholders' positions, document and assess the challenge process, and analyze the validity of the reasoning used by the protagonists by consulting scholarly research on the issues. For example, parents angry about a novel that depicts teenage sex without "punishment" in the form of disease, pregnancy, or profound regret might claim that the book encourages adolescents to engage in sexual activity. The English 231 student would investigate psychological and sociological studies to determine what factors go into teenagers' sexual decisions and the communications literature to understand what media influences and cultural cues exist in addition to situations represented in novels.

Thorough investigation requires delving into the professional literature of multiple disciplines, not all of which are familiar to any one student. In addition, students must identify a case to study, navigate newspaper databases and websites to find additional information, dig through school system and public library websites in search of board minutes, get literary scholars' evaluations of the literary merit of the novel, and ferret out demographic information about the community in which their challenge occurred. Most students have not previously worked with all these kinds of information and are unprepared for the vast variety of forms the evidence will take.

Local Results, National Parallels

In fall 2009, we decided to investigate how information literacy skills compared between students in the class, depending on their year in school, by asking them to keep research logs as part of the process. We approached the information literacy component of

the course in a traditional stand-alone library workshop. Strategies for identifying an interesting and workable case, finding newspaper articles and websites documenting stakeholders' positions, checking stakeholders' claims against scholarly literature in several disciplines, and discovering demographic data were presented by the librarian in one 50-minute session at the beginning of the project. Although the professor continued to discuss research strategies and difficulties in class, students not surprisingly forgot how to use strategies they did not need immediately. They asked the professor frequently for help, filling her office hours beyond capacity with information-seeking questions. To a lesser degree, they sought assistance from librarians.

At the end of the project, each student submitted a required research log, which counted for a small part of the project grade. In these logs, students reported their frustrations during the research process. Despite the library instruction emphasizing logical steps which were reinforced by a handout and subsequent class conversations, students documented processes that jumped from task to task. A typical student would seek information evaluating the claims before he or she had accumulated the stakeholders' positions and understood those claims well. Students seemed to deal with setbacks by switching gears entirely and taking almost random tacks into the information. Rereading all thirty-two research logs and ranking them on the basis of research strategy and depth, we found that persistence and determination better predicted success than major or experience in college. Clearly, the instruction for this complex project wasn't working well enough.

Therefore, when we learned that the professor was scheduled to teach English 231 again in fall 2011, we began to share readings that might help us understand how best to provide effective help to the students. The Project Information Literacy report *Truth Be Told: How College Students Evaluate and Use information in the Digital Age* had tremendous resonance for both of us. Although PIL studied undergraduates across the United States, none of them at Davidson College, the findings corresponded strongly with what we had seen in the 2009 research logs. The study found that students turn time and again to their tried-and-true strategies, even when the demands of the assignment are not well satisfied by those sources.[12] Indeed, local results—as manifested in the 2009 project logs—

showed similar behavior: English 231 students fled to Google as soon as disciplinary databases proved challenging. Just as the PIL study documented student difficulties at the beginning and end of projects, the authors saw that English 231 students floundered in choosing cases (akin to choosing topics) and tapering off their information-seeking when they had enough data. The national study identified a number of people students turned to for help before librarians, including professors and parents; similarly, English 231 students frequently commented that they had never asked a librarian for help. A number of them did report consulting their parents.

Just-in-Time Instruction

Knowing that we wanted to improve the information literacy component of the course in light of the problematic practices revealed in the research logs, we spent the summer of 2011 working to redesign the project. As a start, we knew that our dialogue needed to be more substantial than the typical, cursory pre-instruction conversation that often occurs between professors and librarians. Perhaps professors and librarians hesitate to tread on the other's territory or worry about appearing to question the other's professional expertise, resulting too often in a discussion focused narrowly on the assignment and lesson plan. We had already held more extended conversations prior to the 2009 course, but realized that students clearly needed more gradually sequenced research instruction to mitigate the challenges they had reported in their research logs. In order to develop this instruction, we had to talk about the *why* of the assignment, not just the *what*, to set the assignment in the context of the course. Together, we grappled with questions like

- What impact does the instructor want the course to have on students that will still be there a year or more after the course is over?
- What connections (similarities and interactions) should students recognize and make
  - Among ideas within this course?
  - Between the information, ideas, and perspectives in this course and those in other courses or areas?
  - Between material in this course and the students' own personal, social, and work life?
- What would the instructor like for students to learn about:

– How to be a good student in a course like this?
– How to engage in inquiry and construct knowledge with this subject matter?
– How to become a self-directing learner to this subject? (That is, students should have a learning agenda of what else they need and want to learn and a plan for learning it.)[13]

Talking through these questions, we discovered that the information-seeking challenges of this assignment were, from the library perspective, unique in the breadth of what was being asked of students.

