Developing Information Literacy for the Maritime Curriculum: Strategy and Pedagogy

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Abstract

"Developing Information Literacy for the Maritime Curriculum: Strategy and Pedagogy" demonstrates the instructional program of the Stephen B. Luce Library in response to the academic requirements of the maritime curriculum. The paper outlines the strategic directions of the Stephen B. Luce Library in developing a comprehensive plan to integrate information literacy for the core curriculum in the areas of maritime studies and scholarship. Furthermore, the study demonstrates pedagogical techniques employed for achieving positive student learning outcomes, methodologies for integrating information literacy through course-integrated lectures, collaborations with the teaching faculty in enhancing the design and development of the maritime curriculum, and implementation of assessment tools to measure student learning outcomes in response to maritime program review and accreditation requirements. In addition, the study demonstrates the expansion of the information literacy instructional program during the two-month semester at sea.

Introduction

Information literacy and the integration of information-literacy instruction are concepts which have been recognized by a variety of assessment tools for measuring learning outcomes as the key to successful student learning. The terms and conditions of information literacy have been defined by the American Library Association (1989) as, "Information literacy is a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (para. 3).

The mission of higher education institutions is to develop lifelong learners with the intellectual abilities of reasoning and critical thinking. In order to achieve consistency in student-learning outcomes, accrediting agencies such as The Middle States Commission on Higher Education (MSCHE), the Western Association of Schools and College (WASC), and the Southern Association of Colleges and Schools (SACS) have incorporated information literacy into discipline-based competency standards for using, managing and evaluating information.

The Boyer Commission Report (1998), *Reinventing Undergraduate Education*, states that students require to engage actively in "'framing of a significant question or set of questions, the

research or creative exploration to find answers, and the communications skills to convey the results..." (p. 27). The Stephen B. Luce Library has incorporated information literacy to the core maritime curriculum in order to create the distinct learning environment for the students to center their information inquiry in relation to discipline-specific problem solving skills.

The Stephen B. Luce Library Information Literacy and Instructional Program

The Stephen B. Luce Library sought the challenge and the opportunity to develop and implement a comprehensive information literacy program that addresses the maritime core courses and reflects the demands of the specialized maritime curriculum.

The maritime curriculum displays academic content and rigor that serve specific sectors of the maritime industry and further the professional opportunities of graduate students. With an unusually large number of credits and undergraduate requirements, in addition to semesters at sea and merchant marine license exams, the maritime curriculum prepares and positions its students for high-level professional opportunities.

Due to the rigorous academic demands of the maritime core curriculum, the Stephen B. Luce Library of SUNY Maritime College adopted an information literacy program which is both equally rigorous and complementary to the maritime core curriculum. The Library's instructional program serves the teaching and learning needs of the SUNY Maritime College through instruction, assessment, and evaluation of scholarly material (print and electronic). In addition, the Library's involvement with the College's curriculum committee plays an integral role during the development and revision of new and pre-existing curriculum programs and courses. The Stephen B. Luce Library instructional and information literacy program focuses on three strategic directions to successfully integrate information literacy to the core curriculum in the areas of maritime studies and scholarship.

Strategic Directions

Strategic Direction #1: Librarian-faculty Collaboration

The first strategic direction was to bridge the divide and elevate the level of collaborations between library faculty and classroom teaching faculty. The Stephen B. Luce Library positioned its subject-specialists to serve as liaisons to the academic departments. In addition to Master's degrees in Library and Information Studies (MLS), all library faculty at the Luce Library hold a second subject Master's degree in science, engineering, and the humanities.

The library faculty have assumed additional responsibilities which allow them to develop close working relationships with the teaching departments. Library faculty attend the academic

department meetings of their respective area of concentration. They schedule information literacy meetings with the teaching faculty. They organize one-on-one or small group tutorial sessions for faculty and students and demonstrate new and existing resources to all faculty. They work along with the teaching faculty to conduct syllabi analysis as it relates to information literacy.

In order to maintain the relevancy of the library's collections, resources and teaching mission, a librarian serves as a voting member on the college's curriculum committee. As part of the curriculum committee's process, the librarian is entrusted to work with any of the teaching faculty and academic departments offering new courses or revising pre-existing courses prior to the courses being brought to the faculty senate for final approval. During the curriculum committee's process, and prior to the committee's approval of any new course or program, the librarian works with the proposing department to identify the learning/teaching objectives of the course and supplement the proposal with additional resources needed. A critical component of the process is identifying the type of bibliographic instruction required to fulfill the development of students' information literacy competency skills.

