

Student Learning in Library Research Instruction for University Seminar and Critical Writing, Reading and Research I & II

Assessment Report for Academic Year 2013-2014

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Summary

During the 2013-2014 academic year, Staley Library continued to use a pre-test, post-test format to assess the information literacy confidence and skills of first-year Millikin University students. Between taking the pre-test and the post-test, students receive four library instruction sessions designed to address Staley Library's four CWRR learning goals (see page 2).

All students enrolled in the University Seminar/CWRR sequence (essentially all first-year students at Millikin University) were part of the assessment. While participation varied by question, approximately 200 students took the pre-test and approximately 80 students took the post-test. In all cases, the tests were administered through Moodle and students took them on their own outside of class time.

Key findings from the assessment include:

- Students showed an overall increase in their confidence with the research process and with particular information literacy skills from the pre-test assessment to the post-test assessment.
- Students' confidence in using library resources, especially the databases, selecting search terms, and citing sources increased the most, while their confidence defining a topic for research or finding materials in the library increased the least.
- Students showed strong improvement in skills that are directly addressed in instruction sessions such as identifying the purpose of the library databases or the characteristics of a scholarly article.
- Students come to Millikin with at least some understanding of website evaluation but their initial criteria for evaluation tend to be simplistic.
- Students ability to identify unbiased information sources increased by the post-test, but still represented the lowest score overall, which may reflect the complexity of this task.
- Based on their comments, it appears that students appreciate library instruction, especially learning how to find articles, evaluate sources, and develop keywords.
- A majority of students consider librarians' principle role to help them find books, but a large number of students also acknowledge the variety of other tasks that a librarian can help them with.
- Survey data indicate that the self-guided library tour offered at the beginning of the fall semester is achieving its stated learning outcomes.
- While the pre-, post-test format provides important longitudinal data across the first year of college, the decline in participation from the pre- to the post-test continues to challenge the reliability of the data.

Goals

The mission of Staley Library's instruction program is to empower students to become information literate adults who are confident in their information seeking abilities and able to apply critical thinking skills in the retrieval, evaluation, and ethical use of information. The program supports the academic curriculum of

Millikin University and strives to develop students who are not only successful academically, but also are prepared to find and critically use information throughout their lives.

The research instruction program corresponds directly with CWRR learning outcome goal #3: “Conduct research to participate in academic inquiry.” The purpose of research instruction for CWRR is stated in Staley Library’s four CWRR learning goals:

1. Students will identify the use and purpose of potential information sources and formats.
2. Students will develop and implement search strategies to retrieve resources using library and non-library tools.
3. Students will evaluate the information that they find to determine its context, value, and to identify bias or deception.
4. Students will understand ethical aspects of information and information technology.

These goals correspond to the University-wide learning goals:

1. Millikin students will prepare for professional success.
2. Millikin students will actively engage in the responsibilities of citizenship in their communities.
3. Millikin students will discover and develop a personal life of meaning and value.

Table 1 (below) shows how Staley Library’s learning goals relate to University-wide learning goals:

Table 1. Staley Library’s CWRR learning goals mapped to the University’s learning goals

Learning Goal	Corresponding MU Learning Goal Number(s)
Students will identify the use and purpose of potential information sources and formats.	1, 3
Students will develop and implement search strategies to retrieve resources using library and non-library tools.	1, 3
Students will evaluate the information that they find to determine its context, value, and to identify bias or deception.	1, 3
Students will understand ethical aspects of information and information technology.	2, 3

Snapshot

The research and instruction librarians devote a majority of their in-class instructional activities to the first-year core courses – CWRR and University Seminar. The librarians use a 2:2 instruction model, with two sessions in the fall and two sessions in the spring. The fall sessions are taught in either Seminar or CWRR as the course professors see fit (2 sessions per cohort); the two spring sessions are both taught in CWRR as there is no spring Seminar equivalent. The fall sessions use active learning to cover research basics and evaluating Internet sources, while the spring sessions cover more advanced topics such as evaluating types of articles, advanced keyword/topic development, and appropriate source choice for an assignment. In all cases, the librarians work with the Seminar and CWRR course professors to time the library session(s) appropriately within the course content; this means the students are able to learn, practice, and apply skills in a way that makes them immediately relevant to their research needs.

During the 2013-2014 academic year, the librarians conducted 63 sessions (44 sections) for in-sequence CWRR classes, 23 sessions (24 sections) for in-sequence Seminar classes, 8 sessions (4 sections) for the off-sequence CWRR classes, and 5 sessions (4 sections) for the PACE CWRR classes.

Matthew Olsen coordinates the research instruction program and shares in the instruction with library faculty Rachel Bicicchi, Cindy Fuller (Library Director), Denise Green, and Amanda Pippitt. All library faculty, including the Instructional Services Coordinator, report to the Director.

The Learning Story

For most Millikin University students CWRR and University Seminar are their introduction to college-level research. While many first-year students are comfortable using consumer technology and finding information on the Internet, those abilities do not necessarily translate into well-developed information seeking skills or the ability to critically evaluate the information that they find. The librarians are the campus leaders in increasing the information literacy skills of students, not only to promote academic success, but also to develop the skills necessary for life-long learning. To this end, the librarians work closely with University Seminar and CWRR faculty to tailor their instruction in such a way that it matches the course content and provides an authentic learning experience. Librarians teach students to use both library and non-library sources and stress the important of evaluating information sources no matter how they are discovered. They also focus on active learning and give students opportunities to practice the skills that they are learning.

Assessment Methods

Pre- and Post-Test Assessment Methods

The 2013-2014 academic year was the eighth complete year of data collected via a pre- and post-test. Over time, the assessment has used different questions and methods (documented in prior instruction reports). The pre-test was administered via Moodle before the students met with a librarian in the fall; the post-test was also administered through Moodle after the library instruction was complete in the spring. In both cases, the tests were taken outside of class time.

The sixteen questions that comprise the first part of the test are based on the Project Information Literacy report, "Truth Be Told: How College Students Evaluate and Use Information in the Digital Age."¹ These questions are designed to measure the students' confidence level with the academic research process (affective learning). For this year some of the questions were modified slightly for greater clarity and four questions that the librarians considered outside of the library's CWRR learning goals, e.g., "taking notes" and "deciding whether or not I'm 'done'," were eliminated. The five point scale that students use to rank their confidence with different stages of the research process was also modified to make things clearer for the students. Previously the scale ranged from 1 to 5 with 1 being "almost always difficult" and 5 being "never difficult." The current scale ranges from 1 "very difficult" to 5 "very easy." The complete list of questions is provided in Appendix A.

The second portion of the assessment is comprised of nine questions that assess the students' information literacy skills. Five of the questions are selected-response questions (multiple choice) and two of the questions are constructed-response (short answer). Question one on the pre-test asks students what they would like to learn in their library instruction sessions. On the post-test question one has two parts: "What was the most useful thing that you learned from the library sessions this year?" and "What do you wish that you would have learned?" Question nine asks the students about the research activities that a librarian can help them with and is intended to gauge how well students understand the role of the librarian. The complete list of questions can be found in Appendix A.

