

Starting From Scratch: Implementing a Successful, Multifaceted Information Literacy Program for the First-Year Course

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Abstract

First-year programs often provide critical avenues for freshmen students' first exposure to information literacy. Collaborations between librarians and first-year programs often include orientations that are brief and limited in scope. Implementing a more rigorous approach to acquisition of information literacy skills in a first-year course requires buy-in from administration and faculty, as well as significant planning and sound instructional design in order to demonstrate learning outcomes and provide for useful assessment. This article provides a blueprint for designing and implementing a successful information literacy instruction and assessment program in the one-hour credit, first-year experience course. Assessment data demonstrates a 24-percent increase in acquisition of information literacy outcomes for the sample.

Introduction

Roughly 70 percent of all colleges and universities in the United States have a first-year program of some sort incorporated into the undergraduate curriculum, aimed at improving retention.¹ First-year programs have a long history of collaboration with libraries in college and university settings. The goals of these programs often include the promotion of information literacy skills in order to better prepare freshmen for future information-seeking needs as they progress through the stages of their academic careers. These collaborations often involve students visiting the library via the first-year program course, which may be referred to as Freshman Seminar, the First-Year Experience, University Studies, etc.

Although students do not typically encounter bibliographic instruction until a point of need (i.e. freshman composition courses), research supports the idea that students benefit all the more from "just in case" instruction presented during introductory freshman courses.² These visits or orientations typically take place in the form of a physical library tour, a workshop led by a librarian in a classroom, or may be conducted entirely online with a virtual tutorial or orientation that can be accessed remotely. Regardless of the format, librarians and first-year program administrators often struggle with the challenge of having the resources to build a successful collaboration that is effective and meaningful for students without compromising valuable class time and other course-related programming. Additionally, achieving buy-in from administrators and program coordinators is not always easy due to the severe time limitations and the perceived burden placed on limited resources.

In many instances, the first-year experience course is worth a single, one-hour credit. Many academic librarians are accustomed to the reality that they may only be allotted 50 minutes to provide instruction on everything that a freshman student will need to know to be successful in his/her first year research endeavors, let alone being able to assess the effectiveness of the instruction. Online learning resources such as free-standing tutorials and audio and video podcasts have opened new asynchronous avenues for teaching information literacy skills, but used alone they can also create disconnect between new students and their physical orientation with library collections and services. A combination of both virtual and physical instruction can provide an optimal learning environment for promoting information literacy skills to freshmen, while also providing opportunities for librarians to determine learning outcomes and teach to multiple learning styles using a variety of activities.

This study describes a program created from scratch in which collaboration is initiated by librarians with teaching faculty in the first-year program to provide information literacy skills to incoming freshmen. The program is not only successful logistically, but is designed with assessment needs and evidence of student learning in mind. Additionally, the program design takes into account the needs of learners through utilization of a variety of learning activities and teaching tools that include group interaction, web-based tutorials, individual assignments, and peer-learning.

Background

The University of North Carolina at Pembroke, located in Southeastern North Carolina, is a four-year member institution of The University of North Carolina 16-campus system. Total enrollment for the university is over 6000 students, including 700 graduate students. The university is a regional institution serving largely the eight surrounding counties of this area of the state. Less than 5 percent of all enrollees come from outside North Carolina.

For more than 10 years the Mary Livermore Library has collaborated with the university's Freshman Seminar program, a first-year program on campus designed to enhance the academic and social integration of freshmen into college. Freshman Seminar at UNCP is a required, one-credit hour bearing general education course that provides students the opportunity to learn various study skills and the fundamentals of time management, helps them to become acquainted with the college classroom and campus, and encourages them to engage in social and community activities.

Despite this commitment to providing a foundation for both the social and academic aspects of college life, the academic emphasis of the course is generally less rigorous depending upon the instructor – many sections of the course are not taught by full-time faculty, but rather by university staff. The library's role in promoting student learning has historically been minimal. The library has collaborated for a number of years with the Center for Academic Excellence, the administrative department that oversees the Freshman Seminar program. However, the relationship has always been such that Freshman Seminar instructors were encouraged, not required, to bring their sections to

the library for one class period during the fall semester for a 50-minute physical tour of the building.

Because each librarian on staff, including those not involved with library instruction, is responsible for leading at least one Freshman Seminar tour every fall as part of the university's tenure and promotion process, the tour itself was designed to provide a basic overview of the library with little preparation needed on the part of librarians. Students were presented with a general overview of the physical premises including collection areas such as reference and serials, the circulation desk, and an introduction to basic library policies and services such as course reserves, printing, interlibrary loan, etc.

Roughly 50 sections of Freshman Seminar are typically taught each fall, with slightly more or less than half of the sections making their way to the library for the tour. This has left many entering students without any exposure to information literacy or in-depth knowledge of library resources available to them. Overall, the academic emphasis in the library portion of the Freshman Seminar course was largely insufficient for providing any meaningful orientation to finding information, using electronic information tools, and critically evaluating Internet sources for academic content. In other words, there was a complete lack of any research component whatsoever, and the teaching of information literacy skills was non-existent. Not only was the library tour method unproductive and unappealing to students, but the instruction librarians felt that we were not doing all that we could to support the mission of the university in terms of student learning outcomes.