Rejecting the limitations of the stand-alone workshop model, we had to find a way to get more instruction time without taking any more class time. To achieve this goal, we discussed the project dimensions in depth and agreed upon logical stages at which students might shift from one form of information seeking to another. Once these stages were determined, we agreed to extend the information literacy instruction over several weeks, making the librarian more of an embedded co-teacher for the project and less of a guest lecturer.

By the end of the summer, the structure for the revised lesson was set. There would be one fifty-minute, in-class session led by the librarian, which set the stage for the information-seeking tasks but focused only on the first step—finding a suitable case. (See Appendix 1 for a handout from that workshop.) Then, ten days later, the librarian offered five out-of-class workshops, for which students signed up in advance, geared to helping them find stakeholders' positions. Attendance at a workshop was not required, but the professor strongly encouraged the students to attend and emphasized their value. In addition, library staff urged students who signed up but failed to appear for their workshop to reschedule. Finally, two weeks later, another series of five out-of-class workshops helped students find and evaluate the scholarly literature around issues raised by their cases. Again, the professor encouraged attendance, and the library staff contacted no-shows and urged them to reschedule. All the workshops were designed as opportunities for guided practice, with an initial ten to fifteen minutes of instruction, followed by time for students to work on their own projects with librarian help.

Regular Reflection

Building on the previous iteration of English 231, we again asked students to keep logs to record their progress in finding and analyzing information on their cases, to describe their successes and challenges in using information sources, and to reflect on their development as learners grappling with complex information. Students were asked to record time spent, goals, activities, problems, and reflect on what they had learned about their own practices along the way.

The professor collected the research logs twice during the project, as well at the end of the project, when the log was submitted along with the paper. The first two times, we used the logs diagnostically, identifying information-seeking tasks that seemed to challenge several students and applying those findings in planning the next workshop. After the course ended and grades were submitted, we met in early spring 2012 to design a rubric (see Appendix 2) for assessing the logs. We had a colleague render the work anonymous by removing student names and assigning numbers. Then we both read all the logs and rated them, after which we met to compare results and talk though any differences in rating.

Results

Almost three-quarters of the students (70%) improved on previous research practices (Insert Table 1), many of them in several ways. Two-thirds used sources recommended by the professor, librarian, or a peer. While using recommended sources would not seem to be particularly noteworthy, our experience suggests that students do not always draw on sources that are pointed out to them. Despite strong encouragement to begin their case-seeking process with the American Library Association website, for example, as well as in-class demonstration and hands-on practice with that website, a surprising number of journals did not mention it. Students instead googled phrases like *Hunger Games banned* to locate cases, often finding multiple repeats of the same Associated Press news blurb about a particular objection to their novel of choice or to programs related to the ALA's Banned Books Week.

Because the research log assignment asked students to list their search terms and results, we could see how students developed in this area. Over the seven weeks of the assignment, more than a third (38%) of the students changed their search terms by making them more specific to the topic or disciplinary area or took advantage of advanced and specialized search features in disciplinary databases. One-third

TABLE 1	
Research Log Assessment Results	
Where Students Sought Help	**Percentage**
Other Students	13
Professor	33
Class workshops	86
Library Staff —includes consultations, emails, and reference visits	40
Changes in Research Practices	**Percentage**
Did Not Change	10
Unchanged but sees need	20
Changed (could show multiple changes)	70
improved search terms	38
used recommended sources	66
tried multiple sources	33
Point of Greatest Difficulty	**Percentage**
Finding case	13
Collecting case information	16
Selecting best sources	33
Using unfamiliar databases	26
Knowing when to quit	0

(33%) of the students tried other sources, not including Google, when dissatisfied with their first results.

