

Student Learning in Library Research Instruction for University Seminar, Critical Writing, Reading, and Research I & II, and Honors Writing Studio 1 & 2

Assessment Report for Academic Year 2019-2020

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Summary

During the 2019-2020 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 learning goals.

All students enrolled in the University Seminar/CWRR/HWS sequence (essentially all first-year students at Millikin University) were included in the assessment. While participation varied by question, approximately 287 students took the pre-test and approximately 31 students took the post-test.

Key findings from the assessment include:

- Students showed an overall increase in their confidence with the research process and in their information literacy skills from the pre-test to the post-test assessment. On average, the scores on the skills part of the assessment were in the Green range on the CWRR Artifact Performance Indicator Scale.
- Students' confidence and skills in the research process increased for all 4 of Staley Library's learning goals, especially "identifying information sources," "search strategies," and "evaluating information."
- This assessment cycle was the first time that the results for the traditional (CWRR) and honors (HWS) students were reported separately. On the whole, the honors students performed better on the skills portion of the assessment but expressed similar research confidence levels to their CWRR peers and they expressed less confidence in some areas.
- A new question in Part 2 of the pre-test assessment asked students about their prior experience with information literacy instruction and about the research resources they used during their first year at Millikin on the post-test. A majority of students said they had received instruction on source evaluation and citation prior to arriving at Millikin, while very few claimed receiving instruction on using a library catalog or library databases. Students reported that websites and scholarly journals were the resources most commonly used for assignments in their first year at Millikin.
- The self-guided library tour continued to be a successful method for introducing student to the library's physical space.
- The abrupt switch to online education in the middle of the spring semester due to the COVID-19 pandemic affected the nature and amount of library instruction provided in the spring semester. It also negatively affected participation in the post-test, particularly for the HWS students.

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 who are able to apply critical thinking skills in the discovery, 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 who are prepared to use information critically and ethically throughout their lives.

The research instruction program corresponds directly with the Critical Writing, Reading, and Researching (CWRR) and Honors Writing Studio (HWS) learning outcome goal 3: "Conduct research to participate in academic inquiry." The purpose of research instruction for CWRR and HWS is stated in Staley Library's four 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 learning goals mapped to the University's learning goals

Library Learning Goal	Corresponding MU Learning Goal
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

Staley Library faculty devote a majority of their in-class instructional activity to the first-year core University Studies courses – CWRR, HWS, and University Seminar. The librarians use a 2:2 instruction model for CWRR and University Seminar, with two sessions in the fall and two sessions in the spring. The fall sessions can be taught in either University Seminar or CWRR as best matches the needs of the instructors, but usually one session is taught in each of the classes; the two spring sessions are both taught in CWRR as there is no spring University 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 University Seminar and CWRR faculty to schedule the

library session(s) appropriately so that students learn and apply skills in a way that makes them immediately relevant to their research needs.

For Honors Writing Studio and Honors University Seminar, the librarians took a slightly different approach this past year. The HWS students spend the fall semester developing a detailed research proposal that they use in the spring to write a research paper and to produce a multi-modal project. Thus, it is necessary to provide them with more library instruction early on so that they can successfully complete their proposal and be well-situated for the spring semester. The librarians met twice with each HWS 1 class in the fall not only to familiarize them with Staley Library research resources, but also for work on keyword development and source choice. For most of the HWS 2 sections the librarians followed up with one session in the spring on more advanced keyword development and strategies for exploring alternate information sources.

During the 2019-2020 academic year, the librarians taught 58 sessions (in 42 sections) for CWRR and HWS classes, 31 sessions (in 30 sections) for University Seminar classes, and 2 sessions (in 1 section) for the “off-sequence” CWRR classes (i.e., CWRR II offered in the fall rather than the spring semester and CWRR I offered in the spring). The abrupt switch to online instruction after spring break in response to the COVID-19 pandemic did affect our instruction in the spring semester because much of the librarians’ work with CWRR II classes happens shortly after spring break. The librarians were creative in their responses to the shift to online. Included in the numbers above are six sessions with three CWRR II classes where the librarians met with the classes via Zoom while also creating worksheets and instructional videos to supplement that instruction. For four other sections (not included in the statistics above) the librarian created an online worksheet and shared instructional videos with the classes. For four other sections the librarian created online guides. For one of the off-sequence CWRR I classes the librarian created an online guide and worksheet. However, there were cases in which the instructor changed assignments or course requirements in such a way that library instruction was not possible, thus our overall instruction session totals are down from last year.

Matthew Olsen coordinates the research instruction program and shares in the instruction with library faculty Rachel Bicicchi, Cindy Fuller (Library Director), Amanda Pippitt, and Nancy Weichert (part-time research/instruction librarian). All library faculty, including the Instructional Services Coordinator, report to the Library Director.

The Learning Story

For most Millikin University students, CWRR/HWS and University Seminar are their introduction to college-level writing and 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 and evaluation skills. The library faculty are the campus leaders in increasing students’ information literacy skills, 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/HWS faculty to tailor their instruction so that it matches the course content and provides an authentic learning experience for students. Librarians teach students to use both the specialized scholarly research resources found in the library and non-library sources, and they stress the importance of evaluating information no matter how it is discovered. They also focus on active learning and give students opportunities to apply the skills that they are learning.

Assessment Methods

Pre- and Post-Test Assessment Methods

The 2019-2020 academic year marks the fourteenth complete year of data collected via a pre- and post-test. As in previous years, the pre-test was administered via Moodle before the students met with a

librarian in the fall; the post-test was administered through Moodle after the library instruction was complete in the spring. In both cases, the tests were taken outside of the library instruction time. This assessment cycle was the first time that CWRR and HWS students' results were gathered separately.

The sixteen questions in the first part of the assessment 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 students' confidence level with the academic research process (affective learning). The five-point scale that students use to rank their confidence assigns tasks a range from "very difficult" to "very easy." The complete list of questions is provided in Appendix A.

The second part of the assessment consists of seven 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). There are two additional questions in Part 2 of the assessment. Question 1 on the pre-test is a short answer question that asks students what they would like to learn in their library instruction sessions. Question 1 on the post-test has two parts: "What was the most useful thing that you learned from the library sessions?" and "What do you wish that you would have learned?" Question 9 had previously asked how librarians can help with the research process, but for this year's assessment that question was changed on the pre-test to ask students about their experience with information literacy instruction prior to arriving at Millikin while the post-test asked about the research resources that students used during their first year at Millikin. The complete list of questions can be found in Appendix A.

To facilitate reporting of the range of answers to the short answer questions, the responses to question 1 were coded into fourteen categories, all of which are listed in Appendix A. Each response was assigned up to three codes. The Instruction Coordinator and Library Director performed the coding. After review, for any responses the two librarians coded differently, the responses were discussed and the librarians agreed on common codes. Questions 3 and 5 were also graded by the Instruction Coordinator and the Library Director and the grades were averaged to assign a final grade to each response. The grading scale for questions 3 and 5 can also be found in Appendix A.

Other Forms of Evaluation

In addition to the library instruction sessions, new students have traditionally participated in a self-guided tour of the library 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 library's resources and services that are available in the University Commons. The tour has three broad learning goals:

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.

The self-guided tour uses a mystery narrative format that incorporates a worksheet and QR (Quick Response) codes scanned with a smartphone that guide students around the library. Students are directed to places like the Research Assistance Desk, New Technologies Studio, University Archives, and the books stacks for a total of ten locations. The only non-library space in the University Commons that students visit on the tour is the Writing Center. At each location students answer a brief question on a worksheet and

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://www.projectinfolit.org/uploads/2/7/5/4/27541717/pil_fall2010_survey_fullreport1.pdf

receive a clue that leads them to the next location. At the conclusion of the tour the worksheets are collected by library staff, graded by the librarians, and returned to the University Seminar instructors.

Academic year 2019-2020 also continued the Faculty Assessment of Library Instruction survey. This electronic survey is sent to every faculty member within whose class library instruction was conducted including those outside of the first year University Studies sequence. The faculty can then give anonymous or signed feedback, which the librarians use to improve their library instruction. To view the survey questions please contact the Instruction Coordinator.