As the coordinator of instructional services, the author proceeded to restructure the library orientation for the Freshman Seminar course to make it more meaningful for students, seeking to incorporate basic concepts of information literacy, while actively engaging students in the learning process of finding and using information within the context of academic research. Planning for a robust information literacy program to work within the Freshman Seminar curriculum required a long list of considerations that needed to be made. Among them included the need to acquire buy-in from Freshman Seminar administrators and instructors, as well as library administrators. Other significant considerations made in the planning process involved examining the best methods of delivery of instruction, deciding on the format of the instructional content, choosing the most effective and practical methods of assessment, accommodating a variety of learning styles, and preparing non-instruction librarians for teaching in the classroom.

Literature Review

Academic librarians have been providing bibliographic sessions, tours, and orientations to students since the 1800s, but it wasn't until the growing complexity of libraries and information resources in the 1970s created a need for a shift toward more sophisticated methods of teaching students how to use information effectively.³ More recently, academic libraries have been aspiring to collaborate with first-year programs on campuses in efforts to engage new students and to promote information literacy skills for the 21st century. There is an abundance of literature regarding the redesign or creation of information literacy collaborations with first-year programs at institutions of higher

learning. In redesigning the Freshman Seminar library orientation, the author was interested in researching the types of collaborations that existed between libraries and first-year programs, as well as best practices in designing information literacy achievement outcomes for freshmen students participating in these collaborations. The following is a literature review of academic library collaborations with first-year programs and the assessment efforts of such programs.

Collaborations

One of the best sources of research dealing with collaborations between libraries and first-year programs can be found in the ACRL publication “The Role of the Library in the First College Year”. In chapter one Thomas G. Kirk, Jr. states that the collaboration between classroom faculty and librarians is essential to success in first-year programs. Classroom teachers and librarians working together can effectively address the educational goals that have been set forth by first-year program developers. As part of the relationship, classroom faculty should have a good knowledge of how the research process is conducted and what types of resources are available to students so that they will be prepared to complete course assignments successfully.⁴

Literature detailing successful collaborations between librarians and first-year program faculty can be found widely. For the purposes of this study, it was important to find examples of studies that featured libraries that have a similar relationship with their respective first-year programs compared to the relationship that the Mary Livermore Library has with UNCP’s Freshman Seminar course. In other words, it was more relevant to find studies that involved first-year programs offering one credit hour, did not incorporate a formal research paper assignment, were not tied to a discipline or theme, and featured a single class period devoted to the library instruction/orientation.

An example of one such study written by Katherine Strober Dabbour, described how an experimental Freshman Seminar course was created employing active learning library instruction as opposed to traditional lecture or demonstration.⁵ In this study, librarians created an alternative to the traditional ‘one-shot’ library instruction lecture by incorporating active learning exercises into the sessions. Each 90-minute session began with a 20-minute discussion about library perceptions, anxiety, and the importance of information literacy. The next 45 minutes was designated for a small group, self-guided exercise that required students to perform database searches on predefined topics and to explain findings to classmates. Additionally, students were asked to complete a self-guided walking tour of the library. After the activities, there was another 20-minute discussion aimed at reinforcing skills and knowledge learned, giving students an opportunity to ask questions. Prior to the session, Freshman Seminar instructors assigned a chapter on library research from the class textbook to stimulate interest in using the library.

The University of Tennessee at Knoxville has a first-year program similar to that of UNCP, in that a one-hour credit is offered for completing the First Year Studies (FYS) course.⁶ The FYS did not originally have a standardized curriculum, meaning instructors

were given the choice to introduce their students to research skills but were not required to do so – much the same as UNCP’s relationship with its Freshman Seminar program.

UT’s program has recently evolved to incorporate a library module created by librarians, which may be delivered by any one of three different methods. The online method involves a series of three tutorials which must be completed by each student. There are also instructor-led and librarian-led delivery options that are available for face-to-face implementation. Librarians offered a training session to faculty for the instructor-led option.

The UT library module was separated into three sub-sections that dealt with providing students a basic introduction to library services and information literacy concepts. Each section included a learning objective, learning outcome, and corresponding learning activities which were used for assessment. The learning activities were designed to accommodate multiple learning styles. All content was placed on a Blackboard site where it could be retrieved easily by FYS instructors.