In their final log entries, students often looked back on the project and assessed their own performance. They contrasted their research habits on this project with those used previously at Davidson. As one student explained:

> This project demanded me to go beyond the basic Google search. I did use Google occasionally, once I had specific keywords, to find blogs and general information about the case, but the cited material came from databases, newspaper articles, and websites referred to me by my professor or college librarian. I become more familiar with Davidson's Library English database. (Log 1008)

Other students similarly talked about the struggle to get "beyond" or "past" Google, such as in this comment:

> In hindsight, I definitely had trouble at the beginning getting past Google. Coming from high school where I had not had much experience with online research like that available at Davidson, it was a tough transition to using all of the resources in the Library section of the Davidson website. However, I definitely improved in this aspect, moving towards better sociology and psychology references…. (Log 1018)

Notably, whatever their year in school, students reported that the demands of this project, coupled with the support structure and just-in-time instruction, had helped them make what they considered a difficult transition to using the typical tools of academic research.

Moreover, where students turned for help also changed. As revealed in log comments, 40% of the students sought out librarian assistance **in addition** to that provided through the three class workshops. In contrast to the 2009 version of the class, when the professor spent many hours helping students who were struggling to find a case or sufficient information about a case, only 33% said they asked their professor for help, and she noticed this change in her office hours. Instead of spending the time helping students find information, she was able to work with them on evaluating their evidence and framing their arguments, areas of instruction more fully in her areas of competency.

Students noted a change in this regard as well. One said: "My research skills evolved in one specific way with this project—I consulted librarians. Never before had I gone to a librarian for help…a huge mistake on my part because through this project I have learned that they are unbelievably helpful." (Log 1012)

Deep Reflection

While we were encouraged by the number of students who improved their search processes—and some students' logs showed only that kind of development—we were even more pleased to find students showing deep thought about their habits and processes as researchers. In making this claim, we analyze student comments in relation to key criteria of reflection, for which we draw on Rodgers' re-articulation of Dewey's concepts. Rodgers elaborates on four key criteria that she feels characterize authentic effective reflection à la Dewey:

1. Reflection is a meaning making process that moves a learner from one experience into the next with deeper understanding of its relationships with and connections to other experiences and ideas.

2. Reflection is a systematic, rigorous, disciplined way of thinking, with its roots in scientific inquiry.
3. Reflection needs to happen in community, in interaction with others.
4. Reflection requires attitudes that value the personal and intellectual growth of oneself and others.[14]

We saw evidence of all four characteristics in the logs. Criterion one is synonymous with our goal in assigning these logs, as we hoped to encourage students to notice their research habits, realize what worked and didn't work and why, and build stronger habits. Criterion three was achieved every time we used information from the logs in progress to initiate class conversations, workshop conversations, or one-on-one conversation about difficulties. We also saw reflection-in-community when students, on their own or prompted by the professor, shared information with the class and explained how they found it.

Criterion two was met in the best logs, when students would systematically note the results of various search strategies. The act of recording this data seemed to limit students' use of the scattershot approach, forcing them to discipline themselves to think critically about their failed strategy and try logical alternatives.

The boldest criterion for deep reflection, criterion four, may seem to be difficult to assess in an academic context. However, some students did engage in reflection that suggested potential intellectual growth. As one honest student explained:

> My biggest weakness in researching and writing papers, which I knew before this project, is my tendency to procrastinate starting work until the last minute. Sometimes I rationalize this to myself by saying "I work better under pressure!" but who knows. Either way, I still get the work done, but I certainly might want to start these projects a day earlier. Maybe I'll try this next semester. (Log 1011)

Though the student may or may not change practices as a result, in this comment the student owns his or her behavior and is willing to concede its limitations.

A similar honesty emerges in other final comments that also suggest changed future practices. Consider, for example, what the following student notes:

> Looking back at my research log, I have noticed flaws in my research method. First of all, I relied too heavily on Google Scholar. I neglected using the library's databases as much as I should have because Google is simply easier to use. With Google, my search term did not have to be as specific, and results were easier to find when time was limited, which was often the case with my schedule and other homework demands. When I was going about researching for this project, I generally did searches with the intention of finding out what research was even available, so I did broad searches. For this type of research, the official databases would have been difficult to use, since many of them require really specific search terms and a clear idea of what information I want to find. *However, the databases would have helped me to find more scholarly sources on my topics, and it would have been good for me to dig deeper on them to improve my skill with navigating those sites*. (emphasis ours Log 1026)

This student is willing to go beyond giving excuses for current practice to admit the benefits both to the current project results and future research strategies in shifting habits.