Assessment Data

Fall Pre-Test²

Part 1: Average score – CWRR = 3.17 / HWS = 3.18 / weighted average = 3.17 (5 point scale)

Part 2: Multiple-choice: Average percentage of students answering the question correctly –

CWRR = 60% / HWS = 81% / weighted average = 64%

Short answer: Average score – CWRR = 2.01 / HWS = 2.64 / weighted average = 2.14 (3 point scale)

Spring Post-Test³

Part 1: Average score – CWRR = 3.36 / HWS = 3.38 / weighted average = 3.36 (5 point scale)

Part 2: Multiple-choice: Average percentage of students answering the questions correctly –

CWRR = 83% / HWS = 100% / weighted average = 85%

Short answer: Average score – CWRR = 2.52 / HWS = 2.75 / weighted average = 2.54 (3 point scale)

Table 2. Pre- and post-test results by library learning goal [scores are weighted averages of the CWRR & HWS results]

Staley Library Learning Goals (LG)			
1. Information Sources	2. Search Strategies	3. Evaluation of Information	4. Ethical Aspects of Information
Part 1 Questions 7 & 8 Pre-Test Avg. = 2.92 Post-Test Avg. = 3.22 Improvement = 10%	Part 1 Questions 1, 2, 3, 4 & 5 Pre-Test Avg. = 3.18 Post-Test Avg. = 3.35 Improvement = 5%	Part 1 Questions 6, 9 & 10 Pre-Test Avg. = 3.18 Post-Test Avg. = 3.4 Improvement = 7%	Part 1 Questions 13, 14 & 15 Pre-Test Avg. = 3.27 Post-Test Avg. = 3.49 Improvement = 7%
Part 2 Questions 4 & 5 Pre-Test Avg. = 69% Post-Test Avg. = 87% Improvement = 26%	Part 2 Question 2 & 6 Pre-Test Avg. = 66% Post-Test Avg. = 86% Improvement = 30%	Part 2 Questions 3 & 7 Pre-Test Avg. = 61% Post-Test Avg. = 80% Improvement = 31%	Part 2 Question 8 Pre-Test Avg. = 74% Post-Test Avg. = 89% Improvement = 20%
Total for LG 1 Improvement = 18%	Total for LG 2 Improvement = 18%	Total for LG 3 Improvement = 19%	Total for LG 4 Improvement = 14%

² For the pre-test the number of student responses was not the same from question to question. For the CWRR students, on Part 1 the average number of responses was 208 (mode = 208). For the HWS students on Part 1 the average was 56 (mode = 56). For CWRR on Part 2, questions 2-8 the average was 250 (mode = 250). For HWS on Part 2 the average was 60 (mode = 60). 403 students were enrolled in CWRR I and 96 students were enrolled in HWS 1. The participation rates on the pre-test were higher than last year (58% versus 45%). More of the CWRR and HWS students participated in Part 2 of the pre-test than Part 1, which is unusual. It is typically the other way around.

³ The post-test also exhibited different numbers of responses from question to question. For Part 1 for the CWRR students the average number of responses was 28 (mode = 28). For HWS on Part 1 the average was 4 (mode = 4). For CWRR on Part 2, questions 2-8 the average was 25 (mode = 25). For HWS on Part 2 the average was 3 (mode = 3). 327 students were enrolled in CWRR II and 89 students were enrolled in HWS 2. The participation rates on the post-test were much lower than in past years and clearly represent the challenge of assessing students in the online environment necessitated by the COVID-19 pandemic.

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 (very difficult) to 5 (very easy) how they feel about different stages of the research process. Table 3 (below) and Graphs 1 and 2 (Appendix B) provide a question by question listing of student scores on both the pre-test and post-test, and Table 4 (below) shows the average number of responses at each level of difficulty for all questions in part 1.

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

Question Scale 1 - 5 1 = very difficult 5 = very easy	Pre-Test Average Points CWRR / HWS (n=208 / 56)	Post-Test Average Points CWRR / HWS (n=28 / 4)	Point Change CWRR / HWS	Percent Change CWRR / HWS
1. Defining a topic for the assignment	3.14 / 3.09	3.29 / 3.75	0.14 / 0.66	5% / 21%
2. Narrowing my topic	3.14 / 3.02	3.25 / 3.00	0.11 / -0.02	3% / -1%
3. Selecting search terms	3.19 / 3.38	3.39 / 2.75	0.21 / -0.63	6% / -19%
4. Finding articles in the research databases on the Library's website (EBSCO, JSTOR, ProQuest, etc.)	2.75 / 2.61	3.29 / 3.00	0.53 / 0.39	19% / 15%
5. Finding sources to use "out on the web" (example - Google, Wikipedia, websites)	3.72 / 3.59	3.46 / 4.25	-0.26 / 0.66	-7% / 18%
6. Determining whether a website is credible or not	3.31 / 3.38	3.46 / 4.00	0.15 / 0.63	5% / 19%
7. Figuring out where to find sources in different parts of the library	2.70 / 2.89	3.00 / 3.00	0.30 / 0.11	11% / 4%
8. Finding up-to-date materials	3.19 / 2.80	3.61 / 2.25	0.42 / -0.55	13% / -20%
9. Having to sort through all the irrelevant results I get to find what I need	2.95 / 3.09	3.21 / 3.00	0.26 / -0.09	9% / -3%
10. Evaluating the sources that I've found	3.27 / 3.16	3.54 / 3.25	0.26 / 0.09	8% / 3%
11. Reading and understanding the material	3.49 / 3.55	3.46 / 3.25	-0.03 / -0.30	-1% / -9%
12. Integrating different sources from my research into my assignment	3.27 / 3.45	3.68 / 4.00	0.40 / 0.55	12% / 16%
13. Knowing when I should cite a source	3.53 / 3.68	3.68 / 4.00	0.14 / 0.32	4% / 9%
14. Knowing how to cite a source in the right format	3.02 / 3.11	3.21 / 4.25	0.20 / 1.14	7% / 37%
15. Knowing whether or not my use of a source, in certain circumstances, constitutes plagiarism	3.14 / 3.43	3.39 / 3.50	0.25 / 0.07	8% / 2%

16. Knowing whether or not I've done a good job on the assignment	2.90 / 2.59	2.89 / 2.75	-0.01 / 0.16	0% / 6%
Average	3.17 / 3.18	3.36 / 3.38	0.22 / 0.20	6% / 6%

Table 4. Percentage of responses at each level of difficulty for all questions in Part 1

Rating	Pre-Test CWRR / HWS (n=208 / 56)	Post-Test CWRR / HWS (n=28 / 4)	Percent Change CWRR / HWS
1 – This is very difficult	4% / 3%	3% / 5%	-25% / 91%
2 – This is difficult	22% / 23%	17% / 16%	-19% / -31%
3 – This is neutral	35% / 36%	33% / 33%	-8% / -10%
4 – This is easy	31% / 33%	34% / 31%	8% / -4%
5 – This is very easy	8% / 6%	13% / 16%	67% / 150%

Table 5 (below) and Graphs 3 and 4 (Appendix B) show the percentage of students who answered each question correctly on the pre- and post-test for the five multiple-choice questions in Part 2.

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

Multiple-Choice Question	Pre-Test CWRR / HWS (n=250 / 60)	Post-Test CWRR / HWS (n=25 / 3)	Percent Change CWRR / HWS
2. Keywords	55% / 85%	80% / 100%	46% / 18%
4. Database	72% / 83%	92% / 100%	29% / 20%
6. Narrowing	66% / 90%	88% / 100%	33% / 11%
7. Sources	41% / 50%	68% / 100%	65% / 100%
8. Citation	68% / 97%	88% / 100%	30% / 3%
Average	60% / 81%	83% / 100%	38% / 25%

Tables 6, 7, 8, and 9 (below) list the number of student responses that matched a given category for question 1 and provide a representative response for each category. Student responses were coded in up to three different categories.

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

Pre-Test Question 1 – "What do you hope to learn from the library sessions?"	Number of Student Responses (n=250)
Other – "The proper way to study and use the resources provided to me on campus."	109
Library – "I hope to learn some insight of where things are in the Staley Library, and what is on each floor and what each floor has to offer students."	66
Finding Resources – "Where I will be able to find credible sources for my research papers and essays!"	58

Citation – "I hope to learn more about how to cite sources such as books and newspapers."	43
Finding books – "I want to learn where certain books would be that I would need for research/classes."	32
Writing papers – "I hope to learn how I can become better at writing. "	27
Evaluation of sources – "I will hope to learn how to know for sure the credibility of the sources I am using"	26
Finding articles – "How to use the research data base."	23
Web – "I wish to learn how to find good websites to do research"	6
Don't know – "I have no specific expectations towards the library sessions and I'm just hoping to learn something new."	4
Topics – "I also hope to learn about more interesting topics that would be easy to research."	3
Interlibrary loan – "I also hope to find out if you can order a book from another library and have it shipped to the Millikin Library."	2
Nothing – "I have taken courses like this in high school so I have a pretty good understanding and knowledge of what to do."	2