There are also many examples of collaborations with first-year programs in the literature that do not meet the specific characteristics of UNCP’s relationship with its Freshman Seminar program. For example, in 2003, Elizabeth Blakesley Lindsay reported that librarians at Washington State University initiated collaboration with the general education’s Freshman Seminar course on campus to provide information literacy instruction.⁷

Their two-hour credit elective course is unique from similar courses on other campuses in that students of the course are given a topic with which to form groups, refine the topic, perform research, and create a multimedia presentation as a final project. As with most first-year collaborations, librarians at Washington State aimed to incorporate information literacy skills into its program by tying its objectives to five information literacy standards developed by The Association of College and Research Libraries.⁸

Each section of the Freshman Seminar course was assigned a librarian to meet with at least once during the semester. In addition to providing each section with an instructional session that deals with using the assigned topic to search for and evaluate resources in the online catalog and electronic databases, each librarian designed a resource guide for the class that included search strategies and recommended databases, reference books, and websites. During the sessions, librarians would allow time for groups to work together and participate in active learning, reporting back to others the results of brainstorming and performing searches.

In 2000, Parang, et al. described how Pepperdine University revamped its information literacy collaboration with Freshman Seminar classes by incorporating hands-on learning, accommodation of multiple learning styles, and web-based tours and tutorials.⁹ Librarians at Pepperdine decided to augment their traditional 50-minute session with an online module that would enable them to provide additional content that was not previously being covered due to time constraints.

The librarians realized that by overloading content into a single session lecture, they were only able to accommodate passive learners and failed to meet the information literacy needs of all freshmen students. The online module consisted of a virtual tour and an introduction to the online catalog via web-based tutorial. The instruction session focused on the use of electronic databases and included time for hands-on practice. The students were evaluated on what they learned both from the online module and the hands-on classroom instruction.

Assessment

Assessment of library instruction was once strictly concerned with output data such as number of sessions taught and students attending, however more recent trends are aimed at determining learning outcomes.¹⁰ According to Barclay, there are essentially four varieties of bibliographic instruction assessments that are commonly used in academic libraries including anecdote, survey, test, and evidence of use. These types of assessments can be used to gauge student learning, effectiveness of instruction, but also affective learning which often involves measuring students' perceptions, awareness, and attitudes toward learning. Anecdotes and surveys rarely offer hard evaluative data of student learning outcomes, while tests and evidence of use are most often used to demonstrate acquisition of knowledge.¹¹

Literature that discusses plans for assessing learning outcomes in first-year information literacy collaborations is more widely available than literature that discusses the analysis of the results of such efforts. According to Carter, the evidence of learning outcomes in bibliographic instruction is harder to come by because evaluations are often not meaningful, are not given enough emphasis, and are often focused on perceptions instead of competencies.¹² Because this study is primarily centered upon measuring a changed behavior in learning, the literature that was sought out and surveyed demonstrates the use of pre-tests, post-tests, and other types of quantitative and learning-based assessments to determine the effectiveness of information literacy instruction in first-year programs.

One such study conducted at the University of the Pacific incorporated several different assessment tools for bibliographic instruction sessions in its Mentor Seminar II course.¹³ The librarians used an interactive web-based tutorial that included quiz questions following each section to determine acquisition of content knowledge. Additionally, an in-class worksheet was distributed in conjunction with a hands-on learning activity, and a pre-test/post-test was administered to gauge research knowledge, previous research experience, and student perceptions of their own abilities.

Using the web-based tutorial quiz, it was determined that 95 percent of the students were able to decipher bibliographic records of books and periodicals in the online catalog and could locate a database from the library's home page. Only 54 percent could locate journal holdings from the online catalog, and only 24 percent could distinguish between abstract-only and full text articles within the database. The librarians matched the pre-tests and post-tests of 165 students, 135 of which completed the tutorial and attended

instruction sessions, while 30 only completed the tutorial. There was no significant difference between the pre-test scores for both groups, however there was a significant increase in post-test scores for those who attended the instruction sessions over those who only completed the tutorial. The study did not report how many instruction sessions were offered to each class over the course of the semester, information that would seem contribute significantly to the success of the outcomes of such a program.

At The Citadel in 2000, librarians revamped previously used assessment methods for implementation in a new First Year Seminar course.¹⁴ The course consisted of only one credit hour, but required two class hours of library research instruction for each section. The librarians collaborated with teaching faculty to create research projects where students would need to narrow topics, develop search strategies, use and evaluate a variety of sources, and use references from other sources. A free response pre-test and post-test was created to determine learning outcomes based on the instructional content provided over the course of two sessions. The results demonstrated a significant increase from pre-test scores (1.14 mean) to post-test scores (6.47 mean).

In the Pepperdine collaboration mentioned earlier, Freshman Seminar students were asked to complete an online tutorial and virtual orientation before attending a 50-minute face-to-face library instruction session on using electronic databases and forming search strategies.¹⁵ Students were then asked to complete a six-question quiz based on measurable outcomes. The evaluation was administered to a group of three classes that had completed both the online modules and attended the instruction session. The tool was also administered to a control group of two classes where students did not participate in either the modules or instruction. In questions pertaining to the tutorial, the first group answered correctly 81 percent of the time. The control group was correct only 55 percent of the time. In questions pertaining to the electronic databases instructions sessions, the instruction group answered correctly 69 percent of the time, while the control group answered correctly just 19 percent of the time.