¹ Head, A.J., & Eisenberg, M. B. (2010). *Truth Be Told: How College Students Evaluate and Use Information in the Digital Age* (Project Information Literacy Progress Report). Retrieved from the Project Information Literacy website: http://projectinfolit.org/pdfs/PIL_Fall2010_Survey_FullReport1.pdf

To facilitate reporting of the range of answers to these questions, responses to question one and nine were coded in twelve categories, all of which are listed in Appendix A. The instruction coordinator and two other librarians performed the coding. Each librarian coded each response into up to three categories and categories that were identified by at least two librarians were assigned to the response for this report. Questions three and five were also graded by the instruction coordinator and two other librarians and the three grades were averaged to assign a final grade to each response. The grading scale for questions three and five can also be found in Appendix A.

Other Forms of Evaluation

In addition to the formalized library instruction sessions for the first-year core curriculum courses, new students have traditionally participated in a library self-guided tour during the first month of the fall semester. The goal of the library tour is to introduce students to the “library as place” and to familiarize them with some of the resources and services that are available in the library building. By making the tour self-guided, the librarians do not need to spend valuable in-class time performing this activity and the tour can be completed at a time that is convenient for the students. The tour has three learning outcomes:

1. Students will feel comfortable while researching, locating resources, studying, and relaxing in the library.
2. Students will know how to locate many of the resources available in the library.
3. Students will know who to ask if they have questions.

In fall 2013 the self-guided tour used a new, mystery narrative format that incorporated QR (Quick Response) codes scanned by a smartphone to guide students around the library. The hope was that the combination of story and technology would increase student engagement with the tour. The tour consisted of a nine question worksheet with clues that were discovered by scanning QR codes located throughout the library. At the conclusion of the tour the worksheets were collected by library staff, graded by the librarians, and then returned to the Seminar instructor.

Academic year 2013-2014 also continued the Faculty Assessment of Library Instruction survey. This nine question electronic survey is sent to every faculty member within whose class library instruction was conducted including those outside of the Seminar/CWRR sequence. The faculty can then give anonymous or signed feedback, which the librarians use to improve library instruction. To view the survey questions please contact the Instruction Coordinator.

Assessment Data

Overview:

Fall Pre-Test²

Part 1: Average score = 3.09 (5 point scale)

Part 2: Multiple choice: Average percentage of students answering question correct = 70%

Short answer: Average score = 2.1 (3 point scale)

Spring Post-Test³

Part 1: Average score = 3.30 (5 point scale)

Part 2: Multiple Choice: avg. percentage of students answering question correct = 82%

Short answer: Average score = 2.64 (3 point scale)

Table 2. Pre- and post-test results by library CWRR learning goal

Staley Library CWRR Learning Goals (LG)			
1. Information Sources	2. Search Strategies	3. Evaluation of Information	4. Ethical Aspects of Information
<p>Part 1 Questions 7& 8 Pre-Test Avg. = 2.9 Post-Test Avg. = 3.0 Improvement = 3%</p> <p>Part2 Questions 4 & 5 Pre-Test Avg. = 63% Post-Test Avg. = 85% Improvement = 35%</p> <p>Total for LG 1 Improvement = 19%</p>	<p>Part 1 Questions 1, 2, 3, 4 & 5 Pre-Test Avg. = 3.1 Post-Test Avg. = 3.3 Improvement = 6%</p> <p>Part 2 Question 2, 6 Pre-Test Avg. = 81% Post-Test Avg. = 87% Improvement = 8%</p> <p>Total for LG 2 Improvement = 7%</p>	<p>Part 1 Questions 6, 9 & 10 Pre-Test Avg. = 3.0 Post-Test Avg. = 3.2 Improvement = 7%</p> <p>Part2 Questions 3 & 7 Pre-Test Avg. = 58% Post-Test Avg. = 78% Improvement = 34%</p> <p>Total for LG 3 Improvement = 20%</p>	<p>Part 1 Questions 13, 14 & 15 Pre-Test Avg. = 3.2 Post-Test Avg. = 3.4 Improvement = 6%</p> <p>Part 2 Question 8 Pre-Test Avg.= 84% Post-Test Avg.= 82% Improvement = -3%</p> <p>Total for LG 4 Improvement = 1%</p>

Part 1 of the assessment is designed to measure students' confidence level with the entire academic research process. Students are asked to rank on a scale from 1 to 5 how they feel about different stages of the research process. Table 3 (below) and Graph 1 (Appendix B) provide a question by question listing of student scores on both the pre-test and post-test.

² For the pre-test the number of student answers was not the same from question to question. For Part 1 the average number of responses was 206 (mode = 206). For Part 2, the average was 197 (mode = 197). 463 students were enrolled in the pre-test Moodle 'course.'

³ The post-test also exhibited different numbers of responses from question to question. For Part 1 the average number of responses was 83 (mode = 83). For Part 2, the average was 78 (mode = 78). 419 students were enrolled in the post-test Moodle 'course.' The difference in the number of responses between the pre- and post-test and their relation to the size of the 2017 class is discussed in the *Improvement Plan* section below.

Table 3. Comparison of student ratings pre- and post-test by question for Part 1

Question Scale 1 - 5 1 = very difficult 5 = never easy	Pre-Test Average Points (n = 206)	Post-Test Average Points (n = 83)	Points Change	Percent Change
1. Defining a topic for the assignment	3.14	3.07	-0.07	-2.2%
2. Narrowing my topic	2.92	2.80	-0.12	-4.2%
3. Selecting search terms	3.10	3.59	0.49	15.9%
4. Finding articles in the research databases on the Library's website (EBSCO, JSTOR, ProQuest, etc.)	2.80	3.46	0.67	23.9%
5. Finding sources to use "out on the web" (example - Google, Wikipedia, websites)	3.66	3.73	0.08	2.1%
6. Determining whether a website is credible or not	3.10	3.31	0.21	6.8%
7. Figuring out where to find sources in different parts of the library	2.78	2.81	0.03	0.9%
8. Finding up-to-date materials	2.92	3.16	0.23	8.0%
9. Having to sort through all the irrelevant results I get to find what I need	2.87	3.01	0.14	4.8%
10. Evaluating the sources that I've found	3.12	3.39	0.26	8.5%
11. Reading through the material	3.59	3.75	0.15	4.3%
12. Integrating different sources from my research into my assignment	3.27	3.48	0.21	6.6%
13. Knowing when I should cite a source	3.38	3.51	0.13	3.9%
14. Knowing how to cite a source in the right format	2.98	3.33	0.35	11.7%
15. Knowing whether or not my use of a source, in certain circumstances, constitutes plagiarism	3.10	3.36	0.26	8.3%
16. Knowing whether or not I've done a good job on the assignment	2.77	2.99	0.22	7.8%
Average	3.09	3.30	0.20	6.7%

Table 4. Average number of students reporting at each level of difficulty for all questions in Part 1

Rating	Pre-Test	Post-Test	Percent Change
1 – This is very difficult	3.9%	4.1%	4.6%
2 – This is difficult	25.5%	19.7%	-22.7%
3 – This is neutral	34.3%	31%	-9.5%
4 – This is easy	29.9%	32.8%	9.7%
5 – This is very easy	6.4%	12.4%	93.4%

Table 5 (below) and Graph 2 (Appendix B) show the pre- and post-test results for the five multiple choice questions in part 2. The numbers represent the percentage of students who answered each question correctly.