Table 7. Coded student responses to HWS pre-test question 1

Pre-Test Question 1 – "What do you hope to learn from the library sessions?"	Number of Student Responses (n=60)
Library – "I would like to know how to navigate the library better."	29
Finding Resources – "I hope to learn how to be able to find reliable sources for information that may be more obscure."	20
Finding books – "I would like some more help in navigating physical print resources, we never had any at my high school so we never really went over that."	12
Other – "How to utilize my resources that are available to me."	12
Finding articles – "I would like to learn how to use a library database more often. At my high school, our library page was very small and usually didn't have the information I needed, so I had to find most of my sources on Google and other places on the internet. "	10
Citation – "I also hope to clear up any confusion on what may constitute plagiarism."	6
Evaluation of sources – "I hope to learn how to tell the difference between a credible and a non credible source."	6
Writing papers – "I want my writing skills to improve."	3
Interlibrary loan – "I hope to learn how to access certain books that may not be at the library"	1
Nothing – "Nothing stands out to me as something I hope to learn."	1

Table 8. Coded student responses to CWRR post-test question 1

Post-Test Question 1.1 - "What was the most useful thing that you learned from the library sessions?"	Number of Student Responses (n=24)	Post-Test Question 1.2 - "What do you wish that you would have learned?"	Number of Student Responses (n=22)
Finding articles - "How to access the database"	10	Citation - "I wish I could have learned how to properly cite and use citations in assignments"	6
Evaluation of sources - "How to identify and differentiate reliable sources."	4	Nothing - "I think that the librarians have covered what I need so far"	6
Keywords - "How to search using some keywords"	3	Other - "I wish we had done this assignment before we had begun researching."	4
Other - "How use the online sources."	3	Finding articles - "I feel like we have access to many databases but only focus on Ebscohost , it would be nice to at least acknowledge what the other databases on the library web page do in case we ever need to use them for any research purposes."	2
Finding books - "I was also able to learn how to search the library for books."	3	Evaluation of sources - "I wish the librarian had spent more time explaining to us about the credibility of a source"	2
Library - "I was not very familiar with how to navigate through the ... physical library"	2	Finding books - "I wish I would have spent more time knowing/figuring out where the types of books are located in the actual library/learning to navigate and memorize that for quicker access."	1
Nothing - " I already understood how to conduct research using EBSCO and other search tools with the library."	2	Keywords - "I wish I could have ... gotten more practice with searching with limited keywords."	1
Finding resources - "The most useful thing I got from the library sessions was really just leaning how to narrow your topic down to the smallest thing possible."	2	Finding resources - "I wish I would have learned how to refine my original search to fit the criteria I need in an article."	1

Topics – "How to narrow down the criteria to have a more focused search"	2	Web – "I wish I could learn more on research outside of our library, like online and google scholar (because this seems to be the most common)."	1
Citation – " I learned ... how to cite my papers. "	1		

Table 9. Coded student responses to HWS post-test question 1

Post-Test Question 1.1 – "What was the most useful thing that you learned from the library sessions?"	Number of Student Responses (n=3)	Post-Test Question 1.2 – "What do you wish that you would have learned?"	Number of Student Responses (n=3)
Finding articles – "The most useful thing was learning how to use the library databases to find various articles for my research projects. There are a lot more options than I had during high school, and the information was more thorough than it has been in past situations for me."	1	Evaluation of sources – "How to evaluate sources without having to read an entire article."	1
Interlibrary loan – "I learned that I could borrow books from other schools in Illinois."	1	Nothing – "There was not anything I was I would have learned; I felt that it was very thorough."	1
Library – "it was nice to learn about the materials that the university offers us to help with research and how to use these materials"	1	Other – "How to research things that were not in the database. "	1
Finding resources – "The whole session was a nice refresher on how finding sources works"	1		

Tables 10 and 11 (below) and Graphs 5 and 6 (Appendix B) show the pre- and post-test scores for the two constructed response questions in Part 2 of the assessment.⁴

⁴ The average standard deviation between the two coders for question 3 was 0.14. For question 5 it was 0.26.

Table 10. Comparison of student scores pre- and post-test for question 3

Question 3 - "List and describe three criteria for deciding if a website has the credibility it needs for you to use in your research project."	Pre-Test CWRR / HWS (n=249 / 60)	Post-Test CWRR / HWS (n=25 / 3)	Point Change CWRR / HWS	Percent Change CWRR / HWS
Average (out of 3)	2.27 / 2.60 (76% / 87%)	2.64 / 2.83 (88% / 94%)	0.37 / 0.23	16% / 9%

Table 11. Comparison of student scores pre- and post-test for question 5

Question 5 - "List and describe three ways that scholarly journal articles differ from magazine articles or newspaper articles."	Pre-Test CWRR / HWS (n=234 / 60)	Post-Test CWRR / HWS (n=25 /)	Point Change CWRR / HWS	Percent Change CWRR / HWS
Average (out of 3)	1.75 / 2.67 (58% / 89%)	2.40 / 2.67 (80% / 89%)	0.65 / 0.00	37% / 0%

Tables 12 and 13 (below) show the pre- and post-test responses to question 9 on Part 2 of the assessment.

Table 12. Student responses to pre-test question 9

Pre-Test Question 9 - "Prior to coming to Millikin University did you receive instruction in any of the following areas? (check all that apply)"	Number of Student Responses CWRR / HWS (n=241 / 59)	Percent of Student Responses CWRR / HWS
Understanding the strengths and weaknesses of different information sources	173 / 44	72% / 75%
Using library databases (Gale, EbscoHost, etc.)	116 / 36	48% / 61%
Using a library catalog	68 / 23	28% / 39%
Developing keywords to use in your searches	134 / 40	56% / 68%
Evaluating websites	148 / 41	61% / 69%
Creating MLA, APA, Chicago, etc. style citations	184 / 54	76% / 92%

Table 13. Student responses to post-test question 9

Post-Test Question 9 - "Which of the following information sources have you used for assignments in any of your classes during your first year at Millikin University? (check all that apply)"	Number of Student Responses CWRR/ HWS (n=25 / 3)	Percent of Student Responses CWRR/ HWS
Paper books	6 / 1	24% / 33%
E-books	12 / 2	48% / 67%
Encyclopedias or dictionaries	3 / 2	12% / 67%
Scholarly journals	25 / 3	100% / 100%
Newspapers or magazines	12 / 3	48% / 100%
Websites	21 / 3	84% / 100%

Table 14 (below) shows the average and mean scores on the worksheet for the library tour. Table 15 (below) presents the results of the optional survey at the completion of the tour.

Table 14. Student scores on the self-guided tour worksheet⁵

Average Score (out of 10) (n=350)	9.5
Median Score (out of 10) (n=350)	9.7

Table 15. Self-guided tour survey results

	Number of Student Responses	Percentage of Student Responses
How long did it take you to complete your investigation? (n=188)		
5 - 10 minutes	22	12%
10 - 15 minutes	70	37%
15 - 20 minutes	72	38%
more than 20 minutes	24	13%
Now that you have completed the investigation, do you feel more comfortable using Staley Library? (n=187)		
Yes	162	87%
No	5	3%
Not sure	20	11%
Do you feel more confident about finding library resources? (n=188)		
Yes	157	84%
No	5	3%
Not sure	26	14%

⁵ These scores and the survey results represent participation by students in University Seminar and Honors University Seminar.

Do you know who to ask for help in the library? (n=187)		
Yes	177	95%
No	4	2%
Not sure	6	3%
How do you feel about the Dr. I.B. Smart story used in the investigation? (n=188)		
I liked it	83	44%
It was ok	84	45%
I didn't like it	6	3%
I didn't pay any attention to the story	15	8%

Similar data tables for the off-sequence CWRR classes are included in Appendix C.

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 6% for both CWRR and HWS students. CWRR students demonstrated an average 38% increase in correct answers on the multiple-choice portion of Part 2 (24% increase for HWS) and an average 25% increase in correct answers on the short answer questions (4% for HWS).⁶

All of these results must be qualified by the very low participation rates for the post-test caused by the disruption to instruction caused by the COVID-19 pandemic. For CWRR participation fell from the pre-test to the post-test by 87% for Part 1 and 90% for Part 2. The declines were even steeper for HWS where participation in Part 1 decreased by 93% and by 95% for Part 2. Because we cannot require students to participate in the pre- and post-test assessment the respondents always exhibit a degree of self-selection, but the post-test results are particularly prone to that this year. The result is (artificially) large increases from the pre- to the post-test for CWRR and essentially meaningless data for HWS since only four students participated in the post-test. Nonetheless, trends can be seen for CWRR between the pre- and post-test and the comparison of CWRR and HWS for the pre-test reveals some interesting findings.