Because first-year seminar courses vary in range from one credit hour to as many as three, there are different evaluation techniques that have been used by librarians depending on course format, assignment requirements, and learning objectives. For example, at Washington State University, librarians implemented a citation analysis evaluation tool in its two-credit Freshman Seminar course in order to measure the quality of sources students used in their final group project – a multi-media, web-based presentation.¹⁶

At Georgia State, librarians served as instructors in several of its three-credit Freshman Seminar course.¹⁷ With an entire semester at their disposal they not only implemented a pre-test and post-test that covered a period of 15 weeks' worth of content, but also designed several assignments including reflective papers that were created to help students achieve five information literacy goals over the course of the semester. The abundance of written assignments covering a wide array of information literacy competencies contributed to a significant increase in pre-test to post-test scores.

At Cal State – San Bernardino, librarians were restricted to one-shot instruction sessions with each Freshman Seminar class. However, librarians were able to assign a reading on information literacy from the course text book, as well as an individual walking tour of the library prior to coming for the instruction session. This type of design, where students completed outside work in addition to classroom instruction was seen as most practical for the type of programming that UNCP librarians would be able to create. Although there was no quantitative data collected to provide evidence of learned outcomes, the assessment tool used in the Cal State study was a post instruction evaluation that asked students to value the various components of the program through open-ended response.¹⁸

Program Creation, Design, and Assessment

Promotion

The Freshman Seminar course at UNCP is a one-credit hour course that lasts 11 weeks. Based on the literature reviewed, it was determined that the current ‘one-shot’ fifty-minute format would not be enough contact time to include everything that freshmen students needed to learn in order to gain a minimal knowledge base of information literacy skills, much less provide the time to have students participate in active learning exercises, individual assignments, and engage in social interaction – a mixture of activities that seemed ideal for this unique learning environment.

To promote support for the program, the author presented to the Center for Academic Excellence (CAE) and Freshman Seminar instructors the design of two, fifty-minute instructional sessions combined with the completion of out-of-class assignments and an online learning outcomes assessment. The addition of the out-of-class elements would bolster the quality of the program and provide assessment, while also sparing valuable class time that instructors would likely not agree to part with. A presentation was given in a closed setting to CAE administrators who set the curriculum for Freshman Seminar. Once their approval had been obtained to proceed, another presentation was given in a public forum for all Freshman Seminar instructors at an annual spring workshop, in order to gauge how much participation could be expected in the event that the program moved forward.

Due to time constraints faced by Freshman Seminar instructors, the author acknowledged that there would be instructors who would not be willing or able to devote two whole class meetings to face-to-face library instruction. Despite this acknowledgement, it was decided to propose the new information literacy program to Freshman Seminar administrators, asking to speak directly with instructors in order to stress the importance of the program’s objectives for student success, and to gauge interest level. The goal of presenting the program directly to the faculty was to try to get as many sections as possible to participate in the hopes that momentum would begin to build within the university community for providing all incoming students with the same baseline of information literacy skills during their first college semester.

The presentation was well attended and received, with many instructors expressing an interest in a more robust library orientation that was built on information literacy skill acquisition and not just general knowledge about library collections and policies. A follow up survey conducted online over the summer indicated that there was as much interest in the two-session program as there would be with the typical one-session library tour for the upcoming fall semester. With this knowledge in hand the author proceeded with the program planning and design process. A successful pilot using one section of Freshman Seminar taught by a librarian during the preceding spring semester gave the author a chance to gain formative evaluation and modify the program's design.

Design Theory

Recent learning theory research has led to new ideas on promoting student learning via non-traditional means. Prior to the design of this study, a traditional means of teaching freshmen students at UNCP about information resources had been in place and used to lead students on a physical library tour of the building. Librarians were left to explain where resources and services could be found without any kind of experiential learning taking place. Not only was this practice prohibitive of teaching information literacy skills, anecdotal evidence found that the sessions were uninteresting and non-engaging for students.

The instruction session content and related assignment activities discussed in this study were designed using the principles of active learning and are geared toward engaging students and promoting deeper understanding of information literacy skills. According to a seminal paper on active learning co-authored by Bonwell and Eison, students preferred learning environments where active learning is employed over traditional lecture. They defined active learning as "instructional activities involving students in doing things and thinking about what they are doing".¹⁹ In active learning, the focus of learning moves from an instructor-centric environment to one that is learner-centric; in other words the emphasis is no longer placed on how the teacher teaches but how students learn. In active learning environments, the student gains a far better understanding of the material when she is able to play a role in participating in the shaping of content, instead of simply having it dictated to her using one-way communication.²⁰

Active learning strategies have become popular because they are believed to increase development of thinking and writing in students who participate more actively in the learning process. It is also held that active learning offers teachers multiple ways of reaching students of varied learning styles that may perform better in non-traditional environments.²¹ Design of program exercises based on active learning strategies allows students to become acquainted with both the physical library building and how to use electronic information resources in a way that accommodates a multitude of learning styles while giving students an opportunity to experience research in different settings – individual, group, face-to-face, and web-based. Active learning is also a pedagogical approach that is derived from the epistemology of Constructivism, which encourages social interaction. Based on this pedagogy, it made sense to include activities that

involved collaboration and the opportunity for students to become engaged in differing perspectives of the learning content.²²

Coinciding with the implementation of active learning strategies is the use of a teaching cluster. Teaching clusters are used to create learning experiences where teaching styles are matched appropriately with corresponding learning styles. Of the four clusters of teaching experiences developed by Grasha, cluster three emphasizes the design of learning experiences that promote active student participation.

