



Developing an Assessment Model For An Information Literacy Program

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Abstract:

Introduction:

The Distributed eLibrary (DeLib) implemented an instructional information literacy program in 2011, "DeLib 101". Using the ACRL Information Literacy Standards for Higher Education as a conceptual framework, DeLib 101 was developed in collaboration with faculty. The purpose of this program is to raise the information literacy skills of WCMC-Q pre-medical students to prepare them for their information needs as medical students. A more sophisticated assessment method than was previously utilized was needed.

Objective:

Within the framework of DeLib's mission, strategic plan and information literacy program, this paper describes the path to the development of an assessment model, lessons learned and our successes.

Methods:

A major pilot test was created consisting of twelve questions per ACRL standard for a total of sixty questions. Target scores of 90% were established to indicate mastery.

In spring 2011 the pilot test was administered to forty pre-medical year-one students in their second semester to establish a baseline. The students did not achieve the target scores of 90%.

To help newly incoming students achieve a higher score, the Information Literacy Program was expanded to include workshops, two mini tests and four assignments. The major test was administered to all the pre-medical year one students in the spring of 2012. Results TBA.

Results:

Pilot test scores averaged 79.65%: Standard One test results average was 81.49%; Standard Two 80.77%; Standard Three 87.76%; Standard Four 80.77%; Standard Five 67.47%.

Results from the mini tests and assignments averaged 78%. Results from the major DeLib 101 test in the spring of 2012 are TBA.

Discussion:

Overall target scores of 90% were not achieved and were particularly low for Standard Five, which covers plagiarism, citations, copyright, and ethical, legal and social use of information. Librarians will use this information to design workshops that incorporate a higher emphasis on these topics in an effort to increase students scoring.

DeLib 101 full test will be administered to the Pre-Medical I students in the Fall 2012 semester to establish a baseline of their information literacy skills.

DeLib Librarians will develop this assessment model to design the instructional sessions for Pre-Medical and Medical Programs.

Background

Weill Cornell Medical College in Qatar (WCMC-Q) is part of Weill Cornell Medical College in New York and shares its mission of dedication to excellence in education, patient care and research. The academic programs at WCMC-Q include a Foundation year, a two-year Pre-Medical Program and a four-year Medical Program leading to the MD degree.

WCMC-Q located in Education City in Doha, Qatar, is supporting Qatar Foundation's vision of turning revenues from a hydrocarbon-based economy into a knowledge-based economy. To achieve this vision, Qatar Foundation is placing a priority on developing the human resources in Qatar over the next twenty years, aiming to "unlock human potential". (1) In the United States, since the issuing of the "Spelling Report" in 2006 (2), there has been a movement in higher education to improve student success through meaningful outcomes assessment and also to improve institutional transparency and accountability to stakeholders. (3) This commitment was re-affirmed and strengthened in the report by the New Leadership Alliance for Student Learning and Accountability in 2012. (4) The Association of

College and Research Libraries (ACRL) published a report “The Value of Academic Libraries” in 2010, outlining how academic libraries can be accountable to their stakeholders by assisting their institutions in improving student learning through outcomes assessment. (5)

Supporting the mission of WCMC-Q, the Distributed eLibrary’s (DeLib) mission is to deliver diverse information resources and services that engage students, faculty and staff of WCMC-Q, as well as local, regional, and international communities. (6) In alignment with its mission, a goal in DeLib’s 2008-2012 strategic plan is to build a progressive and academically robust information literacy program that supports lifelong learning.

In 2008, DeLib implemented a liaison program, assigning librarians to years and courses throughout the continuum of the WCMC-Q’s academic programs. As liaisons, the librarians consult, collaborate and coordinate with the faculty on issues related to collection development, course reserves, information literacy activities and other information support relevant to the academic programs. While the librarians view information literacy as a vital component of DeLib’s instruction program, teaching efforts were focused on the resources that would best enhance the students’ performance on class assignments. Evaluations consisted of a brief, standardized questionnaire.

Need for Structured Instruction

During the 2009 academic year, DeLib librarians received feedback from many of the Pre-Medical teaching faculty, that their students’ skills in researching scholarly information and citing authoritative sources for their assignments needed improvement; areas that the faculty considered critical for successful graduate level study. In alignment with DeLib’s strategic plan, the librarians planned to develop an instructional program that would raise the information literacy levels of the pre-

medical students to a level at which they can transition smoothly into WCMC-Q's medical program. In collaboration with Pre-Medical faculty, "DeLib 101", a structured information literacy program, was conceptualized, using the ACRL "Information Literacy Competency Standards for Higher Education" as a conceptual framework. (7) Given its purpose to raise the information literacy skills of WCMC-Q pre-medical students, a more sophisticated assessment method than was previously utilized was needed.