Table 5. Pre- and post-test comparison of percentage of students answering multiple choice questions correctly

Multiple Choice Question	Pre-Test (avg. n=197)	Post-Test (avg. n=78)	Percent Change
2. Keywords	66%	79%	21%
4. Database	71%	86%	22%
6. Narrowing	95%	95%	0%
7. Sources	33%	65%	100%
8. Citation	84%	82%	-3%
Average	70%	82%	17%

Tables 6, 7, and 10 (below) not only list the number of student responses that matched a given category, but also a representative response for each category.

Table 6. Coded student responses to pre-test question 1

Pre-Test Question 1 - "What do you hope to learn from the library sessions this year?"	Number of students responding (n=197)
Resources - "How to easily and succussfully use our library resources."	71
Library - "Where specific information is located in the library."	58
Citation - "I need to learn more about APA and citing sources."	48
Other - "To learn about better techniques to write a research paper."	38
Finding articles - "I hope to learn of the best research databases to use."	19
Finding books - "how to look where certain books are"	19
Evaluation of sources - "I would like to learn how to evaluate which sources I should use in a paper."	12
Topics - "how to narrow down my topic for my paper"	6
Web - "how to use the internet for sources efficiently"	6
Don't know	4
Nothing	2

Table 7. Coded student responses to post-test question 1

Post-Test Question 1.1 - "What was the most useful thing that you learned from the library sessions?"	Number of students responding (n=76)	Post-Test Question 1.2 - "What do you wish that you would have learned?"	Number of students responding (n=63)
Finding articles - "I learned how to use Staley Library's database and that was the most helpful thing I learned."	31	Nothing	12
Evaluation of sources - "The most important thing I learned during the library session was how to identify and differentiate between articles in scholarly journals, trade periodicals, and special-interest magazines."	20	Citations - "How and when to cite."	11
Keywords - "I was able to learn how keywords could help me learn more about the article that I want to find and read."	10	Other - "I wish I would have learned how to organize the research I found in a more efficient and sensible way."	9
Resources - "I learned where to find other sources and use different search engines besides google."	6	Finding articles - "I wanted to learn more ways to find articles."	8
Finding books - "The most useful thing that I learned from the library sessions was how to use the online catalogue to find sources."	5	Evaluation of sources - "I wish I would have learned how to better decide whether a source is credible or not."	8
Library - "The most useful thing I learned from the library session was where to find the academic search links on the Staley website."	4	Library - "Easier ways to find sources in library."	6
Nothing	4	Resources - "I wish I would've learned how to use other sources other than the databases."	3
Topics - "I learned that the library's site helps you narrow topics down."	2	Finding books - "I wish I would have learned a little more on how to find books."	2
Citation - "I learned how to use and cite periodicals."	1	Keywords - "I wanted to learn how to pick out keywords for my searches."	2
Don't know	1	Web - "I wish I would have learned more about how to search reliable sources on google."	2
Web - "I did not know about Google Scholar before our librarian visited."	1		

Table 8. Comparison of students' answers pre- and post-test for question 3

Question 3 – “How do you decide if a website has the credibility it needs for you to use in your research project?”	Pre-Test (n = 197)	Post-Test (n = 77)	Percent Change	Point Change
Average (out of 3)	2.53 (84%)	2.74 (91%)	8%	0.21

Table 9. Comparison of students' answers pre- and post-test for question 5

Question 5 – “Name three characteristics of a scholarly journal article.”	Pre-Test (n = 196)	Post-Test (n = 76)	Percent Change	Point Change
Average (out of 3)	1.67 (56%)	2.53 (84%)	51%	0.86

Table 10. Coded student responses to pre- and post-test question 9

Pre-Test Question 9 – “What are some research activities that a librarian can help you with?”	Number of students responding (n=205)	Post-Test Question 9 – “What are some research activities that a librarian can help you with?”	Number of students responding (n=82)
Finding books - "Helping find a section of books that fit the topic"	73	Finding books – "Finding books in the library's labringth of shelves."	31
Resources - "Finding sources."	68	Finding articles - "finding articles or finding scholarly journals that can be found in other libraries."	23
Finding articles - "Showing me what data bases will give true and accurate information"	53	Finding resources – "help the person locate appropriate resources"	21
Citation – "Just a quick refresher of MLA"	29	Keywords - "Using correct search terms"	11
Web – "How to use google."	23	Library - "The librarian can help me when it comes to finding a source in the library."	11
Evaluation of sources - "differentiate between credible and non-credible sources"	20	Evaluation of sources - "if research if credible"	9
Other - "How to correctly write a research paper."	19	Topics - "narrowing down which topics will be right for a paper and which will be irrelevant"	9
Library - "Finding resources in the library to use for research papers"	16	No answer	8

and other assignments requiring scholarly evidence and support."			
Topics - "Narrowing down your topic"	13	Citation - "Helping to integrate citations into your paper in the correct format, should there be any doubt."	7
No answer	10	Other - "If the computer won't start, if the computer won't let me log in, and if the computer froze."	7
Don't know	9	Nothing	3
Keywords - "What key words to use when researching"	5	Web - "Looking for online sources"	1

Table 11. Self-guided tour survey results (n=46)

How long did it take you to complete your investigation?		
5 - 10 minutes	4	9%
10 - 15 minutes	9	20%
15 - 20 minutes	21	46%
more than 20 minutes	12	26%
Now that you have completed the investigation, do you feel more comfortable using Staley Library?		
Yes	40	87%
No	3	7%
Not sure	3	7%
Do you feel more confident about finding library resources?		
Yes	39	85%
No	2	4%
Not sure	5	11%
Do you know who to ask for help in the library?		
Yes	44	96%
No	1	2%
Not sure	1	2%
How do you feel about the Cliff Dannen story used in the investigation?		
I liked it	21	46%
It was ok	19	41%
I didn't like it	1	2%
I didn't pay any attention to the story	5	11%

Similar data tables for PACE CWRR and off-sequence CWRR I (i.e., CWRR I offered in the spring rather than the fall semester) classes are included in Appendices C & D below.

Analysis of Assessment Results

Looking across all of the different assessment types, students showed an improvement in every area between the pre- and post-test. In part 1 overall student confidence in the research process increased by

0.2 points or 7%. Students showed an average 17% increase in correct answers on the multiple choice portion of Part 2 and an average .54 point or 25% increase in correct answers on the short answer questions. Mapped to the CWRR Artifact Performance Indicator Scale (where Nominal (Red-Stop) = 0-52%, Adequate (Yellow-Caution) = 53-74%, and Excellent (Green-Go) = 75-100%), by the post-test in both the multiple choice and short answer portions of part 2 the students' percentage of correct answers were in the Excellent (Green) range of the scale (multiple choice = 82%, short answer = 88%). The only individual question that fell outside the green range is question 7 in part 2 on types of sources. While a question by question analysis is offered below, on the whole it appears that students' information literacy confidence and abilities are increasing during their first year at Millikin University.

Analysis of Assessment Results by Library Instruction Goal

Many of the questions in parts 1 and 2 can be mapped to particular Staley Library CWRR learning goals. Students' confidence and correct answers increased across all of the learning goals (see Table 2 above), with a particularly strong increase in goals one and three (information sources and evaluation of information). Learning goal four (ethical aspects of information) increased the least, but was also the highest to begin with.