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%), for CWRR on the multiple-choice portion of Part 2 the percentage of correct answers on the post-test was in the Excellent (Green) range at 83%. The percentage of correct answers on the short answer portion of Part 2 of the post-test also fell in the Excellent (Green) range at 84%. As in the past, students did particularly well on Question 4 (databases) 92% correct, while question 7 (sources) was in the Yellow range at 68%. The students continued to show the greatest increase on questions related to material that the librarians particularly emphasize in their instruction sessions, e.g., keywords and the credibility of peer-reviewed journal articles (questions 2 and 7). On the whole this year's assessment shows that the students' information literacy confidence and abilities increased during their first year at Millikin University.

⁶ Another measure of the students' progress from the pre- to the post-test is to look at the *average normalized gain*, which is a measure commonly used in physics education for pre- and post-test assessments, e.g., Hake, A. (1997). Interactive-engagement versus traditional methods: A six-thousand-student survey of mechanics test data for an introductory physics course. *American Journal of Physics*, 66(1), 64-74. Average normalized gain $\langle g \rangle$ is the average actual gain (%post - %pre) divided by the maximum possible average gain (100% - %pre). High- g courses, i.e., those with a large gain from the pre- to the post-test, are those where $g \geq 0.7$, medium- g courses are those where $0.7 > g \geq 0.3$, and low- g courses are those where $g < 0.3$. Applied to this year's assessment, for the selected response questions $g = .58$ (medium- g) and for the constructed response questions $g = .52$ (medium- g). These results are higher than past years and may reflect greater self-selection in the post-test participants.

Analysis of Assessment Results by Library Instruction Goal

Almost all 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 the strongest increase in goals 1 and 3 (information sources and evaluation of information), as has been the case in past years. Students also showed a strong improvement in goal 2 (search strategies).

Analysis of Assessment Results for Part 1

CWRR students' self-assessed confidence increased on Part 1 by .19 points (6%) and a similar amount for HWS students (.20 points or 6%). CWRR students showed the greatest increase in confidence in finding articles in the library databases (question 4), in finding up-to-date materials (#8), and integrating different sources from their research into their assignment (#12). Students showed a slight decrease in confidence in finding sources out on the web (#5) although they showed the highest confidence on this question in the pre-test and their confidence remained relatively high on the post-test. CWRR students' confidence also decreased slightly in reading and understanding the material (#11). Students had the highest overall scores on the post-test on questions 12 (integrating sources) and 13 (knowing when they should cite a source).

When comparing the results from the CWRR and HWS students one of the most interesting findings is that the honors students showed only slightly higher average confidence on the pre-test (3.17 for CWRR versus 3.18 for HWS), and they expressed less confidence in certain areas. For example, on the pre-test the HWS students were much less confident in finding up-to-date materials (question 8) and knowing whether or not they've done a good job on an assignment (#16) and less confident finding articles in the research databases on the library's website (#4) and narrowing their topic (#2). However, the HWS students were more confident than the CWRR students in knowing whether or not their use of a source constituted plagiarism (#15), selecting search terms (#3), and figuring out where to find sources in different parts of the library (#7). The highest scores on the pre-test for the HWS students were also different from the CWRR students who identified finding sources out on the web (#5) as the activity they were most confident about, while the HWS identified knowing when they should cite a source (#13) as their highest confidence activity.

Table 4 (above) lists the percentage of responses at each of the five ratings (1-5) across all of the questions on Part 1 for both the pre- and post-test for both CWRR and HWS. This comparison shows that fewer CWRR students responded with 1s and 2s (low confidence) and 3s (neutral) from the pre-test to the post-test, while the number of students who found tasks easy or very easy (4 or 5) increased, with most responses falling into the neutral or easy categories by the time of the post-test. Overall, it does seem that students are more confident in 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 in Google. CWRR students showed a strong increase (46%) in their scores between the pre- and post-tests. The average score on the post-test (80%) falls in the Green range. For this question, as with the other skills questions in Part 2, the HWS students performed much better than the CWRR students. On the pre-test 85% of the HWS students answered this question correctly. On the post-test, all three students answered this questions correctly.

Question 4 on the types of resources available in library databases also showed a strong improvement (29%) between the two tests, and by the time of the post-test 92% of the CWRR students answered this question correctly, which is well into the Green range. Here too, the HWS students scored even higher, with

83% answering the question correctly on the pre-test. Knowing what library databases are and what can be found in them is an essential skill for scholarly researchers. Learning about the library's databases seems to be important to students given that on question 1 of the post-test students identified this as the most important thing that they learned in library instruction.

Question 6 asks students to narrow a given topic. The CWRR students again showed a strong increase from the pre- to the post-test with 88% answering the question correctly by the post-test, a 33% increase. The HWS students scored 90% correct on this question on the pre-test.

Question 7 on information sources traditionally has the lowest scores, and this year continued that trend with only 68% of students answering this question correctly by the post-test (at the higher end of the Yellow range). This score is a 65% increase from the pre-test. Even for the HWS students only 50% answered this question correctly on the pre-test. This is a challenging question that asks students to identify peer-reviewed articles as an unbiased source of information. As in past years, the second most popular (incorrect) answer that CWRR students gave on the post-test is "a survey conducted by the American Beverage Association." While this would be a source of information on energy drinks, it fails to recognize the potential bias of an industry group researching their own industry, especially when discussing potential negative health effects of their products.

Question 8, which asks about the best time in the research process to record a citation, also showed a strong increase in the CWRR students from pre- to post-test (30%), although the scores were relatively high on the pre-test (60% correct). The percentage correct (83%) on the post-test is well in the Green range and is slightly higher than last year (79% correct). On this question as well, the HWS students scored higher with 81% answering correctly on the pre-test.

Short Answer Questions

Question 1 of the pre-test provides important insights into students' understanding and expectations of the library and scholarly research as they begin their college careers. As in past years, the CWRR students' responses tended to be rather general, and the most popular response was learning more about the research process as a whole. Students were also interested in learning about citations, finding books in the library, or writing papers (which is largely outside the purview of library instruction). One trend that the assessments have revealed for several years now is a desire to learn how to be more efficient and effective in searching. Sometimes that expresses itself in terms of source evaluation ("How to filter out irrelevant info from articles, websites, etc. to pull the most important pieces of info from them to support my claim or ideas."), finding resources ("I would want to learn how to find information better and faster.") or even finding materials in the library ("I hope to learn how to find books the most efficient way in the Millikin library."). Underlying these statements seems to be a sense that there is too much information available and sifting through it all to find the most up-to-date, credible, or relevant is a skill they would like to develop.

The HWS students tended to be more focused in their responses to this question on the pre-test. Their most popular response was hoping to learn how to find things in the library, with finding resources and books coming in second and third. Several of the responses demonstrated that although the students may have been academically prepared to be in the honors program, they did not come from the most resource-rich high school, especially in terms of the library, e.g., "I would like some more help in navigating physical print resources, we never had any at my high school so we never really went over that." or "I would like to learn how to use a library database more often. At my high school, our library page was very small and usually didn't have the information I needed, so I had to find most of my sources on Google and other places on the internet."

On the post-test the most valuable things the CWRR students claimed to have learned in their library instruction (question 1.1) were finding articles, i.e., using the databases, evaluating sources, and searching using keywords. These results are largely in line with past years' results. Learning more about citations and having learned all they needed were tied for the most popular responses to post-test question 1.2, which asks students what they wish they had learned. The complete range of answers to question 1 can be found in Tables 6, 7, 8, & 9 above.

Question 3 asks students to identify three criteria for deciding if a website is credible. Website credibility is a topic that is addressed directly in one of the fall library sessions where students work on methods for evaluating web sources. The CWRR students increased in correct answers from the pre-test to the post-test (2.27 to 2.64, a 16% increase), and their scores on the pre-test were already quite high (76% correct). Students continue to demonstrate in their answers that they have received prior instruction on evaluating websites; they identify things like a .org or .gov domain name ending or an expert author as things to look for. However, on the pre-test the CWRR students also exhibit black and white thinking about website credibility. For example, they claim that all blogs are bad sources of information and that Wikipedia must always be avoided. Students also continued to confuse relevance to their topic with the credibility of the source. Those CWRR students who responded to the post-test showed more nuance in their answers, e.g., "recent --> within the last 5 years for a general assignment; for professions such as medical, articles within the last year or two as that field is rapidly changing." For the HWS students on the pre-test their scores were quite high (2.6 or 87% correct), which demonstrates that most of these students started their first year at Millikin with a good understanding of website evaluation.