Objective:

Within the framework of DeLib's mission, strategic plan and information literacy program, the purpose of this paper is to describe the path to the development of an assessment model, lessons learned and our successes.

Literature Review

Information literacy in academic libraries has been addressed in detail in the library literature. Grassian and Kaplowitz (8) discuss how library information literacy programs enhance students' learning and performance and how it is instrumental in fostering lifelong learning skills. Providing an overview of the process of offering an information literacy program, the authors suggest that librarians form partnerships to further strengthen the impact of their programs. Relevant to the WCMC-Q pre-medical student body is the matter of "Net Generation", "Generation Y" students, their learning styles and affinity to technology. Jones et al (9) studied students born after 1983 in five universities in the UK. Their findings indicate that this generation is not homogeneous in their appreciation of new technologies. Weiler (10) determined that Generation Y students are visual learners who will maintain interest and retain information through hands-on activities and discussion. Weiler also points out that saving time is important to students and that instructing students on Boolean operators and other search techniques should be approached in that light. Finally,

the author concludes that since students arrive to college with varied cognitive skill levels, that cognitive ability is a developmental process, which the students must go through before they will seek information critically and reflectively, librarians should approach their instruction accordingly. While the literature on library assessment is not as abundant, Sundberg (11) gives a good overview of different methods, their advantages and disadvantages. Huffard (12), in a more recent article, reports on using pre- and post-assessment surveys in assessing a library course, which is using the ACRL guidelines as its conceptual framework. The article includes detailed results from the study. The post-test indicated that the students did not perform as well as the instructors had hoped. Finally, Han et al (13) found a correlation between information literacy skills and GPA, and that offering five workshops gave better results.

Methods:

Partnering with pre-medical faculty, and using the ACRL "Information Literacy Competency Standards for Higher Education" (7) as a conceptual framework for "DeLib 101", the course was developed in the Angel Learning Management System. A pre- and post-test was adopted as the assessment method. The target score was set at 90%, in alignment with WCMC-Q admission criteria on standardized exams.

During 2010, DeLib librarians developed a major pilot test, consisting of twelve questions per ACRL standard for a total of sixty questions. Pre-Medical faculty was repeatedly consulted, and the questions were reviewed and revised several times.

In Spring 2011, to establish a baseline, a pilot test was administered to forty Pre-Medical year-one students in their second semester. The students did not

achieve the target scores of 90%. The average score, based on the complete test, was 80.8%, well below the pass rate of 90%. (Figure 1)

The pilot test was reviewed to determine problems within the questions themselves. For questions that were uniformly answered incorrectly, wording was changed to ensure clarity of meaning and an effort was made to remove library lingo. In some cases, answers were too similar and had to be modified.

A meeting with the Writing Seminar and Biology faculty was arranged. These two courses serve 100% of Pre-Medical students. The results from the pilot test was provided and discussed. The outcomes of this meeting were:

1. Two more 50-minute hands-on workshops were allocated the liaison librarians for each course. Workshop content would be directly targeted towards the ACRL standards.
2. Based on the results of the pilot test, liaison librarians created a mini quiz for the Writing Seminar and Biology courses targeting the areas of low performance. Each quiz was made up of twenty multiple-choice questions, again based on the five ACRL standards. i.e: four questions per standard.
 - The quizzes were also complemented with four short assignments i.e:
 - Matching parts of a citation,
 - Legally paraphrasing a quotation,
 - Locating a print book and identifying parts of the citation,
 - Conducting a database search, identifying keywords, refining search, locating and identifying two citations.

It was hypothesized that additional, focussed instruction would improve the students' test scores to the target scores of 90%. The quizzes and assignments were administered to the Pre-Medical students in their second year in the Spring of 2012, the same students who took the pilot test. For grading purposes, the quiz was weighted 60%, each assignment was weighted 10% each. The mini quizzes and

assignments were made available to students on the Angel Learning Management System. The quizzes and assignments were not mandatory, but with buy-in from the faculty, librarians were encouraged that many students would take it. In some sections of the two classes taking the quizzes & assignments were optional; From these sections there were no submissions. In one section of the Writing Seminar class students were provided with a 10% grade if they took the quiz. All students in that section took the quiz. In another section of the Writing Seminar class, librarians used allocated class time for a library session to allow students to take the quiz, which they all did. In the Biology class, students had the option to take the quiz or complete some homework. The higher of the two grades would be put towards their final grade. Twenty nine of forty two students (69%) completed the quiz and assignments.

Results:

On the pilot test the students' scores averaged 80.8%: Standard One (Determine the nature and extent of information needed) the average score was 81.6%; Standard Two (Ability to access information effectively and efficiently) the average score was 80.7%; Standard Three (Critical evaluation of information and adoption of new knowledge) the average score was 88%; Standard Four (Ability to use information effectively to accomplish a specific purpose) averaged a score of 86.2%; Standard Five (Economic, legal, ethical and social issues surrounding the use of information) had the lowest average score of 67.5%.