The teaching style for this type of design is characterized as ‘facilitator’ and the learning styles include ‘collaborative’, ‘participant’, and ‘independent’.²³ Although a lecture element is included in the first of two instruction sessions to serve the purpose of providing students with some introductory knowledge, this specific cluster design provides an opportunity for librarians to serve in more of a facilitator type capacity, encouraging student learning in both collaborative and independent face-to-face instruction environments.

Instructional Content

The content of the program was designed to include some activities to be completed outside of class in addition to the two face-to-face instruction sessions mentioned earlier. By adding an out-of-class element, valuable assessment data could be collected through the use of an online pre-test and post-test, as well as a couple of written assignments to be turned into the Freshman Seminar instructor and given to the instruction librarian.

The first 50-minute session consists of a lecture-based demonstration and hands-on experience using the library’s online catalog and one electronic article database, followed by discussion of the evaluation of Internet websites for academic use. Discussion at the beginning of the session includes the differences between resources such as books, reference books, periodical articles and websites, including the tools used for locating each. Students are also asked to describe previous academic research and writing experiences with classmates, and are encouraged to think about the importance of having information related skills.

Continuing with the discussion, students are given a theoretical research topic and asked to generate a meaningful list of keywords to provide a base for searching different resources. Demonstrations on using library resources include searching the online catalog by title, author, and keyword, and learning the various limiting and sorting features. Next, students are introduced to electronic periodical article databases including a demonstration of Boolean operator implementation using the keyword list generated during the class discussion. During this segment, students are asked to participate at individual workstations, working through a variety of searches and recording information based on theoretical research topics.

To conclude the first session, a discussion is facilitated to get students thinking about critically evaluating the content of information found on the Web. Students are asked to

identify the different characteristics of top-level domains. They are also shown a list of results retrieved from performing a search in Google based on an academic research topic. Upon viewing several of the first sites on the list, students contribute observations regarding evaluation criteria such as authoritativeness, objectivity, relevance, and currency.

At the end of the first session, students are instructed to complete a series of supplemental assignments outside of class before returning for the second session. Each student is given a slip of paper with instructions on how to access the assignments from a Blackboard site. The first assignment asks students to view a web-based video tour of the library. The purpose of this activity is to acquaint freshmen with a visual and audio orientation to the library's collections and service areas in lieu of participating in a time-consuming physical tour of the building.

The second assignment is geared toward providing students with a fundamental understanding of the differences between scholarly and popular periodicals, utilizing both print and electronic publications. Upon downloading and studying a chart that describes the identifying characteristics of several types of serial publications, students complete a written assignment consisting of four questions that require each to come to the library and work individually.

The first question asks the student to locate a print version of a popular magazine in the periodicals collection and to record some information about its contents. The second question asks them to identify a scholarly article from the print journals collection in the field of Business and another in the field of Education, again recording some information about the characteristics of each. The third question asks students to retrieve a scholarly article from a predetermined electronic database on a topic of their choosing. They are then asked to record information about their search strategy and results. Finally, using the same database, the students are asked to find an article from a popular periodical on "the effects of steroid use in professional sports", again recording information about their search strategy and results.

The third assignment requires students to read a document that lists and describes five criteria for evaluating web pages. Using the evaluation criteria, each student is asked to complete a worksheet whereby they locate several examples of both 'good' and 'bad' websites pertaining to guided research topics. They are then required to answer several questions about each page in the context of the criteria that are used to justify their decisions. At the end, students are asked to reflect on the exercise and its importance to becoming good consumers of information.

The second 50-minute session occurs exactly one week after the first session. This gives the students a week to complete the three assignments and allows them the opportunity to ask for assistance from librarians and their instructors outside of class. Upon returning for the second session, the assignments are quickly collected by librarians at the beginning of class. While the assignments are not graded by the instructors in most cases, they are reviewed by librarians to help gauge the effectiveness of the instruction.

The second session is devoted to collaborative work and peer-learning, all of which is facilitated by the librarian. At the beginning of the session, the students are grouped into teams of three or four and given a worksheet to complete. Using what they have learned during the first instruction session and through completion of the individual out-of-class assignments, they are directed to find several resources in a variety of formats based on different research topics and to record their findings. Known as the Information Investigation, the activity requires each group to use theoretical research topics to find reference books, scholarly journals in print, electronic articles in a database, and websites on the Internet. Within their groups, students are encouraged to work together in finding each resource and to use a reference librarian for help if assistance is needed (librarians are instructed to assist, not give students the answers to questions).