Finally, one student described a level of awareness that he/she found frustrating during the research process, but that delighted us:

> I struggled with conflicting literature. Interestingly, I think being at the end of my undergraduate career actually hurt me here. When I wrote research papers in the past, I would find what I needed to support my argument and go with it. Now, I'm so used to literature reviews and interrogating studies that it was really hard to ignore bodies of literature that disagreed with my argument. This posed really, really big roadblocks for me—the kind of thing that would make me just want to stop working. It was particularly difficult to get through when I didn't have sufficient academic background to interrogate the articles that were disagreeing with my argument to see what the potential hole in their methodology or in their theory might be. (Log 1019)

No longer content to "find what [he or she] needed to support [the] argument and go with it," this stu-

dent realized both the intellectual strides made and the challenge of the next big step: evaluating claims in areas where one is a liberally educated generalist, not a specialist.

Sustainability

Teaching information literacy in this format is time-consuming, as is assessing reflective journals. It is incontrovertible that teaching ten out-of-class workshops took more librarian time than teaching the same content in two additional class periods would have. The small-group format with extensive guided practice was much more effective, however, so there was a pedagogical reason to structure the workshops as we did. Not every librarian and professor will be able to devote this much time to each course, but we are not advocating applying this method to every course. It is most applicable in cases where the information-seeking is complex, when students are working outside their comfort zones, and when the assignment encompasses several weeks and multiple checkpoints. The assignment in English 231 met all these criteria. It was not only interdisciplinary but also unpredictable in the full range of disciplines drawn on in research. The professor and the librarian foresaw a need for psychology, sociology, and communications, but students chose their own cases and delved into disciplines their cases dictated. In some cases, the challenge led to a lawsuit, so legal sources came into play. In at least one other case, scientific approaches to sexual orientation were relevant to the case, and the student, who was not a science major, had to seek information in biology.

Closing and Reopening the Loop

The professor is teaching English 231 again in spring 2013, giving us a new opportunity to close the loop by applying assessment results to course improvement. We are repeating the just-in-time, sequenced workshop approach with an embedded librarian. The librarian intends to make a few tweaks to the instruction in the workshops, including offering the students more direction in finding demographic information.

Following Moon's advice to give students examples of both good and poor reflections,[15] we will provide students models of the best logs from 2011 (with the student authors' permission) to help them avoid the pitfalls of the mechanical "what I did when" log. For example, one student from 2011, at the end of a spreadsheet with a meticulous list of sources and results but not much genuine reflection, wrote, "Though I initially thought this research log was extremely inconvenient, I soon discovered how useful it was in helping me backtrack my string of research (how I got from one website to another). (Log 1017). That was indeed one of our intentions in assigning the log, but it was not the ultimate goal. Because it is possible that students in the 2013 class know students who took the course in 2011, we may create an example of a poor log rather than run the risk of embarrassing a real, though anonymous, student by distributing his or her log.

Moreover, we have learned the importance of reflecting ourselves, both in process and after the semester ends, and sharing these reflections with each other. Reflecting in community has led us to discuss the relationships between professors and librarians and the potential for misunderstanding that, we believe, comes from different cultures and an often unacknowledged but nevertheless real power differential. These conversations have opened for us some potential areas of exploration. What we've learned about the value of using data from student experience to inform future pedagogic practice makes us want to open up a broader conversation between classroom faculty and librarians. Professors may not understand why our writing center sends them detailed reports on individual tutorials, yet librarians never share insights from consultations with individual students and rarely report on the class as a whole, even when they discover student confusion that would be helpful for the professor to know. It is important that classroom faculty understand librarian ethics and state law, but we believe, with ACRL, that the choice between sharing no information at all and sharing personally identifiable information is a false dichotomy.[16]

Above all, we are confident we will continue to learn from students' reflections and keep improving our instruction for this project. No educational offering is ever perfect, and no opportunity for continued growth in learning—for students, faculty, and staff—should be overlooked.

Appendix 1. ENG 231 Guide, Fall 2011

Step 1: THE PROPOSAL   Select a challenged book and a specific case.

Two ways you could approach this:

➢ *Search* **for a challenge case on a book that is meaningful to you.**
  – Try Google.
  – Search the ERIC database for the title of your book AND "censorship."
  – Search the compilations below.