After reviewing the questions in the "DeLib 101" test, offering three more workshops to Biology and Writing Seminar students, all designed to incorporate ACRL standards, and included mini quizzes and assignments, the average overall score was 93.48%: Standard 1 92.74%; Standard 2 95.10%; Standard 3 93.55%; Standard 4 93.55%; Standard 5 91.74%. As hypothesized, the additional workshops with targeted content, quizzes and assignments had successfully improved the

students' score to above the target score of 90%.

Discussion:

In the pilot test, overall scores averaged 80.8%, about 10% below the target scores of 90%. Scores were particularly low for Standard Five, which covers plagiarism, citations, copyright, and ethical, legal and social use of information with an average score of 67.5%, followed closely by Standard 2, accessing information effectively and efficiently, with an average score of 80.7%. Standard 1, determining the extent and nature of information needed was slightly higher with a score of 81.6%. The highest scores were in Standards 3 and 4, which focus on critical evaluation of search results and incorporating new information into their knowledge base and value system, and using information effectively to accomplish a specific purpose. These two standards achieved scores of 88% and 86.2% respectively. Based on these results it would seem that our students' challenges lie in the logistics of determining what they are looking for, and how and where to find the information, and using the information according to legal and ethical standards. Once they find the information, they seem to know how to apply it.

After reviewing the language of the questions, and offering additional workshops, which included quizzes and assignments, the students' scores improved quite dramatically. (Figure 1) Standard five covering plagiarism saw the biggest increase of more than 24%, followed by Standard one on articulating the need for information and Standard two on accessing information effectively and efficiently, with an increase of 11.14% and 14.4% respectively. The lowest increase was naturally in Standards three and four, which had the highest scores in the pilot. It is worth noting that their lowest score was still in the area of plagiarism, while their highest score was in the area of accessing information.

The outcomes of the "DeLib 101" testing reflect the findings of Weiler (10), that Generation Y students prefer hands-on activities and assignments, and also that

cognitive ability is a developmental process, which students must go through in a series of steps over time. Additional workshops with assignments as a follow-up to a previous series of workshops over the course of a year, improved the students' performance. Similarly, as Han et al (13) reported, added exposure improves performance. Partnering with the pre-medical faculty, as pointed out by Grassian and Kaplowitz (8), proved instrumental in delivering the content, quizzes and the test to the students, and undoubtedly in the successful outcome. The time and resources devoted to this project by the Pre-Medical faculty is commendable. Besides improved outcomes, this type of partnership also shows the students the relevance of integrating scholarly information into their coursework.

Lessons learned by the librarians fall in three categories: 1. Clarity of the questions in the quiz; 2. The sequence and content of the workshops; 3. A structured information literacy program with measurable outcomes is superior to teaching workshops on request. Regarding the questions, It was decided early in the process to use multiple choice and multiple answer questions. Multiple answer questions was determined not to be a recommended format, because they cause incongruities. As well, scoring can become complicated when dealing with multiple answers. In addition, clarity in language is essential for consistency in the result. As the evidence shows, multiple workshops with specific content, along with quizzes and assignments improve outcomes. Finally, a shift away from teaching workshops based on course assignments to a structured information literacy program with measurable outcomes, gives the department and the librarians greater credibility.

Conclusion

By using a pre- and post-test assessment method, and partnering with pre-medical faculty, DeLib librarians successfully hypothesized that modifying the "DeLib 101" content, based on the pilot test outcomes, would achieve the target scores of 90% from the Pre-Medical students. It is expected that the process will be further

modified over time. However, the “DeLib 101” full test will be administered to the first-year Pre-Medical students in the Fall 2012 semester to establish a baseline of their information literacy skills.

The design, assessment and modifications of DeLib’s first structured information literacy course, fulfills a strategic goal in the department, which is aligned with institutional goals. Assessment of successful learning also assists the DeLib in being accountable to both internal and external stakeholders. For the students, we are hopeful that they carry their information literacy skills from “DeLib 101” with them into WCMC-Q’s medical program or other studies of their choice. Over time, DeLib’s structured assessment may, in some way, assist our students become successful members of Qatar’s knowledge-based economy or other societies in today’s global market place.

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DeLib 101	Standard 1	Standard 2	Standard 3	Standard 4	Standard 5	Avg Score
PILOT	81.6	80.7	88	86.2	67.5	80.8
BIO INFO LIT	92.74	95.1	93.55	93.55	91.74	93.48
Improvement	11.14	14.4	5.55	7.35	24.24	12.68

Figure 1. "DeLib 101" pilot test scores, and quiz scores