Analysis of Assessment Results for Part 1

Student scores (self-assessed confidence) increased on 14 of the 16 questions and on the whole increased by .2 points (7%). The greatest increase in confidence was in selecting search terms (question #3), finding articles in the library databases (#4), finding up-to-date materials (#8), evaluating sources (#10), knowing how to cite sources in the correct format (#14) and knowing when something constitutes plagiarism (#15). Using the library databases and evaluating materials are both covered extensively in library instruction sessions and these results reflect positively on that instruction. Citing sources and plagiarism are covered both in library instruction and by Seminar/CWRR faculty.

Students' confidence in their ability to define and narrow their topic (questions #1 & #2) declined slightly, but this may reflect a greater awareness of the self-direction that is required in college-level writing assignments, as opposed to the defined prompts that are often given in high school. This interpretation is reinforced by students' increased confidence on the final question, which asks if they know whether they have done a good job on the assignment (#16). This may indicate a greater overall understanding of college level assignments. Students showed a very modest increase (2.1%) in their ability to find information on the open web (#5), although their confidence was very high to begin with (3.66). Finally, students exhibited a very minor increase (0.9%) in their confidence in finding sources in different parts of the library (#7) and their confidence was very low on the pre-test (2.78). Increasing students' confidence when navigating the library is a persistent problem. Changes to the self-guided tour this year were intended to increase students' engagement with the library building, but based on this result may not have been as effective as desired.

Table 4 (above) lists the percentage of students who provided each of the five ratings (1-5) across all of the questions on part 1 for both the pre-test and the post-test. This comparison shows that fewer students responded with 2s and 3s (low confidence) from the pre-test to the post-test, while the number of students who found tasks "easy" or "very easy" increased. The percentage of students who found tasks "very difficult" did increase slightly, but the percentage of students who assigned tasks to this category were small for both the pre- and post-test (3.9% & 4.1% respectively). Overall, it does seem that students are more confident throughout the research process by the end of their second semester at Millikin University.

Analysis of Assessment Results for Part 2

Multiple Choice Questions

Question 2 asks students to determine the best keywords to use to enter a query into Google. Students showed a significant increase (21%) in their scores between the pre- and post-tests. Keywords are covered in library instruction both in the fall and the spring, thus this increase is a positive reflection on that instruction.

Question 4 on the types of resources available in library databases also showed a significant improvement between the two tests; 86% of students responded to this question correctly by the post-test. Knowing what library databases are and what can be found in them is an essential skill for scholarly researchers. Students' success acquiring this skill (which they seem to appreciate given that they mentioned learning about the databases as one of most important things that they learned in question one of the post-test) is an indicator of the importance of library instruction.

Question 6 asks students to narrow a given topic. While students showed no improvement from the pre- to the post-test, the very high percentage of correct answers (95%) shows that they know how to take a very broad topic (renewable energy is the example in the question) and turn it into something more specific that could then be investigated.

Question 7 showed a large increase in the number of correct answers from the pre- to the post-test (+100%), but the percentage of correct answers was very low on the pre-test (33%) and was the lowest of all the questions on the post-test (65% correct). This question asks students to identify an objective information source on energy drinks. The correct answer, "a peer-reviewed article in a nutrition journal," is intended to have students identify scholarly sources as accurate and reliable. While the increased number of students who were able to identify this source is encouraging, the second most popular answer for both the pre- and post-tests was "a survey conducted by the American Beverage Association." Students clearly did not recognize the potential bias of an industry group conducting a survey of its own industry. Identifying bias in information sources is an advanced skill, but one that will benefit students throughout their lives. Although this is a difficult skill to inculcate in the short time that librarians have with the students during their first year, teaching these higher order skills is a constant aspiration of the librarians.

Question 8, which asks about the best time in the research process to record a citation, showed a minor decrease in the number of correct responses (-3%) from pre- to post-test, but student scores were high to begin with and even in the post-test 82% of students identified correctly that citation information should be recorded the first time that you access a source. The most common incorrect answer "after you have finished writing the section of the paper that uses information from the source," indicates that students recognize the need to tie a source to their writing, but don't recognize how early in the process they should do this. The librarians will continue to stress the need to record citation information as early in the research process as possible.

Short Answer Questions

Question 1

Students' responses to question one in the pre-test provide important insights into their incoming understanding and expectations of the library and scholarly research. For this reason, responses to this question were shared amongst the librarians early in the fall semester prior to meeting with the students. On the pre-test the student answers tended to be more general. They expressed an interest in learning about the library and library resources overall. This is perhaps natural since most students come from high schools with limited library facilities and probably do not understand the variety of resources and services

offered by a university library. It is also noteworthy that few students wanted to learn about searching the open Internet, perhaps because they already feel confident or because they feel that the library does not have a lot to offer in this area.

When looking at the results for question 1.1 in the post-test, students clearly appreciated learning how to use the databases to find articles. This is especially clear when contrasted with the pre-test where less than 10% of students identified finding articles as something that they wanted to learn about. Students also appreciated learning how to evaluate sources. The number of students who claimed that they learned about keywords is also encouraging as this is something that librarians stress in their instruction sessions, particularly in the spring semester.

For post-test question 1.2, a majority of students claimed that there was nothing more they could learn. While clearly not true, this does seem to express a sense of satisfaction with the library instruction that they received. The next most popular answer, "citations," indicates that students would like to learn even more about how and when to cite sources. Responses coded in the "other" category usually expressed an interest in learning more about the entire research or writing process. In past years, more students wanted to learn more about the physical library. The changed format of the self-guided tour was in part intended to address this deficiency. The decreased incidence here is encouraging, but as mentioned above, students didn't express a great deal of confidence in finding materials in the library in part 1.

Question 3

Question three asks how one decides if a website is credible enough to use in a research project. Website credibility is a topic that is addressed directly in one of the fall library sessions and students are given criteria for evaluating websites. Students showed an 8% increase in their average score from pre- to post-test. The high initial scores on this question indicate that students are probably receiving some instruction on website evaluation before entering college. However, their responses show that their initial criteria tend to be overly focused on the URL of a website and to be binary, e.g., all .org sites are good or all .com sites are bad. One of the goals of our website evaluation instruction is to encourage students to think more deeply in their evaluation and apply the criteria with a more nuanced understanding.

Question 5

Question five asks students to name three characteristics of a scholarly journal article. Part of a spring library instruction session is devoted specifically to this topic and students are given criteria for distinguishing scholarly journals from other periodical types. Student scores showed an increase from the pre- to the post-test by over 50%. These results indicate that by the time of the post-test students better understand the characteristics of scholarly journals, which are a major source of scholarly information across the disciplines.

Question 9

Question 9 about research activities that a librarian can help you with is new to the assessment and is intended in part to give a better sense of students' perceptions of the librarians both before and after the instruction sessions. The variety of activities that students identified both on the pre- and post-test is noteworthy. Students may see finding books as the librarians' principle activity, but they also recognized that librarians can help them find and evaluate resources, develop topics, and navigate the physical library. The increased prominence of finding articles matches the students' responses on question 1 and also matches one of the foci of the librarians in their instruction sessions, which is encouraging.