➢ *Browse* **compilations of challenges and select an interesting one:**
  – The American Library Association maintains a list of frequently challenged books. Follow ALA's leads to the Newsletter on Intellectual Freedom (available in full-text since July of 1998 through OmniFile Full-Text Mega.) (http://www.ala.org/advocacy/banned/frequentlychallenged)
  – Banned in the U.S.A.; an e-book through eBrary
  – Opposing Censorship in the Public Schools: Religion, Morality, and Literature; an e-book through NetLibrary
  – Literature Suppressed on Political Grounds; Ref. Z 658 .U5K37 2006
  – Literature Suppressed on Social Grounds; Ref. Z 658 .U5S69 2006
  – Literature Suppressed on Sexual Grounds; Ref. PN 56 .E7S68 2006
  – Literature Suppressed on Religious Grounds; Ref. BL 65 .C45B35 2006
  – Censored Books: Critical Viewpoints; PS 65 .C46C46 2001
  – Censored Books II: Critical Viewpoints, 1985-2000. PS 65 .C46C45 2002
  – Banned Books, 387 B.C. to 1978 A.D.; 098 H14b4
  – Banned Books: Informal Notes on Some Books Banned for Various Reasons at Various Times and in Various Places; 098 H14b
  – Banned Books: Informal Notes on Some Books Banned for Various Reasons at Various Times and in Various Places; 098 H14b3
  – Battle of the Books; 098.12 B969b

➢ **Your choice at this stage can make your information-finding task more or less challenging. If you crave a challenge:**
  – Choose an older case.
  – Choose a less-famous book.

Appendix 2. English 231 Project Log Evaluation

1. Where are students seeking help? Check as many as apply.

    ☐ Other students
    ☐ Professor
    ☐ Library staff
    ☐ Other (please explain)

    Over the course of the project, does the help seeking behavior shift? If so, how?

2. According to the large national Project Information Literacy survey, students tend to be locked into basic research subroutines that they port to college with them from high school. To what extent did our just in time, phased emphasis on research instruction make any impact on their research sub routines and how?

    ☐ Student did not change practices from beginning to end of log
    ☐ Student did not change practices, but recognized that he/she should
    ☐ Student did change practices from beginning to end of log: check as many as apply.
        ☐ Improved search terms
        ☐ Used sources, tools, and sites recommended by the librarian
        ☐ Tried multiple sources, tools, and sites if dissatisfied with first choice
        ☐ Other: Please explain

3. Where in the process was the point of greatest difficulty? Please check one

    ☐ Finding a case
    ☐ Collecting case information on facts, stakeholders, dates
    ☐ Locating information on issues raised in case
        ☐ Selecting the best sources to match the information need
        ☐ Using unfamiliar databases
    ☐ Knowing when to quit research
    ☐ Procrastinating
    ☐ No point of greatest difficulty

Notes

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2. Carol Rodgers, "Defining Reflection: Another Look at John Dewey and Reflective Thinking," *Teachers College Record* 104, no. 4 (06/01, 2002): 842-66.

3. Moon, "Reflection," 7.

4. Rodgers, Defining Reflection," 848.

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7. Donald L. Gilstrap and Jason Dupree, "Assessing Learning, Critical Reflection, and Quality Educational Outcomes: The Critical Incident Questionnaire," *College & Research Libraries* 69, no. 5 (09, 2008): 422.

8. Karen Bordonaro and Gillian Richardson, "Scaffolding and Reflection in Course-Integrated Library Instruction," *Journal of Academic Librarianship* 30, no. 5 (09, 2004): 394.

9. Ibid., 398.

10. Anne R. Diekema, Wendy Holliday, and Heather Leary, "Re-Framing Information Literacy: Problem-Based Learning as Informed Learning," *Library & Information Science Research* 33, no. 4 (10, 2011): 261-268.

11. Pamela A. McKinney and Barbara A. Sen, "Reflection for Learning: Understanding the Value of Reflective Writing for Information Literacy Development," *Journal of Information Literacy* 6, no. 2 (12, 2012): 110-129.

12. Alison J. Head and Michael B. Eisenberg,"Truth be Told: How College Students Evaluate and use Information in the Digital Age," http://projectinfolit.org/pdfs/PIL_Fall2010_Survey_FullReport1.pdf.

13. Adapted from L Dee Fink, *Creating Significant Learning Experiences: An Integrated Approach to Designing College Courses*, (San Francisco, CA: Jossey-Bass, 2003), 75.

14. Rodgers, "Defining Reflection," 845.

15. Moon, "Reflection," 11.

16. Association of College and Research Libraries, "Value of Academic Libraries: A Comprehensive Research Review and Report," Association of College and Research Libraries, http://www.ala.org/acrl/sites/ala.org.acrl/files/content/issues/value/val_report.pdf, 43.