



## Strategy for Information Literacy Development: Management Undergraduate Program at U.S. Coast Guard Academy

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### ABSTRACT

The paper presents an integrated approach of teaching and assessing information literacy at the United States Coast Guard Academy, with specific examples from the Management Program. The success of information literacy at United States Coast Guard Academy is based on the Indiana University framework, a successful collaborative environment, and a new core curriculum that uses a threading approach to expand IL development across disciplines and throughout the four-year curriculum. The future success of IL at CGA will depend on regular assessment and improvement of student development in this critical skill that is essential for success in college, in career advancement, and in life.

**Keywords:** Information literacy, strategy, education, business education

### INTRODUCTION

The continuing growth of non-traditional learning technologies and increasing sources to obtain information for learning and research purposes continue to extend the places where learning occurs beyond the walls of classrooms (Grassian and Kaplowitz, 2001). Also as computer technology advanced, information available to students increased, and access improved, it became vital to tie fundamental concepts of learning skills across all fields to the development of Information Literacy (IL) skills (Cox and Lindsay, 2008). Today, IL is considered to be the most critical skill for students' continued professional growth and lifelong learning (Jarson, 2010). Most studies on IL advocate the integration and development of IL skills across curricula and recommend application of these skills in real-life situations across various assignments, research papers, and presentations (Campbell, 2004; Burkhardt, et al. 2003). Initiatives can be instilled throughout the curriculum and could develop into IL educational instruction that ranges from an undergraduate to a graduate program experience (Bruce, 1997; Owusu-Ansah, 2003).

IL initiatives at the college level are required by AACBS accreditation as they insure that students will become information fluent through IL education. In practice, IL is being taught either as an independent course or integrated into the other curricula (Derakhshan and Singh, 2011). Some studies advocate the integration of IL skills across curricula to allow application of the skills in real situations (Moll, 2009). Specifically tailored IL programs at any college level will benefit students by moving them from just basic IL skills to a point, where they become information fluent. These initiatives become infused throughout the curriculum and become a major component of undergraduate students' experience. Becoming information fluent will not only make students more successful in their studies while at the college, but it will also prepare them for their continued academic career and in fact *lifelong learning* (Niedbala, and Fogleman, 2010). The information sources will continue to grow and information will be more readily

available through a variety of resources. It is the college's responsibility to make sure that IL becomes an important element of undergraduate education and that all students will benefit from it by knowing how to navigate this sea of information to their best advantage.

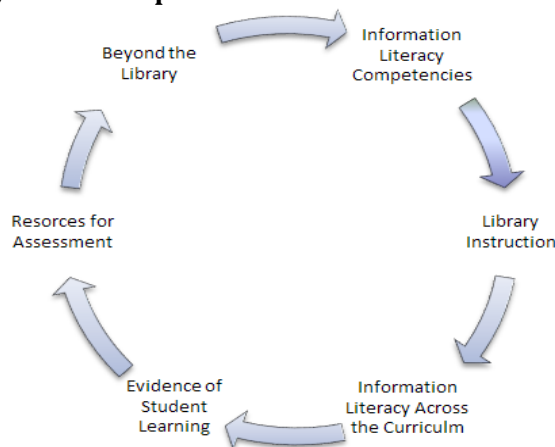
The paper describes an approach at CGA that uses established courses as a starting point for the development of a more structured and integrated IL initiative and suggested IL strategies and techniques that have been successfully implemented at the Department of Management. The success of IL strategies at CGA hinges on excellent collaboration between faculty and the library staff. The CGA librarians assist faculty with the evaluation and selection of intellectual and information materials and resources. Additionally, they provide instruction to students (and faculty) who seek information. The major goal of this paper is to present an approach to IL strategy at the CGA that can be integrated and implemented in any undergraduate program, with a focus on IL modules, outcomes, and assessment tools. The paper also discusses a framework and development strategy for IL education that includes: IL competencies, IL library instruction, IL across curriculum, evidence of student learning of IL skills, resources for assessment of IL skills, and IL beyond the library.