Students are allowed much of the class period to locate their resources before being asked to return to the classroom. Upon their return, the librarian uses the remainder of the time to designate a leader from each group who will present the group's findings. This peer-demonstration is conducted at the front of the class using a SmartBoard projection system that students can manipulate to show how they went about locating items in the catalog, database, and Internet. Feedback from classmates is encouraged during the demonstration period. Following the demonstrations, the librarian commences the session by fielding remaining questions about any content learned throughout the course of program.

Assessment

Quantitative assessment of student learning is of keen significance for determining the success of the program as well as the need for future modifications. The assessment tool selected was based on the review of literature and logistics of the program. An online multiple choice pre-test is administered to each student prior to the first instruction session. A corresponding post-test is conducted after the second session. Each test consists of 20 questions that are designed to reflect learning objectives derived from the ACRL's Information Literacy Competency Standards One through Three.²⁴ The three out-of-class assignments were also designed to reflect these intended competencies. Table 1 represents the program's desired student outcomes from each standard.

(Insert Table 1 here)

While the questions on each exam are not identical they are mirrored to test the same competencies using slightly different text, yet measuring the same skill. By changing the text of the questions for each test, students are not able to memorize the questions from test-to-test.

Results

Overall, the average increase in score from the pre-test to the post-test proved to be dramatic. Out of a significant sample size of 77 students that had completed both tests, the mean pre-test score was 47 percent and the mean post-test score was 71 percent – an

increase of 24 points. In only nine instances did an individual's post-test score not improve when matched up with his pre-test score.

On the pre-test (See Appendix 1), students had the most difficult time being able to identify the journal title from a periodical article citation (Question 2, 13.64 percent). There was a 60-point improvement overall on this question for the sample. They also demonstrated trouble identifying characteristics of scholarly journal articles on the pre-test (Question 12, 26.14 percent). This question saw the greatest increase in score on the post-test (Question 13, 95.45 percent) – a gain of 69 points. There was a 56-point improvement on a question dealing with the Boolean operator 'OR', and a 51-point improvement on a question regarding effective search strategies. The easiest question on the pre-test was Question 5 (84.09 percent) which asked them to identify what types of information can be found using an Internet search engine.

On the post-test (See Appendix 2), students fared poorest in identifying the characteristics of reference book entries (Question 4, 23.86 percent). They also performed poorly on a question dealing with steps to take when beginning a research paper (Question 16, 39.77 percent). There were a total of four questions on the post-test where students performed poorly compared to the pre-test counterpart. Overall, the most significant signs of improvement seemed to come in areas relating to identifying citations and devising search strategies.

A possible correlation may exist between student achievement on the post-test and whether or not they completed the out-of-class assignments. A sample of the 12 lowest scores on the post-test (55 percent or lower) and the 12 highest scores (85 percent or better) were matched with the assignments collected for those 24 participants. Of the 12 students scoring 55 percent or lower, only three had turned in both out-of-class assignments. Eight of the 12 students scoring 85 percent or better had turned in both assignments. Although the data points to a trend that shows that students who completed the assignments scored better on the post-test, it is important to note that there were no assignments collected from the top three scorers on the post-test. This may mean that success is not dependent upon completing the assignments, or that there are inconsistencies on the part of faculty when collecting the assignments from students.

Conclusion

Some college and university libraries are not fortunate enough to be able to garner buy-in from faculty or administration when it comes to implementing information literacy programs across the curriculum – much less a segment of it (e.g. first-year courses). This study is an example of a grassroots effort developed within the library for promoting information literacy among freshmen where information literacy is not mandated as part of the first-year experience curriculum.

In addition to setting freshmen students on a path toward information literacy achievement, this study provides a successful framework for librarians hoping to develop and sustain a similar effort. Based on the results of the post-test data, this study can be

seen as an effective model for implementing an information literacy program in conjunction with the first-year course, particularly in courses that are awarded less than three credit hours or have a limited allotment of time for library instruction.

Implications for Implementation

A critical element to having a successful program is to achieve buy-in from faculty members that teach sections of the first-year program course. Under ideal conditions, all FRS course instructors would be required to participate in the program, but such was not the case in this study. Because only roughly half of the sections of Freshman Seminar participated in the program, it is difficult to say what the overall effects of learning would be if all freshmen were required to participate, given that statistical data from the post-test does provide a significant sample.

The importance of marketing and presenting a clear case for the need for information literacy skills is paramount to any program's success. Faculty need to be educated and 'sold' on the benefits of student achievement of baseline information literacy skills during the first year. A program with sound design and successful execution is worthless if instructors do not see the value of the potential outcome. Therefore, achievement on a large scale is dependent on librarians' ability to get the optimal number of instructors and students to participate.

Not emphasized in this research is the training of librarians to carry out the instruction sessions and the completion of assignments. It is essential to the acquisition of learning outcomes that librarians are aptly trained to carry out the content covered in the assessments. Poorly articulated instruction and direction can lead to motivational loss and lack of understanding of what is expected on the part of students. Although no two librarians will be able to provide identical learning experiences, the ability to promote a consistent skill set should easily be attainable with proper training.