Question 5 asks students to describe three ways that scholarly journal articles differ from magazine or newspaper articles. 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. The CWRR students' scores were low on the pre-test (1.75 or 58% correct) but increased by 37% to 2.4 (80% correct) by the post-test. This is a larger increase than last year, but a lower overall score on the post-test. While the pre-test was in the Yellow range, the scores had increased to the Green range by the post-test. The HWS students started with 2.67 correct (89%), which is well into the Green range. For the CWRR students it was obvious that many students were not clear on the distinction between popular and scholarly articles. Many were able to provide only one or two criteria, and often those seemed like guesses, e.g., "1. They are more reliable. 2. They are accredited. 3. They are more reliable." The HWS students were more likely on the pre-test to identify scholarly articles as typically peer-reviewed, written by experts, or that "the author uses more complex language to reach the academic experts." By the time of the post-test the CWRR students were more likely to pick out qualities of scholarly articles correctly and to move beyond the most obvious qualities, e.g., "[scholarly journals] may have graphs and data whereas the magazines and newspapers have colorful pictures and comics." As in past years the students took a very dim view of magazines and seemed to have tabloids or celebrity focused magazines in mind, e.g., "[m]agazine articles are filled with tabloids and peoples stories told without research."

Question 9, is new this year and on the pre-test focuses on students' prior information literacy experience while the post-test asks about their use of resources types during their first year at Millikin. For the pre-test one interesting finding is that while more HWS students claimed instruction in each of the areas than the CWRR students, the percentage of responses tracked very closely between the two groups. For example, both groups identified creating citations as the thing they had learned most often prior to coming to Millikin. This particular answer is somewhat hard to square with Part 1, question 14 where students are asked to express their confidence in creating citations and where their scores were some of the lowest on both the pre- and post-tests. Additionally, when asked what they wish they had learned, the number one response was citation. Perhaps this indicates that students are receiving instruction on citation, but it isn't effective for some reason. Another area where both CWRR and HWS students claimed to have received instruction is in understanding the strengths and weaknesses of different information sources, i.e., source evaluation. Areas in which students claimed they didn't receive instruction are also telling. Only 28% of CWRR students and 39% of HWS students claimed learning about a library catalog. After seeing these

preliminary results prior to library instruction in the fall, the librarians made a point to devote more time to explaining and demonstrating the catalog to students. A little less than half (48%) of CWRR students and 61% of HWS students claimed to have learned to use a library database. This is topic that is covered in the both the fall and spring semesters in our work with these students.

The post-test question 9 asks students to identify the information sources they used in their first year at Millikin. 100% of CWRR and HWS students claimed to have used scholarly journals, while almost all CWRR and all HWS students claimed to have used websites. Around half of the CWRR students used e-books or newspapers or magazines and around a quarter used paper books, while only 12% used encyclopedias or dictionaries. None of these results are all that surprising and it will be necessary to collect data from a more representative sample of CWRR and HWS students next year, however, having this information will help the librarians focus their instruction in the future.

Analysis of Results for the Self-Guided Tour

There were 188 unique responses to the optional survey that students complete after taking the self-guided tour, which represents approximately 54% of the 350 students who completed the tour. A sizable majority of respondents claimed to have met the tour's learning goals of making students feel more comfortable in the library (87%), more confident using library resources (84%), and more knowledgeable about who to ask for help in the library (95%). For most students, it took 10-20 minutes to complete the tour, which is in the target time range of 15 minutes. All of the results from the survey can be seen in Table 15 (above). It is important to note that the survey was optional, and these self-selected responses may not be representative of the students who completed the tour.

This year the librarians again recorded the scores for the worksheet that students complete during the tour. 350 worksheets were collected by the librarians and the average score was 9.5 out of 10. Based on a class of 485 this means that approximately 72% of first year students completed the self-guided tour (the results are in Table 14 above).

Overall, a self-guided tour is an efficient way to introduce students to the physical library. The challenge is making the tour engaging enough that students remember the areas that they visited and actively seek out new areas of the library. The high average score on the worksheet does show that most students were able to answer the questions posed at each stop on the tour.

Analysis of Assessment Results for Off-Sequence CWRR classes

This year data were collected from four off-sequence CWRR I sections in spring 2020. These classes were small (47 students across the four sections), and the participations rate was approximately 17% or less than half that of the traditional CWRR classes on the pre-test. In addition to the low participation rate, there continues to be difficulties assessing the off-sequence classes since they are populated with a mix of transfer students, international students, and students retaking CWRR. Not only do students come into these classes with extremely varied backgrounds and preparation, but also some of them are taking the class for a second time.

For part 1 of the assessment, it is only possible to compare the pre-test results, not the change from pre-test to post-test since no data were collected from the two fall 2019 CWRR II classes. The overall confidence for the off-sequence CWRR classes was lower than for the CWRR classes (2.99 versus 3.17), which is consistent with past years. Both groups expressed the highest confidence in finding sources out on the web (question 5), but the off-sequence's next highest confidence was in integrating different sources from their research into their assignment (#12). Their lowest confidence was in knowing when the use of a source constitutes plagiarism (#15) and knowing whether they've done a good job on an assignment (#16). These responses also differed from the traditional CWRR students on the pre-test. Again, the fact that some

students are repeating CWRR I while some students are new to these classes or are international students skews the results in unpredictable ways.

In Part 2 of the assessment, the overall average percentage who answered the questions correctly on the multiple-choice questions was identical between the traditional and off-sequence sections (60%). The off-sequence classes actually scored higher on some of the questions (questions 2, 4, and 8 – keywords, database, and citation), but scored much lower on questions 6 and 7 (narrowing and sources). For question 3 (website evaluation) the off-sequence scores were slightly lower (2.19 versus 2.27) while they were slightly higher for question 5 (1.88 versus 1.75). As with the traditional CWRR classes, the most popular response to question 1 was a broad statement about wanting to learn about research overall and categorized as “other.” The results for question 9 were also similar, although fewer students in the off-sequence classes claimed to have learned about citation and no students said that they had learned about a library catalog prior to coming to Millikin.

The complete results for the off-sequence CWRR classes can be found in Appendix C (below).

Improvement Plan

The biggest change in this year's assessment was separating the results of the CWRR students from the HWS students. Because our instruction with the HWS classes took a different form this year (explained above) it made sense to be able to see the assessment results separately. In the future it may also be advantageous to differentiate the content of the assessment between the CWRR and the HWS students. For this year, many of the findings were not that surprising, e.g., the higher scores of the HWS sections on the skills portion of the assessment, but the differences in confidence, in particular the lower reported confidence in some areas of the research process by the HWS students was particularly noteworthy. In future years, when we are able to collect better data from the post-test, it will be interesting to see if that trend continues and how the HWS students' confidence changes from the pre- to the post-test.

An ongoing challenge with the library assessment is the lack of participation. As mentioned above, the participation rate was very low on the post-test. Only a combined 7% of the CWRR and HWS students completed the post-test, compared to 35% last year. This drop in participation is surely due to the move to online classes that was necessitated by the COVID-19 pandemic. As in the past, the pre- and post-tests were administered outside of the library instruction sessions and it is up to the instructors if they allocate class time for students to take the assessment. The advantage of this system is that it does not impinge on the limited library instruction time, but it does mean that it ultimately falls to the CWRR/HWS instructors to get their students to participate in the assessment. The Instruction Coordinator continues to stress the importance of the assessment to students and faculty.

The self-guided tour format continues to be a successful way to introduce students to the physical library without spending valuable instruction time on the task. Almost three quarters of the first-year students completed the tour, and they performed well on the accompanying worksheet. Those who completed the optional post-tour survey showed that they achieved the learning outcomes for the tour. We continue to monitor the questions that students most frequently miss on the worksheet and modify the tour based on their performance and anecdotal feedback. For example, this year we chose to have a stop at the library's leisure collection rather than the reference collection, and the question that takes students to the bookstacks took them to the graphic novels this year rather than the photography section. We are hoping to continue with a physical self-guided tour of the library in the fall. However, depending on the modifications of University operations due to the on-going COVID-19 pandemic, it may be necessary to make it a virtual tour.

Last year's report mentioned that the librarians were moving away from a checklist approach to website evaluation to one that better addresses the complexity of information dissemination in today's information environment, especially the increasing use of social media as an information source.⁷ The librarians began this process in the fall semester and will continue to develop it in future years. Question 3 on Part 2 of the assessment addresses website evaluation but is largely predicated on a checklist approach. The librarians will need to discuss if this question should be modified to better match the evolving instruction that we are providing to students.

Question 7, which identifies a peer-reviewed journal article as an objective and accurate source of information on the health benefits and drawbacks of energy drinks, has for several years received much lower scores than the other questions in Part 2 of the assessment. This year the scores were 14 percentage points lower than the next highest score of the multiple-choice questions on the pre-test and 12 percentage

⁷ Mike Caulfield's *Web Literacy for Student Fact-Checkers* (<https://webliteracy.pressbooks.com>) provides a different approach to web source evaluation that uses professional fact checkers as its model. This approach is supported by the work of Sam Wineburg and Sarah McGrew who found that fact checkers outperform students and subject experts when evaluating web sources: Wineburg, S., & McGrew, S. (2017, October). *Lateral Reading: Reading Less and Learning More When Evaluating Digital Information* (Stanford History Education Group Working Paper No. 2017-A1). Retrieved from <https://ssrn.com/abstract=3048994>

points lower on the post-test for CWRR students. The librarians need to evaluate this question to see if there are ways that this question can be improved or if our instruction practices can be modified to better explain the strengths of peer-reviewed journal articles.