### INFORMATION LITERACY STRATEGY U.S. CGA

IL instruction has been developed across all eight majors at the CGA. Some of the IL initiatives have been introduced and used by individual faculty members for several years and are now integrated throughout the CGA curriculum across all majors. The development of IL at the CGA is fully supported by the library staff. Since the initial development of the program, several changes to the curriculum across various courses within all majors have been accomplished. The IL objectives are based on the Association of College and Research Libraries (ACRL) outcomes that were adopted for the development and assessment of students from freshman to senior year. The IL program is regularly assessed for continuous improvement. As the amount and reliability of available information changes, CGA students are expected to continuously improve their ability to learn how to find, organize, evaluate, and select information that is available from various sources.

The CGA has developed an IL education program that is similar to the model proposed by Indiana University that consists of six key components illustrated in Figure 1.

**Figure 1. IL Strategy for Development of the Information Literacy at the U.S. CGA**



**Source: Developed based on Indiana University:**  
[https://www.ulib.iupui.edu/research/infolit/niloa\\_1](https://www.ulib.iupui.edu/research/infolit/niloa_1)

In order to effectively facilitate IL, an educational program, the CGA first determined and agreed on: (1) *IL Competencies*; (2) *Current Library Instruction*; (3) *IL Across the Curriculum*; (4) *Evidence of Students Learning*; (5) *Resources for Assessment*; and (6) *Beyond the Library*. This strategy facilitates meeting the goal of enabling students to develop and master strong IL skills. Faculty members are responsible for collaborative efforts across all courses throughout CGA. All IL efforts are communicated among all majors for reliability and consistency and the process is coordinated and supervised by the CGA Information Literacy Committee.

### **IL Competencies**

The CGA Management department has agreed on a working definition of IL (Figure 2) that was recommended by the CGA library staff and has been in use across all majors at CGA.

**Figure 2. IL National Forum Definition of Information Literacy**

**National Forum's definition of Information Literacy:** *"the ability to know when there is a need for information, to be able to identify, locate, evaluate and effectively use that information for the issue or problem at hand."*

**Source: National Forum on Information Literacy definition:**

<http://infolit.org/definitions/>

The CGA has also adopted the Association of College and Research Libraries' (ACRL) seven competencies. According to the ACRL, an IL student is someone who can: (1) determine the extent of information needed; (2) access the needed information effectively and efficiently; (3) evaluate information and its sources critically; (4) incorporate selected information into one's knowledge base; (5) use information effectively to accomplish a specific purpose; (6) understand the economic, legal, and social issues surrounding the use of information; and (7) access and use information ethically and legally (Association of College and Research Libraries, 2000). The CGA IL approach guarantees that those skills are developed across the curriculum so that every graduate is IL competent. These competencies are tiered expectations for freshman, sophomore, junior, and senior levels. The introduction and practice of IL standards across CGA curricula has been accomplished through librarian-led sessions, classroom lectures, activities, and modules related to research and writing assignments that have been carefully crafted to ensure that students are developing and mastering IL competencies and skills.

### **Library Instruction**

The CGA library staff has the primary responsibility of facilitating access to information resources and providing instruction on how to use those resources. Access to the appropriate library resources plays an important role in helping students develop and enhance their IL skills. The CGA library staff is required to be active and assist the CGA faculty in the effort to promote IL and help students develop those skills. The CGA library staff supports the Academy's educational and training missions by delivering library services, resources, and facilities to the students, faculty, and staff.

Freshman students are required to attend a library skills session where they are introduced to the library research process, shown how to find books and reference materials, and instructed in the use of general and multi-subject databases. The IL developed during those sessions is built upon and expanded during the freshman year in English and History courses when students are provided instruction on search strategies, specialized databases, and primary

sources in order to complete a specific assignment. Beyond the first year, the library staff provides IL service at the request of faculty and can include in-class sessions of discipline specific resources and resource guides tailored to a single course. The library staff at CGA plays an active role in providing access to information and working with faculty to promote IL.

### IL Across Curriculum

The Management Department at the USCGA has adopted an IL course of study into the current curriculum without developing or adding new courses. This was established to identify the IL components related to the ACRL learning goals and outcomes. Performance indicators were developed, planned, and linked to courses within the current Management major curriculum. An example for the Management major coursework with IL instruction is presented in Table 1.