Strategic Direction #2: Student Outreach

The second strategic direction for carrying out the information literacy program is reaching out to the students of SUNY Maritime College and engaging their sense of inquiry and discovery.

The Stephen B. Luce Library information literacy program is designed to develop students' skills at various levels of their college careers. An extensive library orientation program provides all new students with an introduction to the information literacy concept. Working closely with the Dean of students, the faculty and program coordinator of graduate studies, and the leadership of the Regiment, all incoming students, undergraduate and graduate alike, receive their first library orientation session.

The goals of the first library orientation session are to familiarize the students with the library facility, the physical environment and locations of resources, the history of the library, to remove barriers such as anonymity and introduce familiarity of library personnel. The objective of the first orientation session is to transfer ownership of the library to the students. Phrases such as "your library" and "you belong in the library and the library belongs to you" become the constant refrain during orientation sessions.

The concepts of transferring the library's ownership to the students are reiterated during the followed weeks of students' assimilation to the college and campus life. Subsequent to the first library orientation session, the first and second semester freshman students receive a general

information literacy course integrated session. Most common courses during the first and second semester freshman year are introductory English, History, Science, Engineering and International Trade and Transportation courses. Upper level students receive a more discipline-specific information literacy session; information literacy sessions are taught for English composition courses, American History and American Civilization, Introduction to Business and Economics, General Science, Marine Biology, Oceanography, Computer Science and General Engineering. Graduate level students receive in-depth sessions for various courses, including preparation for the graduate capstone course.

In addition, the Library's Research Assistance program, a one-on-one information literacy consultation session, is available to all students at all levels. The Library's Research Assistance program is widely promoted to students through the library's web portal and campus announcements.

Strategic Direction #3: Tutorials

In order to continue building upon and improving the library's teaching objective, a third strategic direction was established to create print and online publications. The library's print and online publications provide a base line for consistency in teaching and convey a methodology for communicating the information needs of the students. Based on the demands of the curriculum, the Library continuously creates online pathfinders and online research modules (general and discipline-specific) to address the information needs of students. In addition, the library faculty liaisons collaborate with instructors to create course-specific research guides. The library's research publications also serve an additional purpose - to provide the student with the choice and the flexibility to complete their assignments independently outside of the classroom teaching environment.

Pedagogy

The new generation of learners arrives to our campuses far more prepared in computer skills, far more skillful in multi-tasking and far more experimental. The students are also far more demanding in their expectations for instantaneous access to information. To acknowledge the students' new mode of learning the Stephen B. Luce Library set forth to bridge the generation gap by ensuring the information and formats through which it is conveyed to students remains relevant.

As is the case with other types of instruction, the Library is committed to teaching information literacy using various pedagogical techniques to achieve positive student learning outcomes. All information literacy sessions are computer-assisted, utilizing state of the art equipment for

effective multimedia instruction and hands-on experience. General information literacy sessions for freshmen include a library orientation component where students are taught to visually and physically identify various types of sources. Library assignments, both library-only and course integrated are fundamental to all information literacy sessions and are carefully designed to incorporate the Association of College and Research Libraries (ACRL) information literacy standards (ACRL, 2000). Course-specific web tutorials serve to guide students in their research and to reinforce learning beyond the information literacy session.

Methodology

The primary focus for teaching information literacy is to immerse information literacy instruction with regular course work. As Ward (2006) stated "Students do not achieve information literacy by attending one or more library sessions. Rather, students learn relevant information skills when they are systematically integrated and sequenced throughout the curriculum" (p. 397).   Librarian-faculty collaboration and student outreach beyond the basic reference transaction are methods used to systematically integrate information literacy in the maritime curriculum.

The core methodology for integrating information literacy through course-integrated lectures involves close collaboration between librarians and teaching faculty to design the information literacy lectures and to develop assignments that stress critical thinking as well as information literacy skills development. Librarians hold meetings with instructors prior to the information literacy sessions to discuss lesson plans and assignments. During the librarian's lecture it is common practice for instructors to be present in the classroom to further stress to students the course-related importance of the information literacy concept. Course integrated assignments are designed to introduce information literacy as well as to meet the teaching faculty's instructional goals.