Analysis of Survey Results for Self-Guided Tour

There were 46 unique responses to the survey that students could complete after taking the self-guided tour. This represents approximately 14% of those students who completed the tour and approximately 10% of the entire first-year class. A majority of respondents claimed to have met the tour's learning outcomes of feeling more comfortable in the library, more confident using library resources, and knowing who to ask for help in the library. Because the survey was optional these responses are self-selected and may not represent the majority of students who completed the tour. Nonetheless, the results are encouraging. A self-guided tour is a very efficient way to introduce students to the physical library. The challenge is making the tour engaging enough that students actively seek out new areas of the library and remember the areas that they visited.

Analysis of Assessment Results for PACE and Off-Sequence CWRR classes

This year data were collected from four PACE CWRR classes and two "off-sequence" CWRR I classes. Collecting reliable data from these classes is challenging for a number of reasons. Not all students who take PACE CWRR II have taken CWRR I, which undermines the purpose of the pre- and post-test. Getting these students to participate in the assessment has also been a challenge. The off-sequence CWRR I sections were offered in the spring and were a mix of transfer students, international students, and students retaking CWRR. The pre-test is designed to be taken prior to any library instruction, which is partially undermined by the composition of these classes.

The results from the PACE CWRR classes generally matched the trends found in the traditional CWRR classes. Students demonstrated increased confidence in the research process from the pre- to the post-test, although their degree of confidence was lower in the both the pre- and the post-test. Students also showed roughly the same increase in scores in part 2 of the assessment (with the exception of question 5, which increased more significantly), although again, the scores were lower than in the traditional classes. Students in the off-sequence CWRR I class expressed even greater confidence in the research process than on the post-test for the traditional students. Their scores on part 2 tended to be between the scores of the pre- and post-test scores of the traditional students. Without knowing the exact composition of the off sequence classes it is difficult to explain these scores, although they do seem to demonstrate a greater familiarity with scholarly research and using an academic library than the typical first semester student.

Improvement Plan

A continuing challenge with the library assessment is the lack of participation, especially in the post-test. While it is possible to make comparisons across the two tests, overall confidence in the results would be increased if more students would participate in the post-test. Because the test is administered outside of class there is also a danger that the participation is self-selecting and the results do not represent an authentic cross section of the class of 2017. The advantage of this format is that the assessment can be administered without sacrificing instruction time and on balance this factor may outweigh the lack of participation. Nonetheless the Instructional Services Coordinator will continue to stress the importance of the assessment to both students and faculty.

One of the desired improvements from last year's report was to increase the participation of the PACE and off-sequence CWRR classes. All of the PACE CWRR classes participated in the assessment in 2013-2014 and the two off-sequence CWRR I classes participated. The assessment was made available to the off-sequence CWRR II class in fall 2013, but only one student completed the assessment. The Instructional Services Coordinator will continue his efforts to have all CWRR classes participate in the assessment.

Changes to the self-guided tour for academic year 2013-2014 seemed to increase student engagement and for the first time data were collected through the survey administered at the completion of the tour. For

next year, the Instructional Services Coordinator will work to increase student participation in the survey. The worksheets that students complete during the tour are currently collected and graded by the librarians. In fall 2014, the Instructional Services Coordinator will work with the other librarians to record those scores to get a more accurate count of how many students complete the tour and their average scores on the worksheet.

In the 2012-2013 Instruction Report, the Instruction Coordinator recommended having other librarians help with the coding and grading of the open-ended responses from part 2 of the assessment. Rachel Bicicchi and Amanda Pippitt did do this work for this report and will be consulted on ways to improve these parts of the instrument.

The reduction in the number of questions in part 1 and the refinement of the response scale seems to have had an indeterminate effect on the students' responses since the confidence expressed on the pre- and post-test were almost identical from last year to this year. As mentioned above, the questions that were eliminated were those that did not match any of the library's learning goals. Questions 11 and 12 ("Reading and understanding the material" and "Integrating different sources from my research into my assignment") are still not connected with the library's learning goals and will be reviewed by the librarians before the pre-test is administered.

The introduction of question 9 in part 2 has given the librarians insight into the thinking of students and will be retained. The question on unbiased sources of information was changed for 2013-2014, but continued to be challenging for students with only 65% responding correctly by the pre-test. As was noted in last year's report this is probably a reflection of the difficulty of this concept for students. Question 6 on narrowing topics is also new and given that 95% of students answered the question correctly in the pre-test, this question may need modification so that it can accurately capture improvements in student's understanding from the pre- to the post-test.

Finally, during summer 2013 the library's learning goals were updated slightly to reflect the changing information landscape in which students are looking for and finding scholarly information. The update also placed plagiarism in the context of the ethical use of information, which includes proper citation. The library's learning goals are based on the Association of College and Research Libraries' *Information Literacy Competency Standards for Higher Education*.⁴ These standards are undergoing a substantial revision that should be completed by the end of 2014. The library faculty are monitoring these changes and once they are finalized will possibly be incorporated into a revision of Staley's Library's learning goals.

Conclusion

On the whole, the assessment of library instruction in Seminar/CWRR indicates that students are learning important information literacy skills over the course of their first year at Millikin University. Finding, evaluating, and using information effectively and ethically are important 21st century skills and are skills that library faculty are uniquely qualified to develop in students across the curriculum. The close relationship that library faculty enjoy with other faculty across campus allows them to provide instruction in a way that is most beneficial to students. In particular with Seminar/CWRR, the opportunity to meet with cohorts on multiple occasions allows the librarians to introduce and reinforce more concepts to the students. The librarians continue to stress the idea of research as a process and to develop higher order information literacy abilities while reinforcing the more fundamental skills. The library faculty look forward to working again with their CWRR and Seminar colleagues during the 2014-2015 academic year.

⁴ Association of College and Research Libraries (2000). *Information Literacy Competency Standards for Higher Education*. Retrieved from <http://www.ala.org/acrl/standards/informationliteracycompetency>

Appendix A

Pre- and Post-Test Questions

Part 1

When you think about the ENTIRE research process—from the moment you get the assignment until you turn in your research paper—what is the level of difficulty for the following tasks? [Scale of 1 to 5: 1 – Very difficult, 2 – Difficult, 3 – Neutral, 4 – Easy, 5 – Very easy]

1. Defining a topic for the assignment.
2. Narrowing my topic.
3. Selecting search terms.
4. Finding articles in the research databases on the Library's website. (EBSCO, JSTOR, ProQuest, etc.)
5. Finding sources to use "out on the web" (using Google, Wikipedia, or other search sites).
6. Determining whether a website is credible or not.
7. Figuring out where to find sources in different parts of the library.
8. Finding up-to-date materials.
9. Having to sort through all the irrelevant results I get to find what I need.
10. Evaluating the sources that I've found.
11. Reading and understanding the material.
12. Integrating different sources from my research into my assignment.
13. Knowing when I should cite a source.
14. Knowing how to cite a source in the right format.
15. Knowing whether or not my use of a source, in certain circumstances, constitutes plagiarism.
16. Knowing whether or not I've done a good job on the assignment.