**Table 1. Management Major Plan of Study and IL Instruction**

<b>Fall Semester</b>		<b>Spring Semester</b>	
<i>Freshman Year</i>		<i>Freshman Year</i>	
0901	<b>USCG History*</b>	2123	<b>Writing About Literature*</b>
1116	Statics and Engineering Design	3117	Calculus II
2111	<b>English Composition and Speech*</b>	4103	Personal Defense I
2141	Leaders in U.S. History	4112	Principles Fitness/Wellness II
3111	Calculus I	5262	Physics I
4102	Principles Fitness/Wellness I	6101	Fundamentals of Navigation
4111	Swimming I	8115	<b>Macroeconomic Principles*</b>
5102	<b>Chemistry I*</b>		
<i>Sophomore Year</i>		<i>Sophomore Year</i>	
2263	American Government	1320	Principles Electrical Communication Systems
4222	Professional Rescuer	3213	Probability and Statistics
52xx	Lab Science	4204	Lifetime Sports I: RQB
8201	Introduction to Management & Business	4214	Lifetime Sports II: Golf
8211	<b>Leadership and Organization Behavior*</b>	2393	Morals and Ethics
8217	Microeconomic Principles	6201	Ships & Maritime Systems
		6202	Applications in Navigation Lab
		8246	Financial Accounting
<i>Junior Year</i>		<i>Junior Year</i>	
2391	Criminal Justice	8342	Marketing
4303	Personal Defense II	4304	Lifetime Sports III: Tennis
6301	Maritime Watch Officer	8349	Financial Management
8331	<b>Management Information Systems*</b>	8363	Operations and Project Management
8348	Managerial Accounting	8366	<b>Leadership and Organization Development*</b>
8357	Human Resources Management		Major Area Elective

	<i>Senior Year</i>		<i>Senior Year</i>
2493	Maritime Law Enforcement	5442	Atmospheric & Marine Science
6401	CG Division Officer	8441	Legal Environment of Business
8443	Strategic Management	8445	Public Management Consulting
	Major Area Elective		Free Elective
	Free Elective		Free Elective
	Physical Education		Physical Education

**\*Courses with a library IL instruction**

### **Evidence of Student Learning**

The Management Department goal is to ensure that Management majors gain IL competency that extends learning beyond formal classroom settings and provides practice with self-directed investigations as the major move into specific research projects, internships, and professional positions within the CG. Assessment tools were developed to measure achievement of each performance indicator within several courses from freshman to senior year. As IL augments students' ability to evaluate, manage, use information, expand knowledge, effective communication, and think critically, Management majors are systematically assessed in these areas. In addition to discipline specific content, individual course content is designed to measure one of more selected competencies that are appropriate for the specific course. The Management Department performance indicators for each IL related student outcomes are linked across numerous courses. Student performance has been assessed in each course on the established performance indicators (Table 2).