Training materials and instructional sessions for this study were provided in group and individual settings to insure that librarians were well prepared to execute the designed curriculum in an effective manner. Because some librarians do conduct more library instruction sessions than others, it is reasonable to expect that the learning curve for those who do not frequently contribute to public services will be steeper. Although achievement can vary based on the instruction performance of one librarian over another, there were no indications that librarians individually impacted the outcome of the assessment in this study.

Future Considerations

In setting out to measure the learning outcomes of students participating in an information literacy program designed for the one-hour credit Freshman Seminar course, the author encountered obstacles that could potentially impact the quality or accuracy of the data collected in this study. For example, students were asked to complete both the pre-test and post-test online in an uncontrolled environment, meaning they were free to

complete each test in any location at any time of their choosing. This could lead to the sharing of answers between students, or haphazard selection of answers for the mere purpose of receiving credit for completing the assignment. The same can be said for the out-of-class assignments where participants could essentially copy answers from classmates and submit the work without actually completing it.

Additionally, the length of time elapsing between each section taking the pre-test and post-test, greatly varied depending upon when each instructor scheduled their sessions. For example, a class coming to the library for the first session on a certain date may not have returned for the second session until a month later, thus creating a four or five week gap between the time the pre-tests and post-tests were taken. Alternatively, another class may have only had two weeks in between the taking of the assessment, thus possibly skewing learning outcome achievement between the two classes. A standardization of session scheduling and a more controlled environment for collecting assessment data will be investigated in order to insure more reliable data in the future.

It would have also been beneficial to have collected data indicating how many students attended both the first and second instruction session. Knowing which students attended both sessions versus how many may have only attended one or none, leaves some uncertainty as to the effectiveness of the sessions. Ideally, Freshman Seminar instructors would have provided an incentive for students to attend both sessions and complete the out-of-class assignments and assessments; however, in many of the classes students were given little or no credit for participating. Librarians did not take roll, thus did not have access to this data. Although it is unlikely to have affected such a large scoring sample, it is possible that students who completed the pre-test, post-test, and out-of-class assignments had attended neither of the two sessions while still achieving a significant increase in test score. To prevent that scenario in the future, data collection will include a question that asks students if they had attended both sessions.

Another future consideration is whether to add more affective learning questions to the assessment tool in order to help paint a more complete picture of learning outcomes. Future assessments may include methods that measure not only how well students improved in test scores, but how they felt the program has increased their confidence or motivation to become better researchers. And finally, while it is yet to be determined if the skills learned by students participating in the program will be retained over the course of any significant period of time, the design of a method to measure such acquisition and retention will be considered going forward.

Appendix 1: Pre-test

To select your answer for questions 1-7, please write the correct letter on the answer blank.

(1-3.) Correctly identify the parts of the following citation by writing the proper corresponding letter in the blank:

| Barthelme, Frederick. | "Architecture of Southern Colonial Porches." | Kansas Quarterly | 13. | 3-4 | (1981) : | 77-80.

(A)

(B)

(C)

(D)

(E)

(F)

(G)

Sample. **Author** A

1. Issue Number _____
2. Journal Title _____
3. Volume Number _____

(4-7.) Each of the following items can be useful for finding information. Choose the letter that represents what you can likely expect to find in the resource listed.

4. Reference Book

- A. A short article about a person, place, or event
- B. A long scholarly research article
- C. Both A and B

5. Google

- A. Non-academic websites
- B. Academic websites
- C. Both A and B

6. Journal

- A. Advertisements and photographs
- B. Articles with references
- C. Both A and B

7. Electronic Resources

- A. A newspaper article
- B. A scholarly journal article
- C. Both A and B

8. Which of the following would you use to search for books on “No Child Left Behind”?

- A. Electronic Resources
- B. Journal Finder
- C. BraveCat
- D. Brave Web

9. You are researching where outbreaks of avian flu have occurred. Which of the following is more likely to be an authoritative source of information?

- A. <http://www.cdc.gov/flu/avian/>
- B. http://en.wikipedia.org/wiki/Avian_flu
- C. <http://avianflu.typepad.com/>
- D. <http://disease.net>

10. You are interested in purchasing a hybrid automobile from a foreign manufacturer. You searched for *Honda* and got 17 hits. Which of the following searches would help you retrieve *more than 17 hits*?

- A. Honda OR Toyota
- B. Honda AND Toyota

11. You are looking for information on the impacts that global warming has on mammals, birds, and reptiles. In conducting your search in one of the library’s electronic resources, you typed in *global warming* and retrieved over 5,000 articles. Which of the following searches would help you to *narrow* your results?

- A. global warming and impacts
- B. global warming or greenhouse gases
- C. global warming and animals
- D. global warming or insects

12. A journal article is more likely to have been written by:

- A. A reporter
- B. A professor
- C. A military officer
- D. A stock broker

13. A summary of a journal article is referred to as:

- A. An abstract
- B. Full-text
- C. A PDF
- D. A citation

For questions 14-15, match the correct citation with the citation type by entering a letter in the blank.