Finally, as explained above, question 9 was changed for this assessment cycle to discover what information literacy instruction students had received prior to arriving at Millikin, while the post-test asked what information resources students had used during their first year. The pre-test produced interesting results that the librarians were able to apply to their instruction, in particular the lack of familiarity with library catalogs. The post-test showed that scholarly journals and websites were the most commonly used information sources. As we gather more information from this question in future assessments, the librarians will be able to use this knowledge to inform their instruction.

Conclusion

On the whole, the assessment of library instruction in University Seminar/CWRR/HWS indicates that students are learning important information literacy skills and increasing their confidence in the research process 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 throughout the curriculum. The close relationship that library faculty enjoy with faculty members across campus allows them to provide instruction in a way that is most beneficial to students. In particular with the first year University Studies sequence the opportunity to meet with classes on several occasions allows the librarians to introduce and then reinforce multiple concepts with the students. This fall will present unique challenges as online elements are incorporated into classes across the campus. The library faculty, at this point, are not sure exactly what information literacy instruction will look like for the 2020-2021 academic year, but they look forward to working again with their CWRR, HWS, and Seminar colleagues to make our students more information literate.

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?
1. (Post-Test) This year, a librarian visited your CWRR and Seminar classes 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. List and describe **three** criteria for deciding 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 [a screenshot of database is included], what type of research resources should you expect to find in your results?

Journal Articles
Books

5. List and describe **three** ways that scholarly journal articles differ from magazine articles or newspaper articles.

6. You have been assigned to write a research paper on a current events issue and you have decided to write about privacy on the Internet. Your professor tells you that your topic is too general. Of the following, which is the best way to **narrow** your Internet privacy topic?

Focus on the relationship of Facebook use and self-esteem.
Focus on methods that schools are using to prevent online bullying.
Focus on social media companies and how they use personal data to make money.
Focus on whether e-books affect student learning.

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

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

8. When is the best time in the research process to make note of the details about your sources (author, title, date, etc.), so that you can cite them properly?

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 you are working on your reference list.
When the teacher asks you for proof that you did not plagiarize the information in the paper.

9. (Pre-Test) Prior to coming to Millikin University did you receive instruction in any of the following areas? (check all that apply)

Understanding the strengths and weaknesses of different information sources
Using library databases (Gale, EbscoHost, etc.)
Using a library catalog
Developing keywords to use in your searches
Evaluating websites
Creating MLA, APA, Chicago, etc. style citations

9. (Post-Test) Which of the following information sources have you used for assignments in any of your classes during your first year at Millikin University? (check all that apply)

Paper books
E-books
Encyclopedias or dictionaries
Scholarly journals
Newspapers or magazines
Websites

Categories for Part 2, Question 1

A = Finding articles (also using databases)

B = Finding books (and other print materials, also using the catalog)
C = Citation (also plagiarism)
D = Don't know
E = Evaluation of sources
I = Interlibrary loan
K = Keywords (development or selection)
L = Library – navigating the physical library or website
N = Nothing
O = Other – entire research process, information literacy, etc. [use for very broad answers]
P = Writing papers, the mechanics of writing
R = Finding (credible) (re)sources [use if they don't specify format or mention the library "databases"]
T = Topics – defining, narrowing, etc.
W = Web – using Google, Bing, Wikipedia, etc.

Grading Scale for Part 2, Question 3

0 = No correct criteria, "I don't know" or similar answer
1 = One correct criterion
2 = Two correct criteria
3 = Three correct criteria

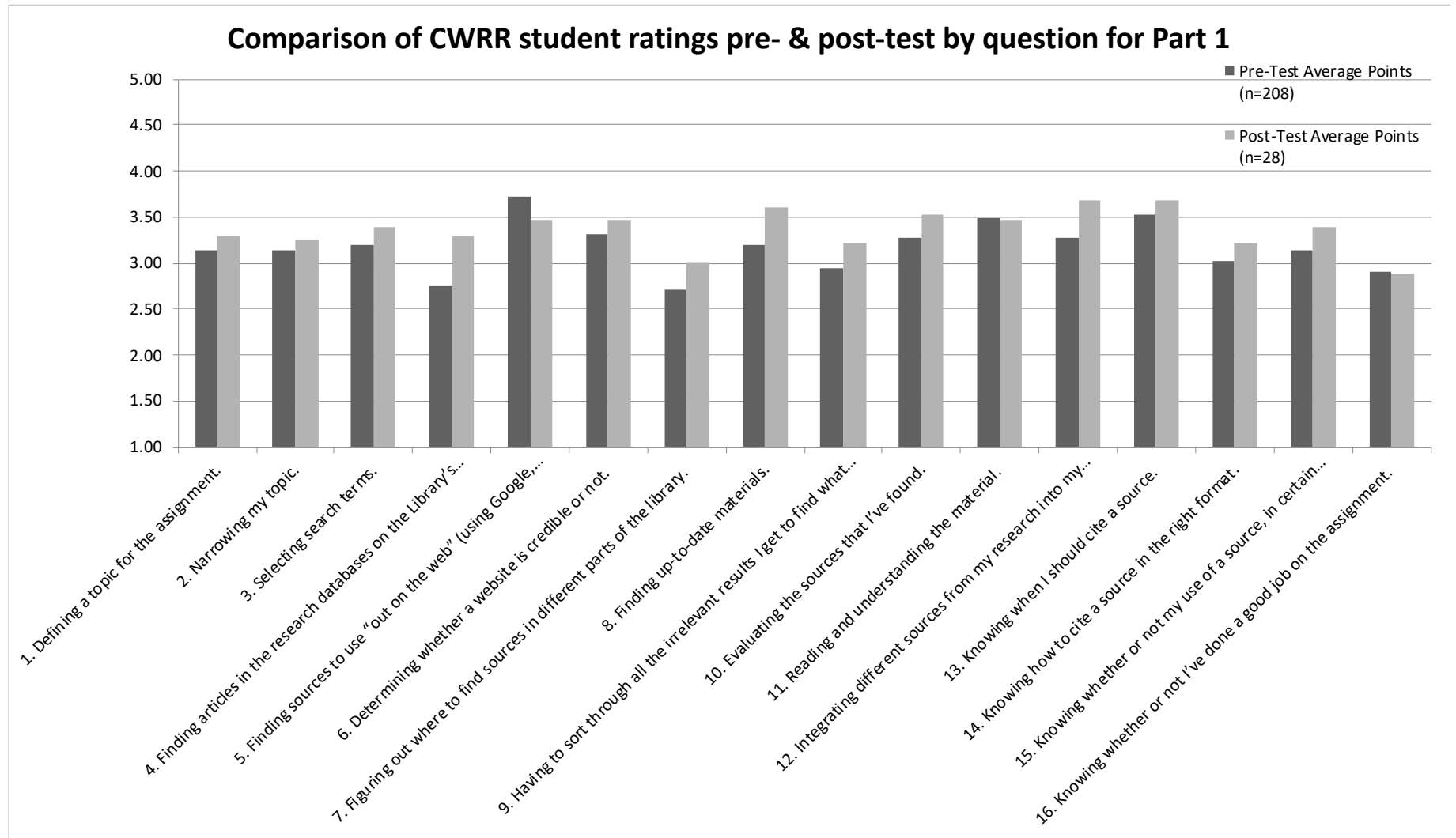
Grading Scale for Part 2, Question 5

0 = No differences correctly identified, "I don't know" or similar answer
1 = One difference correctly identified
2 = Two differences correctly identified
3 = Three differences correctly identified