**Table 2. Management Department Performance Indicators**

IL Outcomes	Distinguished/Master	Proficient/Journeyman	Progressing/Apprentice	Baseline/Novice
Determine the Extent of Information Needed	<ul style="list-style-type: none"> <li>Effectively defines the scope of the research questions or thesis statements and revises as needed.</li> <li>Identifies all key concepts.</li> <li>Seeks out new information or alternative perspectives and successfully adjusts needs accordingly.</li> </ul>	<ul style="list-style-type: none"> <li>Defines the scope of the research questions or thesis statements completely.</li> <li>Identifies most key concepts.</li> <li>Receptive to new information or alternative perspectives and adjusts needs accordingly.</li> </ul>	<ul style="list-style-type: none"> <li>Defines the scope of the research questions or thesis statements incompletely (parts are missing, remains too broad or too narrow, etc.)</li> <li>Identifies some key concepts.</li> <li>Recognizes the presence of new information or alternative perspectives but does not always adjust needs.</li> </ul>	<ul style="list-style-type: none"> <li>Has difficulty defining the scope of the research questions or thesis statements.</li> <li>Unable to identify key concepts.</li> <li>Does not seek new information or alternative perspectives.</li> </ul>
Access the Needed Information	<ul style="list-style-type: none"> <li>Uses advanced search strategies and fluently navigates various systems and formats to retrieve information.</li> <li>Effectively manages information and continually refines search strategy based on new information.</li> <li>Pursues diverse information sources of appropriate number that are most relevant both within and outside library resources.</li> </ul>	<ul style="list-style-type: none"> <li>Uses simple and advanced search strategies and selects various systems and formats to retrieve information.</li> <li>Effectively manages information and is receptive to new information requiring a change to search strategy.</li> <li>Pursues diverse information sources of appropriate number both within and outside library resources.</li> </ul>	<ul style="list-style-type: none"> <li>Uses basic keywords and simple search strategies and uses more than one research tool.</li> <li>Information is managed at a basic level and search strategy is changed to broaden or narrow results.</li> <li>Information sources are relevant and of good quality but are limited and similar.</li> </ul>	<ul style="list-style-type: none"> <li>Searching is random using a single research tool and ineffective search terms.</li> <li>Information is not managed and new information is disregarded.</li> <li>Information sources are similar, not relevant, and are of low quality.</li> </ul>
Evaluate Information and Sources Critically	<ul style="list-style-type: none"> <li>Chooses a variety of high quality sources appropriate to the scope and discipline of the research questions or theses.</li> <li>Critically and effectively evaluates all information sources for currency/timeliness; relevance to research questions/theses; authority/scholarly value, accuracy/quality, and purpose/bias.</li> </ul>	<ul style="list-style-type: none"> <li>Chooses a variety of information resources that are relevant to research questions or theses.</li> <li>Consistently evaluates all information sources for currency/timeliness; relevance to research questions/theses; authority/scholarly value, accuracy/quality, and purpose/bias.</li> </ul>	<ul style="list-style-type: none"> <li>Chooses a variety of information resources with some relevance to research questions or theses.</li> <li>Evaluates information sources using some of the following criteria: currency/timeliness; relevance to research questions/theses; authority/scholarly value, accuracy/quality, and purpose/bias.</li> </ul>	<ul style="list-style-type: none"> <li>Selects just a few information sources with limited relevance to research questions or theses.</li> <li>Does not evaluate information sources for currency/timeliness; relevance to research questions/theses; authority/scholarly value, accuracy/quality, and purpose/bias.</li> </ul>
Use Information Effectively to Accomplish a Specific Purpose	<ul style="list-style-type: none"> <li>Communicates, organizes, and synthesizes information from sources to fully achieve a specific purpose, with clarity and depth.</li> <li>Construction of new ideas relates to the context of the community of practice.</li> </ul>	<ul style="list-style-type: none"> <li>Communicates, organizes, and synthesizes information from sources. Intended purpose is achieved.</li> <li>Construction of new ideas relates to the context of the major.</li> </ul>	<ul style="list-style-type: none"> <li>Communicates and organizes information from sources. The information is not yet synthesized, so the intended purpose is not fully achieved.</li> <li>Construction of new ideas relates to the context of the course material.</li> </ul>	<ul style="list-style-type: none"> <li>Communicates information from sources. The information is fragmented and/or used inappropriately (misquoted, taken out of context, or incorrectly paraphrased, etc.) so the intended purpose is not achieved.</li> <li>Construction of new ideas is limited to the context of the assignment.</li> </ul>
Evaluate Information and Sources Critically	<ul style="list-style-type: none"> <li>Chooses a variety of high quality sources appropriate to the scope and discipline of the research questions or theses.</li> <li>Critically and effectively evaluates all information sources for currency/timeliness; relevance to research questions/theses; authority/scholarly value, accuracy/quality, and purpose/bias.</li> </ul>	<ul style="list-style-type: none"> <li>Chooses a variety of information resources that are relevant to research questions or theses.</li> <li>Consistently evaluates all information sources for currency/timeliness; relevance to research questions/theses; authority/scholarly value, accuracy/quality, and purpose/bias.</li> </ul>	<ul style="list-style-type: none"> <li>Chooses a variety of information resources with some relevance to research questions or theses.</li> <li>Evaluates information sources using some of the following criteria: currency/timeliness; relevance to research questions/theses; authority/scholarly value, accuracy/quality, and purpose/bias.</li> </ul>	<ul style="list-style-type: none"> <li>Selects just a few information sources with limited relevance to research questions or theses.</li> <li>Does not evaluate information sources for currency/timeliness; relevance to research questions/theses; authority/scholarly value, accuracy/quality, and purpose/bias.</li> </ul>
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**Source: the CGA Library; based on Association of College and Research Libraries, "Information Literacy Competency Standards for Higher Education," *College Res. News*, 61(3), (2000): 207-215.**

Table 2 presents the US Coast Guard Academy's instrument for assessment of the IL skills. Management majors are expected to be evaluated on IL skills within the following five competences: (1) *Determine the Extent of Information Needed*; (2) *Access the Needed Information*; (3) *Evaluate Information and Sources Critically*; (4) *Use Information Effectively to Accomplish a Specific Purpose*; and (5) *Obtain and Use Information Ethically and Legally*. They are evaluated across four years of the undergraduate program. Cadets' expected mastery level of IL skills increases during the four years of study. For example, freshman students are expected to master IL skills at a *Baseline/Novice* level, sophomore students a *Progressing/Apprentice* level, junior students at a *Proficient/Journeyman* level, and senior students at a *Distinguished/Master* level as illustrated in Table 2.