Part 2

(Correct answers are indicated in italics)

1. (Pre-Test) This year, a librarian will visit your CWRR and Seminar classes to begin talking about Information Literacy.
What do you hope to learn from the library sessions this year?
1. (Post-Test) This semester, a librarian visited your CWRR class to begin talking about Information Literacy.
 1. What was the most useful thing that you learned from the library sessions?
 2. What do you wish that you would have learned?
2. You are asked to write a research paper addressing the following question: "Should colleges be allowed to restrict student speech?"
You have decided to do a Google search using two keywords.
Which **two keywords** will get the best results?
College and censorship
College and student
College and speech
College and restriction
3. How do you decide if a website has the credibility it needs for you to use in your research project?

4. If you are searching in the database "Academic Search Premier" as seen in the image below, what type of research resources should you expect to find in your results?

Journal Articles
Books

5. Name **three characteristics** that make scholarly journal articles different than magazine articles or newspaper articles.

6. You have been assigned a research paper on the topic of renewable (sometimes called sustainable) energy sources. Of the following, which is the best way to **narrow** this topic?

Focus on the discovery of electricity
Focus on a particular type of renewable energy (for example wind or solar)
Focus on recycling initiatives in Germany

7. You are doing research for a speech on the potential medical benefits and drawbacks of energy drinks (Monster, Red Bull, etc.). Which of the following sources is most likely to have objective and accurate information on this topic?

A discussion of energy drinks on Yahoo! Answers.
A survey conducted by the American Beverage Association.
A website for one of the energy drink manufacturers.
A peer-reviewed article in a nutrition journal.

8. When is the best time in the research process to make note of the details about your source (author, title, date, etc.)?

The first time you access a source you might want to use.
After you have finished writing the section of the paper that uses information from a source.
When the teacher asks you for proof that you did not plagiarize the information in the paper.
When you are getting ready to print your final draft.

9. What are some research activities that a librarian can help you with?

Categories for Part 2, Questions 1 & 9

A = Finding articles (also using databases)

B = Finding books (and other print materials)

C = Citation (also plagiarism)

D = Don't know

E = Evaluation of sources

K = Keyword (development or selection)

L = Library – navigating the physical library or website

N = Nothing

O = Other – entire research process, writing, information literacy, etc. [use for very broad answers]

R = Finding (credible) (re)sources [use if they don't specify format]

T = Topics – defining, narrowing, etc.

W = Web – using Google, Bing, Wikipedia, etc.

X = No answer

Grading Scale for Part 2, Question 3

0 = "I don't know" or similar reply

1 = Answer completely wrong

2 = Answer partially correct

3 = Answer completely correct

Grading Scale for Part 2, Question 5

0 = No characteristics correctly identified, "I don't know" or similar reply

1 = One characteristic correctly identified

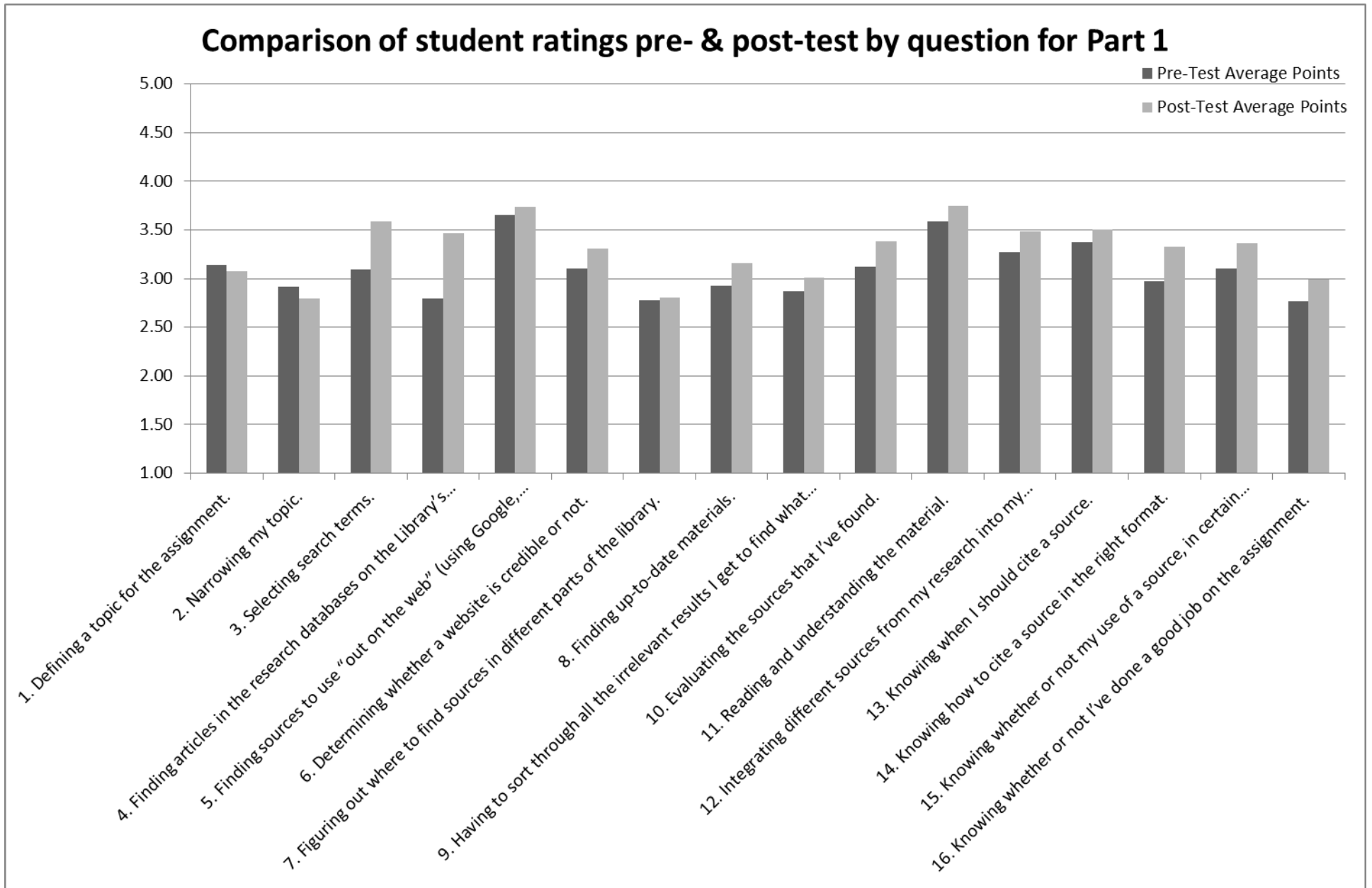
2 = Two characteristics correctly identified