14. Alcock, R. (1997). "Consumption and sustainable development". Science 276 (5319): 1632-1633.

—

15. Engel, J. Ronald and Joan Gibb Engel, Ethics of Environment and Development: Global Challenge
and International Response (Tucson: University of Arizona Press, 1990)

—

A. Journal article citation

B. Book citation

16. Which of the following search strategies should be used in an academic database for finding articles on the topic 'effects of video games on childhood obesity'.

- A. children AND obesity
- B. video games AND obesity
- C. effects of video games on obesity
- D. effects AND video games

17. Before you actually begin to look for your resources, it's best to:

- A. Search the Internet
- B. Change topics
- C. Create a set of keywords
- D. Create your bibliography

18. Which of the following is not the name of a collection in the Library?

- A. Reference
- B. Media
- C. American Indian
- D. General

19. By using the 'relevancy' drop-down menu in an electronic database you are:

- A. Starting a new search
- B. Sorting the articles by date
- C. Weeding out articles that are not full-text
- D. Sorting the articles by importance

20. One major difference between a full-text article that is available in HTML format and one that is available in PDF format is:

- A. PDF articles are harder to email
- B. HTML articles usually do not contain page numbers
- C. PDF articles are just plain text
- D. HTML articles require special software to print out the article

Appendix 2: Post-test

To select your answer for questions 1-7, please write the correct letter on the answer blank.

(1-3.) Correctly identify the parts of the following citation by writing the proper corresponding letter in the blank:

| Garrett, Laurie. | "The Next Pandemic?" | Foreign Affairs | 17. | 1 | (2005): | 124-129.

(A) (B) (C) (D) (E) (F) (G)

Sample. Author A

- 1. Volume Number ____
- 2. Journal Title ____
- 3. Article Title ____

(4-7.) Each of the following items can be useful for finding information. Choose the letter that represents what you can likely expect to find in the resource listed.

4. Reference Book

- A. A short article about a person, place, or event
- B. A long scholarly research article
- C. Both A and B

5. Google

- A. Non-academic websites
- B. Academic websites
- C. Both A and B

6. Journal

- A. Advertisements and photographs
- B. Articles with references
- C. Both A and B

7. Electronic Resources

- A. A newspaper article
- B. A scholarly journal article
- C. Both A and B

8. Which of the following would you use to look for *books* on the topic “use of steroids in sports?”

- A. Electronic Resources (databases)
- B. Journal Finder
- C. BraveCat (online catalog)
- D. Brave Web

9. The following call number can be found where in the Library: *Ref HA 202.U5 2006*

- A. UNCP General Collection
- B. UNCP Reserves
- C. UNCP Reference
- D. UNCP Periodicals

10. You are researching the impacts of white collar crime on society. Which of the following is more likely to be an authoritative source of information?

- A. <http://www.fbi.gov/whitecollarcrime.htm>
- B. http://en.wikipedia.org/wiki/White-collar_crime
- C. <http://embezzlement.blogspot.com/>
- D. <http://www.whitecollarcrimefyi.com/index.html>

11. You are conducting research on non-Christian religions. You did a search on *Buddhism* in a database and retrieved 22 hits. Which of the following revised searches will retrieve *more than 22 hits*?

- A. Buddhism AND Hinduism
- B. Buddhism OR Hinduism

12. Which of the following searches in an article database should be used to find information on the topic “how does acid rain impact the environment?”

- A. acid rain OR environment
- B. acid rain NOT environment
- C. acid rain AND environment
- D. acid rain
- E. environment

13. A scholarly journal is most likely to include:

- A. Advertisements
- B. Color photographs
- C. Technical terminology
- D. Articles written by reporters

14. Electronic databases are often organized according to their academic subject. True or false?

- A. True
- B. False

15. You are writing a paper on the causes of homelessness. Which of the following resources is more likely to provide quality, academic information?

- A. WikiPedia
- B. Time Magazine
- C. The Washington Post
- D. Journal of Sociology and Social Welfare

16. Before you actually begin to look for your resources, it's best to:

- A. Search the Internet
- B. Change topics
- C. Create a set of keywords
- D. Create your bibliography

17. One major difference between a full-text article that is available in *HTML* format and one that is available in *PDF* format is:

- A. PDF articles are harder to email
- B. HTML articles usually do not contain page numbers
- C. PDF articles are just plain text
- D. HTML articles require special software to print out the article

18. By using the 'relevancy' drop-down menu in an electronic database you are:

- A. Starting a new search
- B. Sorting the articles by date
- C. Weeding out articles that are not full-text
- D. Sorting the articles by importance

19. Which of the following domains would be most appropriate for finding reliable information?

- A. .edu
- B. .com
- C. .net
- D. None of the above

20. Which of the following is a citation for a periodical article?

A. Alcock, R. (1997). "Consumption and sustainable development". *Science* 276 (5319): 1632-1633.

B. Engel, J. Ronald and Joan Gibb Engel, *Ethics of Environment and Development: Global Challenge and International Response* (Tucson: University of Arizona Press, 1990)

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