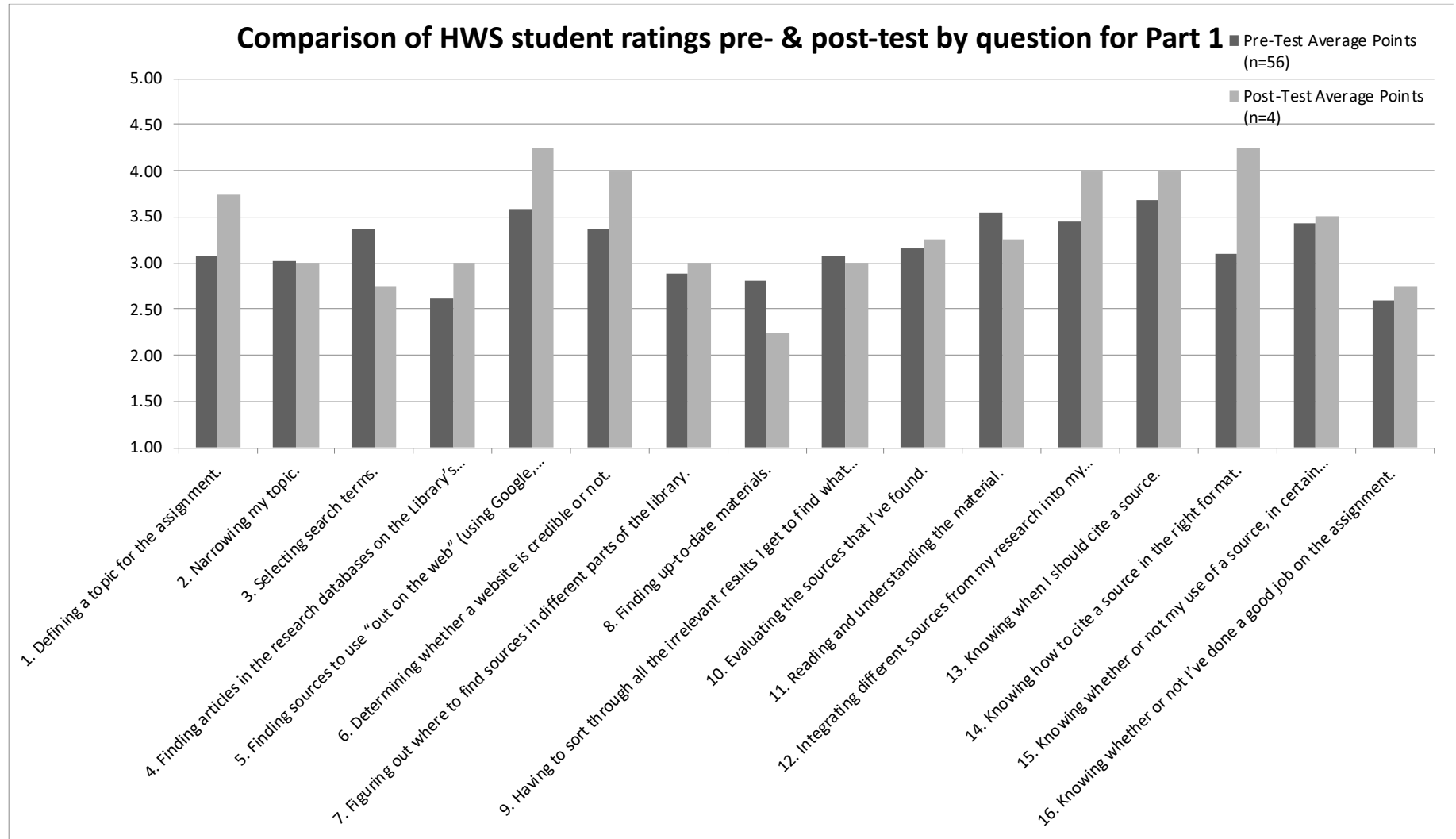
Appendix B

Graphical Representation of Pre- and Post-Test Results

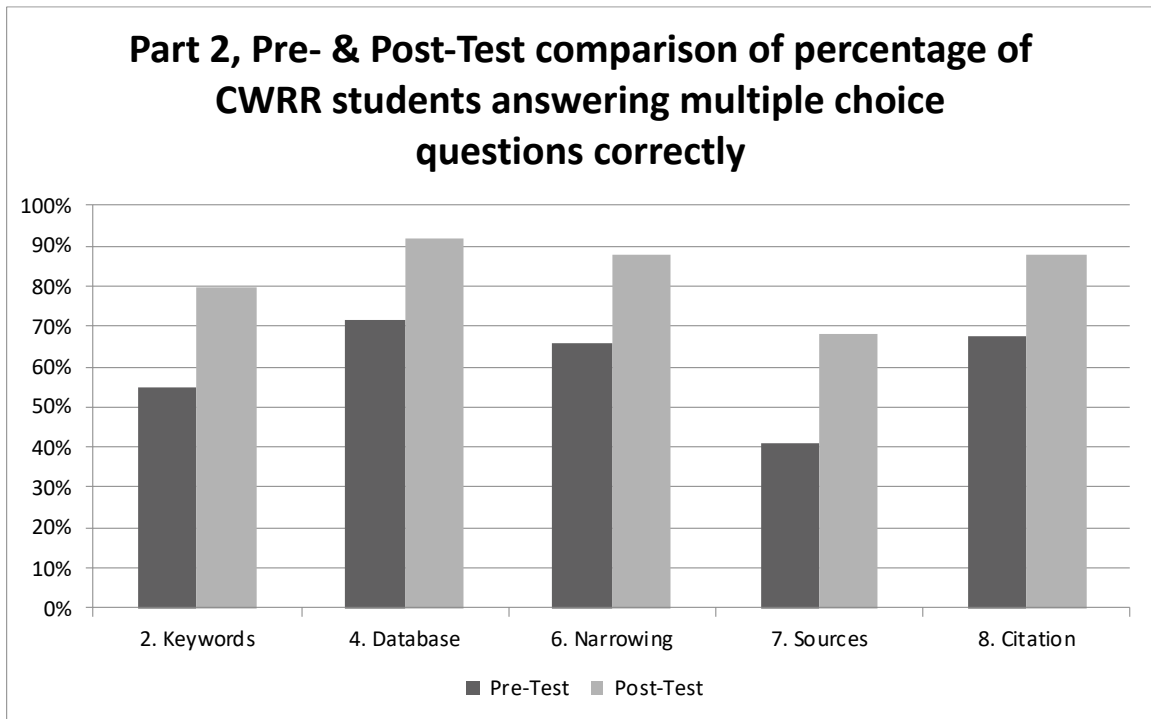
Graph 1



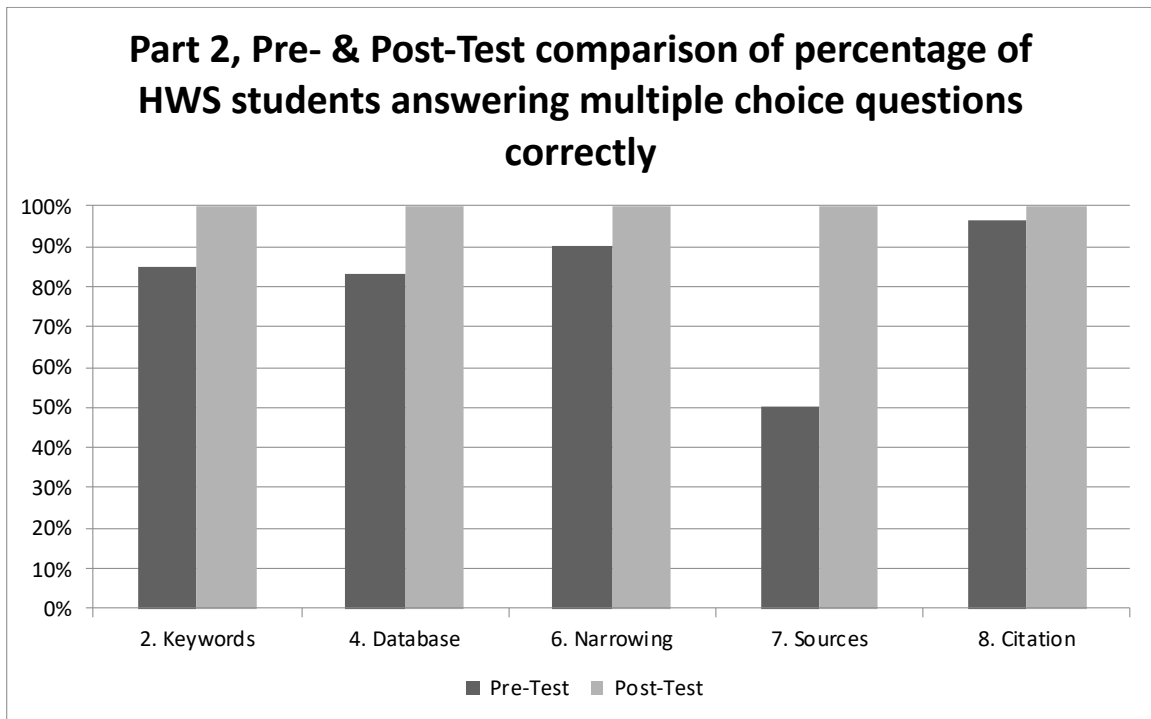
Graph 2



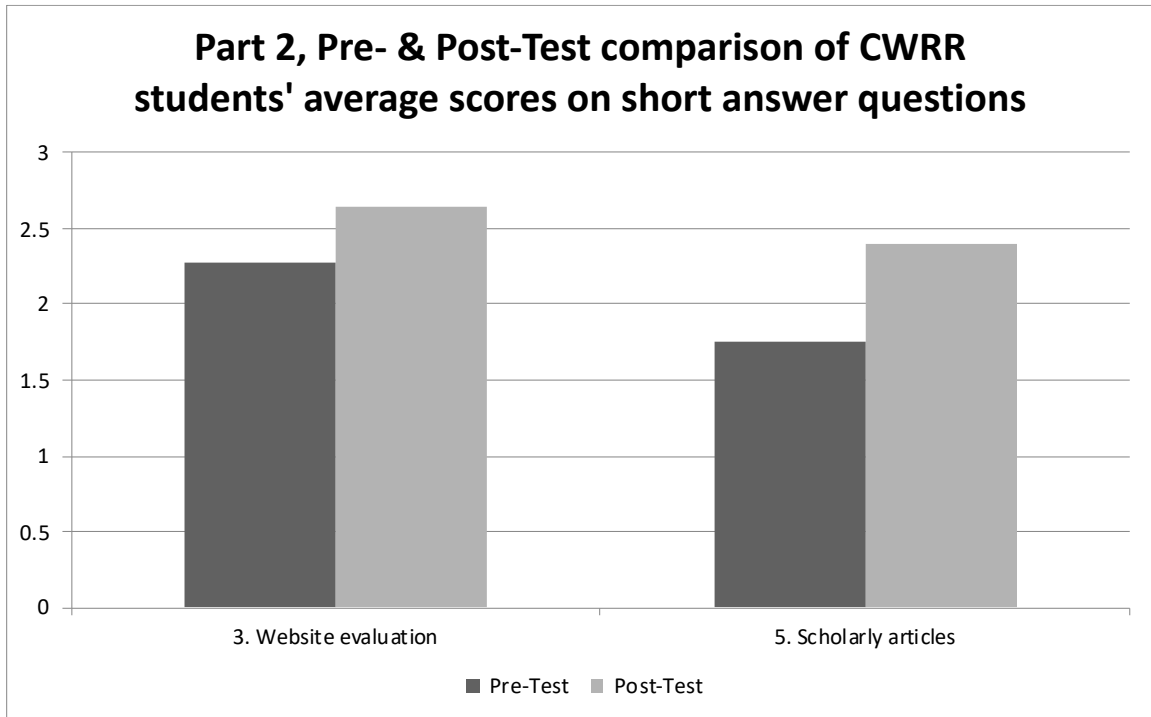
Graph 3



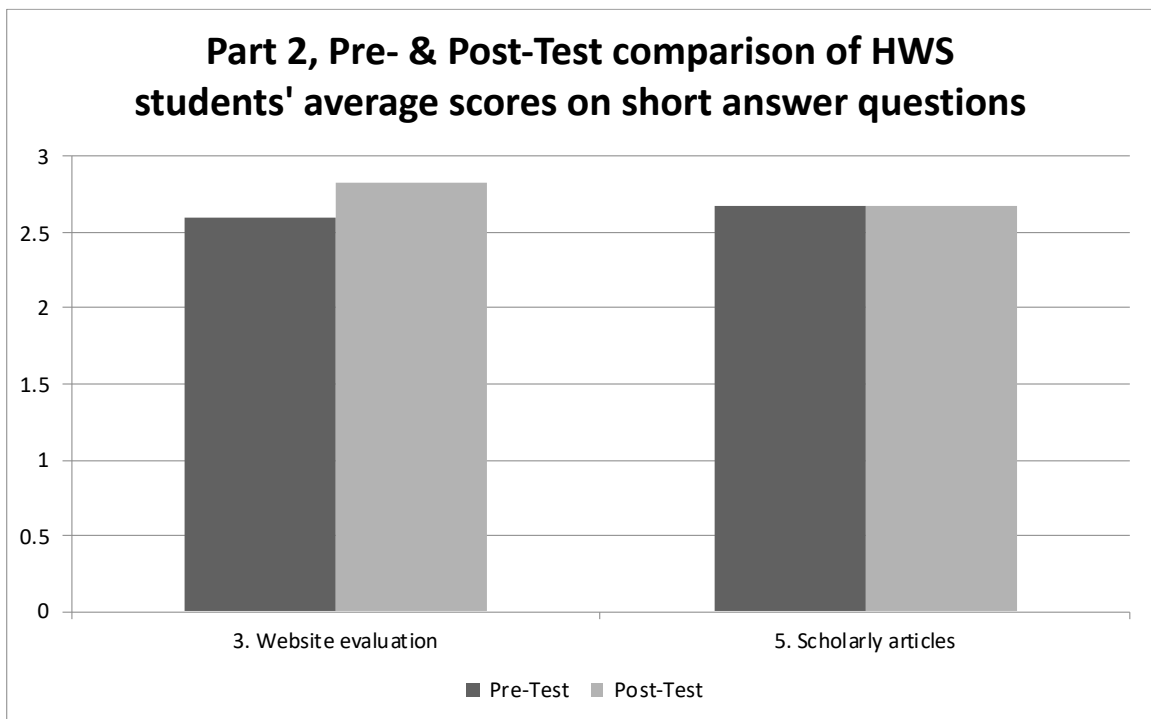
Graph 4



Graph 5



Graph 6



Appendix C

Off-Sequence CWRR Results⁸

Part 1

Table D.1. Student ratings by question for Part 1

Question Scale 1 - 5 1 = very difficult 5 = very easy	Pre-Test Average Points (n=8)
1. Defining a topic for the assignment	3.00
2. Narrowing my topic	2.75
3. Selecting search terms	3.13
4. Finding articles in the research databases on the Library's website (EBSCO, JSTOR, ProQuest, etc.)	2.75
5. Finding sources to use "out on the web" (example - Google, Wikipedia, websites)	3.75
6. Determining whether a website is credible or not	2.88
7. Figuring out where to find sources in different parts of the library	2.75
8. Finding up-to-date materials	2.88
9. Having to sort through all the irrelevant results I get to find what I need	2.75
10. Evaluating the sources that I've found	3.50
11. Reading and understanding the material	3.13
12. Integrating different sources from my research into my assignment	3.50
13. Knowing when I should cite a source	3.25
14. Knowing how to cite a source in the right format	3.13
15. Knowing whether or not my use of a source, in certain circumstances, constitutes plagiarism	2.38
16. Knowing whether or not I've done a good job on the assignment	2.38
Average	2.99

⁸ The off-sequence results represent four section of CWRR I in spring 2020.

Table D.2. Percentage of responses at each level of difficulty for all questions in Part 1

Rating	Pre-Test (n=8)
1 - This is very difficult	4%
2 - This is difficult	31%
3 - This is neutral	32%
4 - This is easy	30%
5 - This is very easy	4%

Part 2

Table D.3. Pre-test percentage of students answering multiple-choice questions correctly