3 = Three characteristics correctly identified

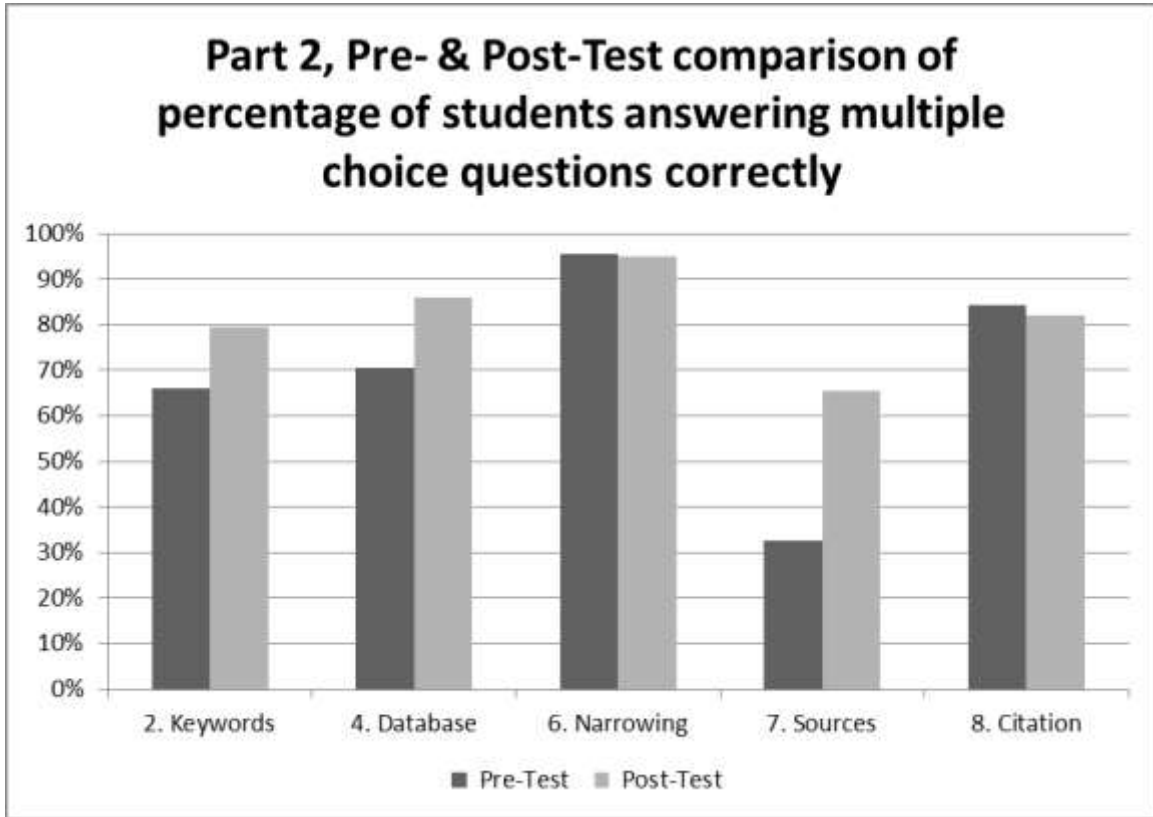
Appendix B

Graphical Representation of Pre- and Post-Test Results

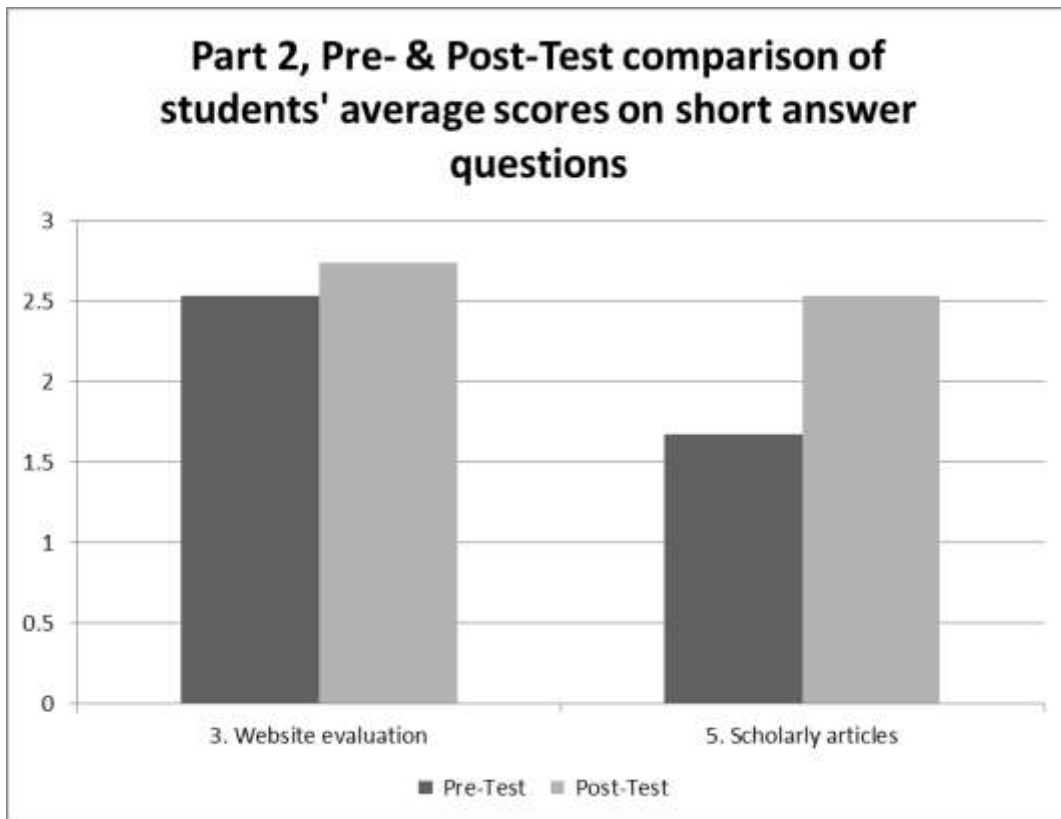
Graph 1



Graph 2



Graph 3



Appendix C

PACE CWRR Results⁵

Part 1

Comparison of student ratings by question for Part 1

Question Scale 1 -5 1 = very difficult 5 = very easy	Pre-Test Average Points (n=8)	Post-Test Average Points (n=12)	Points Change	Percent Change
1. Defining a topic for the assignment	2.75	3.56	0.81	29.5%
2. Narrowing my topic	2.75	2.94	0.19	6.8%
3. Selecting search terms	2.75	3.19	0.44	15.9%
4. Finding articles in the research databases on the Library's website (EBSCO, JSTOR, ProQuest, etc.)	2.58	3.75	1.17	45.2%
5. Finding sources to use "out on the web" (using Google, Wikipedia, or other search sites)	3.92	4.19	0.27	6.9%
6. Determining whether a website is credible or not	2.33	2.69	0.35	15.2%
7. Figuring out where to find sources in different parts of the library	2.50	3.25	0.75	30.0%
8. Finding up-to-date materials	2.58	3.44	0.85	33.1%
9. Having to sort through all the irrelevant results I get to find what I need	2.58	3.25	0.67	27.8%
10. Evaluating the sources that I've found	2.42	3.09	0.67	27.8%
11. Reading and understanding the material	3.25	3.56	0.31	9.6%
12. Integrating different sources from my research into my assignment	2.50	2.94	0.44	17.5%
13. Knowing when I should cite a source	2.17	2.31	0.15	6.7%
14. Knowing how to cite a source in the right format	2.17	2.00	-0.17	-7.7%
15. Knowing whether or not my use of a source, in certain circumstances, constitutes plagiarism	1.83	2.56	0.73	39.8%
16. Knowing whether or not I've done a good job on the assignment	1.92	2.94	1.02	53.3%
Average	2.56	3.10	0.54	22.2%

⁵ The PACE CWRR results for both the pre- and the post-test are an average of a fall and spring semester CWRR I and CWRR II class. The fall 2013 PACE CWRR I class had 6 student responses and the spring PACE CWRR I class had 2 student responses). The fall 2013 PACE CWRR II class had 8 student responses and the spring PACE CWRR II class had 4 student responses.

