
Understanding Research: Assessing Library Impact on Academic Performance through an Online Courseware Pilot

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Abstract

In spring/summer 2015, instruction librarians at Middle Tennessee State University's Walker Library designed and implemented a pilot research study that involved supplementing traditional, face-to-face library instruction with online information literacy courseware. The underlying purpose of the pilot study was to investigate the feasibility of using online courseware as an extension of Walker Library's instruction program. Instruction librarians hypothesized that this method of supplemental instruction and outreach could be sustainable over the long term for a wide variety of classes and would produce measurable data to illustrate the library's impact on overall student academic success. Instruction librarians began the study by selecting a focus for the pilot: a required, research-heavy, undergraduate course with a notable drop/fail/withdraw rate. After mining the course syllabi for learning outcomes and core concepts, librarians created an online courseware package branded as "Understanding Research," designed specifically to align with and support the textbook and various in-class assignments. As an added bonus, the courseware design included built-in assessment components that would allow librarians and instructors to evaluate student performance over the course of the semester, while also collecting valuable data on academic achievement, concept mastery, and online instruction. Librarians established a partnership with a willing faculty member and piloted the courseware within 10 sections of a communications course in the fall 2015 and spring 2016 semesters.

This short paper will discuss the results and findings of the Understanding Research pilot study, primarily focusing on courseware design, student academic performance data, survey data and feedback from pilot participants, library instruction assessment data, and the implications of the study, both at the library and university levels.¹

Introduction

Academic reference and instruction librarians possess a unique perspective on student research habits and their grasp (or lack thereof) of important information literacy skills. In the instruction role, librarians provide expert guidance and encourage hands-on, active learning so that students may practice and utilize these skills; in the reference role, librarians see first-hand at the reference desk and other service points which questions still linger in students' minds and which issues still trouble them long after the one-shot instruction session has ended. In our experience, reference desk interactions often inform or supplement the content of our instruction sessions, which in turn enable us to better answer questions at the reference desk. It is often a cyclical process, one that enables us as information professionals to see a holistic picture of the student experience with information literacy concepts and their various approaches to conducting college-level research.

In many cases—both in one-shot sessions and through reference desk interactions—we have observed a particular problem that is certainly not unique to our institution: students demonstrate a significant gap between learning and actually applying these important information literacy skills. Students may understand that they need a certain number of sources for a research project based on their professor's requirements, coupled with a vague idea of where to find these sources. However, most students ultimately struggle with the more advanced concepts and issues that arise *after* they have begun searching; evaluating information and selecting appropriate resources, incorporating credible source material into research and writing, and citing resources are only a few of the concepts with which students continuously struggle as they work through the research process.

Instruction librarians typically have a very small window of time to make a meaningful difference in this area through just a general one-shot library

instruction session. Librarians often receive faculty feedback (both anecdotal and quantitative) that supports these observations: many professors lament that, by the time the point of need arises, students have either completely forgotten or have disregarded what they learned in a library instruction session, usually reverting back to cursory Google searches and free web resources for source material.

Background

For instruction librarians at MTSU's Walker Library, the problem and ultimate question became: how can librarians attempt to bridge this widely-seen gap between the timing of library instruction and the successful application of information literacy skills outside the library classroom? Short of embedding an individual librarian in every single general education course, how can we reach all of our freshmen and sophomore students in a reliable, standardized, interactive, sustainable way? If we could find a way to achieve this, how would the library's involvement affect course performance, retention, and/or graduation rates? These are just some of the questions we sought to explore and measure over the course of this study.

In addition to anecdotal data, our pilot study was designed and revised using several pieces of internal assessment data from MTSU's English and communication studies departments. Both departments found a key information literacy problem potentially affecting student success over the long term. Results for the shared learning outcome, "students are able to manage and coordinate basic information gathered from multiple sources," were poor: 51.7% of ENGL 1020 (Research and Argumentative Writing) students scored in the "unsatisfactory" category² while 43% of COMM 2200 (Fundamentals of Communication) students scored in the "inadequate" and "severely inadequate" categories.³ This data supports the notion that students appear to be comfortable with locating secondary sources, yet struggle with how to actually evaluate source material and incorporate it into their writing.

This identified disconnect was also apparent in our internal library instruction assessment data. According to Walker Library's Faculty Feedback Survey on Library Instruction conducted at the end of fall 2014, while "100% of [faculty] respondents indicated that library instruction had a positive impact on their students' **selection** of

quality information sources for their researched assignments," 69% of English and communication department faculty noted that "**integrating** information sources into the body of their writing" was still a consistent problem for students, even after a library instruction session.⁴

Clearly, these assessment reports illustrate major improvements are needed across the board for general education courses, specifically in terms of helping students understand and apply methods for incorporating research into their writing. The authors speculated that some sort of asynchronous, supplemental instruction technology would have to be employed to bridge the gap between library instruction and research/writing in a meaningful way, and to measure and capture the process along the way.