For course-integrated information literacy it is essential that the program articulate well with the maritime curriculum. Therefore, the collaboration between teaching faculty and library faculty remains critical in enhancing the design and development of the maritime curriculum as it relates to information literacy. Each librarian serves as liaison to academic departments to provide advice and assistance for course-integrated information literacy, collection development, and information literacy component for the design of new courses or programs and/or revision of pre-existing courses or programs. In addition, the library takes a proactive role in the college-wide curriculum committee to ensure that the library's resources could support the demands of the courses and that information literacy is included in appropriate courses and programs.

Continuing information literacy instruction beyond the classroom on a one-on-one level is the

underline objective of the Library's Research Assistance program.   Optional and available to students on an appointment basis, this program seeks to engage the individual in interactive and hands-on instruction to fulfill research needs for a specific course assignment. This particular instruction method epitomizes the concept that instruction in information retrieval is most effective if it is course-integrated and delivered at the time of need (Fullerton, 1998).

Assessment

Libraries play an important role in helping academic departments meet their accreditation requirements. The information literacy curriculum integrated instruction program is structured in a way that all efforts are concentrated to contributing to program accreditation and program outcomes.

By integrating library instruction into the curriculum, the library provides a quantitative means of documenting progress towards the College's education goals. Course assignments and exercises are used as assessment tools to measure student learning outcomes in response to maritime program review and accreditation requirements. Teaching faculty, in designing course assignments, collaborate with their liaison librarian to make sure students are exposed to a variety of information resources both in formats and types. For example, in American History course, information resources mandatory for the research assignment include primary sources, scholarly articles, and monographs. Library-specific assignments are carefully designed by librarians to test student information literacy skills. These assignments, once completed, are reviewed, graded, and assessed by librarians to measure learning outcomes and the grades are provided to instructors for extra credits. This arrangement of grading the library-specific assignments demonstrates to the students the serious nature of the assignment and encourages them to learn the information literacy concepts (Williams, Blowers, & Goldberg, 2004). Overall quantitative assessment of the information literacy program is measured by statistical data of number of sessions, number of students, and number of faculty. Chart 1 shows a 200% growth in number of students taught in academic year 2005-2006 as compared to academic year 2000-2001.

Information Literacy AY2000-2005

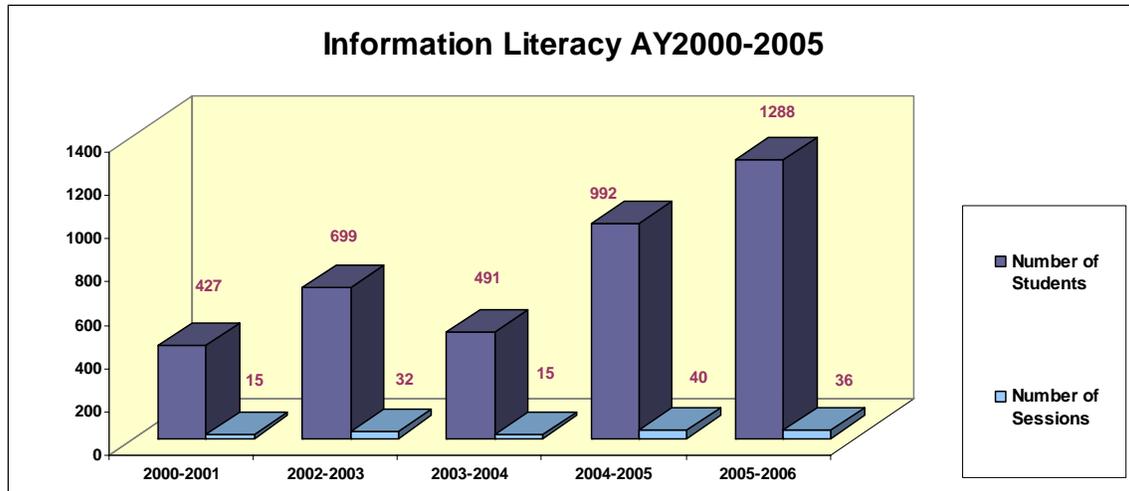|	2000-2001	2002-2003	2003-2004	2004-2005	2005-2006
Number of Students	427	699	491	992	1288
Number of Sessions	15	32	15	40	36