Average number of students reporting at each level of difficulty for all questions in Part 1

Rating	Pre-Test (n=8)	Post-Test (n=12)	Percent Change
1 - Almost always difficult	9.9%	5.1%	-48.7%
2 - Often difficult	41.7%	25.1%	-39.9%
3 - Sometimes difficult	31.3%	30.6%	-2.1%
4 - Rarely difficult	16.7%	33%	98.2%
5 - Never difficult	0.5%	6.3%	1100%

Part 2

Pre- and post-test comparison of percentage of students answering each multiple choice question correctly

Multiple Choice Question	Pre-Test (n=8)	Post-Test (n=12)	Percent Change
2. Keywords	25%	56%	125%
4. Database	75%	69%	-8%
5. Narrowing	100%	100%	0%
7. Sources	17%	21%	29%
8. Citation	58%	80%	38%
Average	55%	65%	19%

Coded student responses to pre-test question 1

Pre-Test Question 1 - "What do you hope to learn from the library sessions this year?"	Number of students responding (n=8)
Other - "I hope that i have a better understanding of formatting papers"	4
Resources - "where i can find research information"	2
Finding articles - "Where I can find articles"	1
Finding books - "The locations of the books and understanding which books would be my best source."	1
Citation - "how to cite the information in my paper"	1
Library - "What information will be available to us in the library."	1

Coded student responses to post-test question 1

Post-Test Question 1.1 - What was the most useful thing that you learned from the library session this year?	Number of student responses (n=12)	Post-Test Question 1.2 - What do you wish that you would have learned?	Number of student responses (n=12)
Finding articles - "How to use the Staley Library data base to research a subject."	6	Nothing - "I learned enough to get me started so I don't know what else there would be for me to learn at this point in time."	4
Library - "I learned how to navigate the library web site"	4	No answer	4
Resources - "The most useful part that I learned was being able to locate and find reputable sources from my home computer."	3	Web - "How to find credible sources from the web (google, etc)"	2
Finding books - "The most useful thing was the information given about ... the catalog for our library."	1	Citation - "How to site better."	1
		Don't know	1
		Evaluation - "I would have liked to learn more about website credibility."	1

Comparison of students' answers pre- and post-test for question 3

Question 3 - "How do you decide if a website has the credibility it needs for you to use in your research project?"	Pre-Test (n = 8)	Post-Test (n = 12)	Percent Change	Point Change
Average (out of 3)	1.3 (43%)	1.5 (50%)	15%	0.2

Comparison of students' answers pre- and post-test for question 5

Question 5 - "Name three characteristics of a scholarly journal article."	Pre-Test (n = 8)	Post-Test (n = 76)	Percent Change	Point Change
Average (out of 3)	0.4 (13%)	2.3 (77%)	475%	1.9

Coded student responses to pre- and post-test question 9

Pre-Test Question 9 – "What are some research activities that a librarian can help you with?"	Number of students responding (n=8)	Post-Test Question 9 – "What are some research activities that a librarian can help you with?"	Number of students responding (n=12)
Finding articles - "Where to look for articles and how to find them."	3	Resources – "how to find find material for your paper"	5
Finding books - "A directory for books that will be of use"	2	Finding books - "help finding a book."	4
Resources - "They can help find resources for a specific topic or tell you where to find a specific resource you are looking for."	2	Finding articles – " Finding ... journals"	3
Library - "Directing the student to the correct area of the library for the information they are obtaining, offering references to use, or where to find them."	1	Citation - "offering information pertaining to the sources and formatting."	3
Other	1	Library - "locating resources in the library or telling how we can access them"	2
Don't know	1	Nothing	1
		No answer	1

Appendix D

Off-sequence CWRR I Results⁶

Part 1

Comparison of student ratings by question for Part 1 of the pre-test

Question Scale 1 -5 1 = very difficult 5 = very easy	Pre-Test Average Points (n = 14)
1. Defining a topic for the assignment	3.21
2. Narrowing my topic	2.57
3. Selecting search terms	3.71
4. Finding articles in the research databases on the Library's website (EBSCO, JSTOR, ProQuest, etc.)	3.29
5. Finding sources to use "out on the web" (using Google, Wikipedia, or other search sites)	4.07
6. Determining whether a website is credible or not	3.29
7. Figuring out where to find sources in different parts of the library	3.07
8. Finding up-to-date materials	3.14
9. Having to sort through all the irrelevant results I get to find what I need	3.21
10. Evaluating the sources that I've found	3.36
11. Reading and understanding the material	3.79
12. Integrating different sources from my research into my assignment	3.79
13. Knowing when I should cite a source	3.36
14. Knowing how to cite a source in the right format	2.93
15. Knowing whether or not my use of a source, in certain circumstances, constitutes plagiarism	3.36
16. Knowing whether or not I've done a good job on the assignment	3.36
Average	3.34

Average number of students reporting at each level of difficulty for all questions in Part 1

Rating	Pre-Test (n = 14)
1 - Almost always difficult	2.2%
2 - Often difficult	21.4%
3 - Sometimes difficult	31.7%
4 - Rarely difficult	29%
5 - Never difficult	15.6%

⁶ The 14 students who completed the pre-test were from two sections of CWRR I offered in spring 2014.

Part 2

Comparison of percentage of students answering multiple choice question correctly.

Multiple Choice Question	Pre-Test (n = 14)
2. Keywords	64%
4. Database	86%
5. Narrowing	100%
7. Sources	50%
8. Citation	93%
Average	79%

Coded student responses to question 1

Pre-Test Question 1 - "What do you hope to learn from the library sessions this year?"	Number of students responding (n=14)
Resources - "Where to find additional information when writing a paper."	6
Library - "What different things are available to me in the library."	5
Finding articles - "The degree as to how far they have access to certain scientific journals"	2
Other - "I hope to learn what Information literacy is as a whole."	2
Citation - "I hope to better know how to cite my sources in different formats"	1
Don't know	1
Nothing	1

Average score on question 3

Question 3 - "How do you decide if a website has the credibility it needs for you to use in your research project?"	Pre-Test (n = 14)
Average (out of 3)	2.5 (83%)

Average score on question 5

Question 5 - "Name three characteristics of a scholarly journal article."	Pre-Test (n = 14)
Average (out of 3)	1.8 (60%)

Coded student responses to question 9

Pre-Test Question 9 - "What are some research activities that a librarian can help you with?"	Number of students responding (n=14)
Finding books - "Finding specific books."	4
Finding articles - "When using EBSCO."	4
Library - "Different navigation games around the library to show us different sections and what there is too learn from each section."	2
Resources - "Finding sources"	2
Don't know	2
Citation - "citing in the correct format"	1
Topics - "broadening my topics"	1
Web - "Finding out what websites are good sources."	1