Purpose

To this end, the underlying purpose of our yearlong pilot study was to investigate the feasibility of using online information literacy courseware within a specific general education course as an extension of Walker Library's instruction program. The aim was to determine what measurable effects supplemental information literacy courseware would have on students' ability to apply information literacy concepts outside of those covered in a one-shot instruction session. Instruction librarians hypothesized that this method of supplemental instruction and outreach could be sustainable over the long term and would not only produce meaningful data to illustrate the library's impact on overall student academic success, but would show a sustainable model of supplementing traditional one-shot library instruction that could potentially be implemented in a wide variety of classes taught at the university.

Designing the Pilot Study

Our pilot study design began with determining which of MTSU's general education courses would most benefit from supplemental information literacy courseware. We consulted the aforementioned program assessment data from various academic departments, internal library instruction assessment data, and the most recent university report on predictive courses with notable drop/fail/withdraw rates. Here, we identified two possible general education courses for our study: ENGL 1020: Research and Argumentative Writing and COMM 2200: Fundamentals of Communication. Both

courses are mandatory for all majors and require students to conduct extensive research throughout the semester.

The next step in the project design was to select an appropriate online courseware platform. The authors evaluated several products based on a variety of factors: content of module lessons, alignment of lesson content to ACRL information literacy standards, ease of use and access, options for content creation and customization, ADA-compliance, compatibility with learning management systems, and analytic/assessment capabilities. In spring 2015, we determined that the Credo Information Literacy courseware best met our needs. After purchasing a yearlong contract, we began designing and branding the customizable courseware, which we named: “Understanding Research Courseware” (URC).

For us, one of the more important aspects of the courseware platform was the assessment component: we wanted to be able to capture and analyze how students performed in the courseware over time and have the ability to record their involvement and activity within the courseware platform. The module contents of the platform we chose were intentionally populated with a variety of learning objects which could all be assessed in various ways: videos, informative slides, multiple choice questions, interactive exercises that reinforced lesson material, and a few open-ended discussion questions to evaluate how students applied the concepts presented. Students would immediately receive scores for completed work with the exception of the open-ended questions, which would be hand graded using a rubric. The other analytics would be collected within the password-protected platform, and would be accessed and stored within Excel spreadsheets. Only the authors and the course instructor would have access to the course analytics. Outside of the courseware platform, we also planned to conduct a student survey and assess a sample of student-submitted bibliographies for their final persuasive speeches.

Designing and Mapping the Courseware

Recruiting a faculty collaborator and mapping the courseware content to the faculty member’s syllabus were the last components of the project design before launch in fall 2015. Ultimately, we partnered with a professor who exclusively taught COMM 2200. Our faculty collaborator was also known to be a flexible innovator in the classroom, making heavy

use of the flipped classroom model and various pedagogical technologies.⁵ We mined his course syllabus, assigned textbook, and course timeline for relevant and important information literacy concepts that would match with the courseware module content. We then strategically mapped the online courseware content to the professor’s course timeline to determine when in the semester the courseware modules should occur (and in what sequence) to best support student learning and point-of-need assistance.

In the end, seven modules were selected for the pilot study:

- Academic Integrity
- Presentations
- Types of Sources
- Search Strategies
- Evaluating Information
- Extending Evaluation
- MLA Citations

A unique login link for each section’s courseware was placed within their D2L course shell (MTSU’s learning management system) so that students would have quick and easy access to the URC.

Student Demographics and Course Enrollment

This pilot study included 10 course sections of COMM 2200, with a total enrollment of 240 students. Classes were populated with a variety of student classifications and designations. Student ages ranged from 18 to 56 with an overall average of 20.64. 85% were classified as freshmen and sophomores; an overwhelming majority—81%—were classified as continuing students. Because COMM 2200 is required for all students regardless of major, we feel the students participating in the pilot study are a good reflection of the MTSU freshmen and sophomore student body.

Notable Findings—Don’t Make Us Think!

Our yearlong pilot study produced several notable findings with regard to student behavior, courseware completion/performance, and potential effect of the courseware on resource selection and final grades. Across the board, regurgitation of information and concepts was not a problem for students. Furthermore, our student survey revealed that regurgitation along with questions that allowed students to guess at the answers were the most preferred assessment techniques. On the

flip side, critical and independent thinking were sticking points for practically every student and predictably the most hated in terms of assessment techniques. Unfortunately, the courseware did not produce measurable indications that it improved student ability to apply abstract information literacy concepts.

Students Struggle Equally with Academic Integrity and Source Evaluation

Just as we had hypothesized and had seen from other pieces of assessment data, the courseware confirmed that students struggled most with critical thinking and answering open-ended questions that required application of information literacy concepts, particularly those related to aspects of source evaluation (the difference between a scholarly article and a website, etc.) and academic integrity (plagiarism, theft, paraphrasing, etc.). Responses to the open-ended questions from both modules were sometimes surprising and provided insight into student thinking and attitudes.