Multiple-Choice Question	Pre-Test (n=8)
2. Keywords	63%
4. Database	88%
6. Narrowing	38%
7. Sources	25%
8. Citation	88%
Average	60%

Table D.4. Coded student responses to pre-test question 1

Pre-Test Question 1 - "What do you hope to learn from the library sessions?"	Number of Student Responses (n=8)
Other - "Hopefully learn effective strategies on how to properly encode information and not be overwhelmed by the excessive amount available information."	3
Library - "I hope to learn how to utilize all of the resources out library here on campus has to offer."	2
Writing papers - "how to use those sources to contribute to any papers I may have to write in my time at Millikin."	3
Finding books - "Good ways to utilize library books to help in writing papers"	1
Evaluation of sources - "How to know if some informations are false informations"	1
Finding resources - "I hope to learn how to find accessible sources, both online and physical"	1

Table D.5. Student scores on the pre-test for question 3

Question 3 – “List and describe three criteria for deciding if a website has the credibility it needs for you to use in your research project.”	Pre-Test (n=8)
Average (out of 3)	2.19 (73%)

Table D.6. Student scores on the pre-test for question 5

Question 5 – “List and describe three ways that scholarly journal articles differ from magazine articles or newspaper articles.”	Pre-Test (n=8)
Average (out of 3)	1.88 (63%)

Table D.7. Student responses to pre-test question 9

Pre-Test Question 9 – “Prior to coming to Millikin University did you receive instruction in any of the following areas? (check all that apply)”	Number of Student Responses (n=6)	Percent of Student Responses
Understanding the strengths and weaknesses of different information sources	4	67%
Using library databases (Gale, EbscoHost, etc.)	1	17%
Using a library catalog	0	0%
Developing keywords to use in your searches	3	50%
Evaluating websites	3	50%
Creating MLA, APA, Chicago, etc. style citations	3	50%