### Resources for Assessment

As collaboration between the library and CGA faculty is important in promoting a learning environment conducive to developing the IL skills, Table 3 illustrates shared responsibilities for learning IL skills across the Academy. The CGA adopted grading rubrics to ensure that the competencies are consistently assessed and evaluated by individual instructors. Students receive the grading rubric together with the assignment to ensure that the expectations of the instructors are known.

**Table 3. Shared Responsibilities for Learning IL Skills**

	Information Literacy Skills	Responsibility
Know	Determines the nature and extent of information needed	Starts with the faculty member; reinforced by librarians
Access	Efficiently & effectively accesses information sources	The librarian usually leads with faculty support
Evaluate Sources	Critically evaluates information Sources	The librarian may lead initially; faculty make the ultimate determination from students' work products or performance
Evaluate Content	Critically evaluates information content; considers impact on student's prior knowledge, value system, and future direction in life	Faculty leads in classroom or other course context; student also may consult librarians, external subject experts, or peers
Use	Uses information found to accomplish a specific purpose	Faculty leads; can be reinforced by librarians
Ethic/legal aspects	Understands the economic, legal, and social issues surrounding the acquisition and use of information	Faculty and librarians jointly and continuously

### Beyond the Library

Librarians have the primary responsibilities of facilitating access to information resources and providing instructions on how to use those resources. As such, access to the appropriate library resources plays an important role in helping students develop and enhance their information literacy skills. One challenge in building an IL program is to develop a strategy that involves a well-balanced approach to associated elements, tasks, and responsibilities among CGA library staff and academic faculty. The resources needed to support an IL program include personnel, fiscal responsibility, technology, and other services. The CGA faculty and librarians provide IL instruction and continue to develop a curriculum in an atmosphere of collaboration, including professional development opportunities and incentives. Table 4 presents the shared responsibilities amongst library staff, faculty and the Administration at CGA.

**Table 4. IL CGA Elements, Tasks, and Responsibilities Shared**

Component	Tasks	Responsibility
IL Competencies	Establish definition and develop IL competencies	Academy-wide IL Development and Implementation Committee
Library Instructions	Provide access to information, assist students and faculty with IL needs and requests	CGA library staff
IL Across Curriculum	Standardize IL competencies across all majors, develop IL curriculum map, implement into existing assessment	Freshman Course Coordination Committee, Curriculum Committee, Department Heads/ Section Chiefs and Accreditation Teams
Evidence of Student Learning	Collect and assess data on IL competencies /standards across curriculum, propose actions for continuous improvement	Assessment coordinator, section chiefs, and department heads
Resources for Assessment	Determine the needs and provide resources to support IL standards	Dean of Academics, Director of Academic Resources, Library Director

A well-developed and comprehensive IL program assessment plan is essential to improve outcomes in academic IL initiatives. To meet the goal of continuous improvement, the overall assessment of the program at CGA addresses the following: (1) Determine the extent to which instructional programs are successful in helping students acquire their IL skills; (2) Regularly monitor the progress of students during the academic year so that appropriate adjustments can be made to ongoing instruction; (3) Identify students who need intervention to advance IL performance; and (4) Monitor and assess the adequacy of available IL resources. IL strategic approach requires providing funding for adequate resources and creating opportunities for collaboration and staff development among faculty, librarians, and other professionals. The challenge in providing an effective IL program is to continuously assess a comprehensive range of strategies including resources and collaboration between faculty and library staff.

### CONCLUSIONS

The development of IL skills is vital for students who are challenged with an increasing amount of choice in the range and quality of information resources available to them. The CGA as an undergraduate academic institution has already responded to these challenges of developing and enhancing IL initiatives to develop the IL skills. Undoubtedly, individual faculty, librarians, and administrative staff have been addressing many aspects of IL development and mastery as they promote an institution wide approach that is woven into the curriculum progressively from freshmen through senior year.