Within the academic integrity module, the behaviors we observed and the answers we received reinforced the notion that our students possess a different value system in terms of information ethics and grade integrity. They have been taught that copying is wrong but a generational belief emerged that copying is really not plagiarism but is instead an extension of the real-world “mixing and sampling” that happens in their everyday lives. There seemed to be a generational sentiment that current plagiarism and information ethics taught by educators are too old, too restrictive, and not in touch with the real world. One student response summed up this sentiment perfectly: “Stealing is a form of flattery.”

Use of URC Correlates with Improved Academic Performance and Increased Use of Library Resources

In order to gauge student ability to apply URC concepts within their assignments, 46 bibliographies and speech outlines were randomly selected and evaluated for resource quality and source incorporation based on a rubric designed to reflect the source evaluation material presented in the URC. In addition, researchers also made note of the number of library resources included within each bibliography and speech outline. The rubric quality scores and the number of included library resources were then compared to a baseline bibliography (produced in a previous semester, pre-

implementation of the URC pilot) submitted by the course instructor. When compared to the baseline bibliography, the quality of bibliography contents produced by URC students improved by 18% and the use of library resources increased by 21%.

Another notable finding borne out of the random sampling showed students who incorporated library resources into their final speech outlines and bibliographies performed better on their final persuasive speeches than those who only used free, web-based resources. Students using at least one library resource scored 4% higher than the average for all student bibliographies and 7% higher than students using only web resources.

Students who utilized library subscription resources also performed better academically in the course overall than students who did not incorporate any library resources. In addition to the higher score on their persuasive speeches, students using at least one library resource scored on average 9% higher in the URC grades, final speech grades, and the overall course grades. For students enrolled in COMM 2200, a 9% improvement is equivalent to one letter grade.

Preparation for Research Makes a Difference

Collected performance data also showed that students who completed the ENGL 1020 composition course before taking the COMM 2200 public speaking course had higher overall grades and submitted higher quality research bibliographies. On average, COMM 2200 students who previously completed ENGL 1020 scored 4% higher in both bibliography quality and final course grades when compared to their classmates who had not completed ENGL 1020.

Unfortunately, 82% of the 240 students enrolled in our pilot study elected to take COMM 2200 before completing the ENGL 1020 course. We believe this is an important consideration in terms of academic advising and curriculum emphasis. In addition, we believe this could be a contributing factor to the poor student research performance both observed and obtained in this study.

Practical Implications/Value

This courseware pilot study provided a number of practical implications and suggestions for both the library and the university as a whole. For one, the authors believe the pilot results show that library instruction must be supplemented, not removed

from the course curriculum entirely. Of the students we surveyed during this project, 87% reported that the in-person, face-to-face library instruction session was helpful. It is our view that an online courseware suite, though valuable and helpful for content reinforcement, must support and supplement library instruction, not replace it altogether.

Secondly, based on our findings, we can reinforce the assertion that students seem to struggle most with understanding the concepts of information ethics, academic integrity, and evaluation of information sources. Information ethics and academic integrity in particular must be addressed in a project like this, regardless of the course in which the courseware package is embedded. Evaluation of sources for authority, credibility, and bias must also continue to be addressed within library instruction classes and semester-long courses, especially as information continues to become freely available online and as students insist upon relying on Google for research purposes. In the library, we can do our part by emphasizing this aspect of research more heavily within our library instruction sessions and by creating new approaches that target generational differences relating to information ethics.

Further-reaching, however, we strongly recommend the Communication Studies department require the graded evaluation of research sources cited in the bibliography component of student speeches. Our evaluation of the bibliographies was eye-opening, to say the least. Unless students receive positive reinforcement for careful evaluation and use of credible sources and/or negative reinforcement for sloppy evaluation and use of weak sources, their research behaviors will not change or improve.

Conclusion and Further Reading

Supplemental online information literacy courseware has incredible value and many potential uses. Results obtained in this pilot study show a positive correlation between the use of online information literacy courseware and improved

academic performance for students in a general education course. However, our study design used online information literacy courseware to supplement one-shot instruction sessions; therefore, the authors are unable to measure the influence of the courseware and one-shot sessions separately—only in combination with each other. With adequate financial and personnel support, it is our view that online information literacy courseware demonstrates potential for becoming a useful instructional and outreach tool for academic libraries seeking an opportunity to make a measurable impact on student academic success.

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Notes

1. For a full summary report, please visit our dedicated URL: <http://jewlscholar.mtsu.edu/handle/mtsu/5055>.
2. Allison D. Smith, *Results of Assessment of General Education Learning Outcomes, Academic Year 2013–2014, Subject Area: Writing* (English Department report, Middle Tennessee State University, 2014).
3. *Assessment of General Education Learning Outcomes, Academic Year 2014–2015, Subject Area: Oral Communication* (Communication Studies and Organizational Communication Department report, Middle Tennessee State University, 2015).
4. Jason Vance, *Faculty Feedback on Library Instruction: Fall 2014* (Walker Library report, Middle Tennessee State University, 2015).
5. Stephen Decker and Thomas M. Brinthaup, “The Flipped Classroom,” in *Recent and Projected Technology Trends Affecting Business Education*, eds. K. Virginia Hemby and Robert E. Grubb (Reston, VA: National Business Education Association, 2007), 245–258.