Chart 1

In the case of the Accreditation Board for Engineering and Technology's (ABET) accreditation requirements for engineering programs, among other competencies, institutions must demonstrate that their students attain (ABET, 2006, p. 4):

a. an ability to apply knowledge of mathematics, science, and engineering

b. an ability to design and conduct experiments, as well as to analyze and interpret data

c. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

d. an ability to function on multi-disciplinary teams

e. an ability to identify, formulate, and solve engineering problems

f. an understanding of professional and ethical responsibility

g. an ability to communicate effectively

h. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

i. a recognition of the need for, and an ability to engage in life-long learning

j. a knowledge of contemporary issues

k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

The highlighted educational outcomes of the ABET accreditation requirements demonstrate that the SUNY Maritime College engineering graduates must have a mature understanding of the information environment in which they will work as future engineers. These learning outcomes

required tailored information literacy courses which will provide the graduates with the ability to conduct research throughout their engineering careers.

As a part of the State University of New York General Education Assessment requirement for student learning outcomes, the Stephen B. Luce Library is required to conduct an information literacy assessment exercise on a two-year cycle. The SUNY General Education process of assessing information management skills consists of two objectives:

    (1) Information Management for courses embedded within Library programs and

    (2) Understand and use basic research techniques

The methodology used for assessing each *Knowledge and Skills* Area and *Competency* must demonstrate the following two requirements:

    (1) the assessment criteria used to determine whether students are meeting the program's goals and objectives

    (2) the sampling procedures used to choose students who provided data for the assessment, as well as a description of the sample itself

The 2004 SUNY General Education assessment for information management drew a sample from random bibliographic instruction sessions. Though not distributed across all sessions in which exercise was administered, sample includes students taking English 090, English 101, and Engineering 101 who attended a library instructional session on research skills and select information literacy issues related to their respective sections of English 090, English 101, and Engineering 101. The structure and the content of these library instructional sessions on these topics is highly standardized, providing a fundamental uniformity across the different sessions. Exercises included multiple-choice, short answer, and yes/no questions. Scale for grading was set for 90-100% = exceeding; 70-89% = meeting; 60-69% = approaching; 0-59% = not meeting.

Major findings of this assessment demonstrated that 22 percent of the SUNY Maritime College student exceeded expectations, 39 percent met expectations, 34 percent approached expectations, and 5 percent did not meet expectations.

To improve on teaching information literacy it is essential to continue to learn more about assessment and to participate at some level in planning and conducting assessment (Lindauer, 2004). At SUNY Maritime, librarian's participation in information literacy assessment goes beyond the teaching faculty-librarian collaboration arrangement. Membership on College-wide assessment committees such as Middle States Self Study, ABET Self Study, and Faculty Assessment Committee are opportunities that librarians always take advantage of.

Semester at Sea

Stephen B. Luce Library's information literacy program extends offshore on T.S. Empire State VI, the training ship for SUNY Maritime College. During the 9-weeks' long semester at sea the librarian onboard the Ship's Library is actively involved in planning and conducting information literacy instruction. Staying on course with the program's strategic directions, the Ship's Librarian conducts one-on-one and group/class oriented information literacy sessions. In addition, the Ship's Librarian conducts research sessions on the information needs of all crew members as visitors to international ports and a port facts sheet supplements these sessions.

Conclusion and Future Directions

Information literacy, an issue widely discussed in higher education and an issue mandated as a requirement by accrediting agencies, is recognized by SUNY Maritime as foundationally critical to producing graduates who are lifelong learners. This article illustrated Stephen B. Luce Library instructional program's strategic directions, including the methodology, pedagogy, and assessment techniques, used to effectively integrate information literacy into the maritime curriculum. Librarians are serving as partners in the classroom, collaborating with teaching faculty in a variety of ways to ensure the systematic integration of information literacy in the curriculum. In addition, librarians' efforts reach beyond the classroom as exemplified by the Library's Research Assistance program and the ongoing development of online research guides and pathfinders.

Librarians are looking ahead to improve and expand the instructional program at Stephen B. Luce Library. First, reaching out to the distance learning students is a top priority. Work is already underway to develop a completely online information literacy module to incorporate into online courses. Second, more rigorous procedures to assess the program and learning outcomes are being discussed. Developing a pre/post test to determine student skill levels and to measure effectiveness of information literacy sessions, using the online environment to streamline assessment, and incorporating information literacy assessment in graduate level courses are all future directions for the program.

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