IL forms the basis for *lifelong learning*. It is common to all disciplines, learning environments, levels of education, and particularly to the education of the Coast Guard leaders. The Management Department's IL program will be designed with the intent to enable cadets to master content, extend their investigations, become more *self-directed*, and place them in control over their own learning. The attainment of the educational outcomes is based on Association of College and Research Libraries (ACRL) outcomes. The challenge of today's research is not to find information but how to find, organize, and evaluate the validity of the vast array of information available. The CGA IL strategy described is based on the model proposed by Indiana University that uses: (1) IL Competencies; (2) Current Library Instruction; (3) IL Across Curriculum; (4) Evidence of Students Learning; (5) Resources for

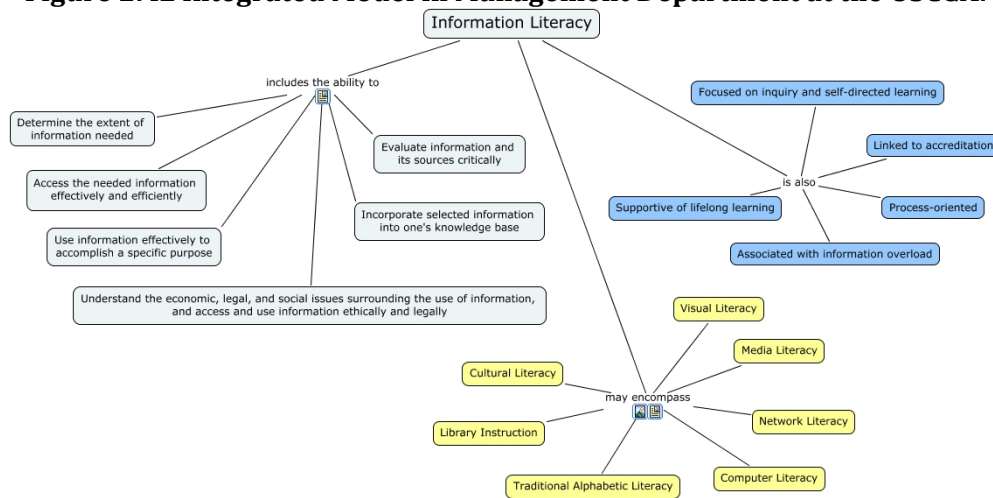


Assessment; and (6) IL Beyond the Library. All six platforms are fully integrated and must be continuously developed, assessed, and revised based on the needs of the academic institution. To help meet the goals for improving IL outcomes, assessments at the Management Department must serve three purposes:

3. To determine the extent to which instructional programs are successful in helping all cadets meet and hopefully exceed undergraduate grade-level standards by the end of the year.
4. To monitor the progress of all cadets during the academic year so that appropriate adjustments can be made to ongoing instruction.
5. To assist in the identification of cadets, at the beginning of the year, who may need instructional intervention to advance IL performance toward basic standards. These identified cadets' low IL skills are likely to seriously interfere with their ability to conduct self-directed study and research projects during their senior year at the CGA and subsequently in their CG career and graduate studies.

Management Department faculty will evaluate the model and assessment process proposed in a number of ways, focusing primarily on course assessment data, followed by Management Department's program level rubric assessment data, the implementation of the program-wide plan, and the collaboration and communication between Management faculty and other academic departments. Based upon the findings of empirical research which demonstrate the effectiveness of rubrics as reflected in the attainment of higher grades, assessment and evaluation of IL in the Management Department will use the rubric method for an assessment analysis (Reddy, 2007). Rubrics can be employed to standardize and equalize any assessment process by employing consistent evaluation criteria, regardless of the target of evaluation.

**Figure 2. IL Integrated Model in Management Department at the USCGA.**



Based on the above analysis, it can be concluded that the IL strategy at the CGA is based upon an *integrated model*. A graphical representation of the Management Department's IL Integrated Model is provided in Figure 2. Contextualizing IL skills and concepts within a Management major field of study or chosen coursework will add meaning and value to those skills (Illustrated in Figure 2 as "INCLUDES THE ABILITY TO") and also gives cadets an opportunity to use and apply IL skills in ways that are authentic. It is being proposed that Management Department's vision of an integrated IL program will include:

6. IL competencies based on the Association of College and Research Libraries (ACRL) IL Competency Standards for Higher Education with tiered expectations for freshman, sophomore, junior, and senior levels (Illustrated in Figure 2 as "INCLUDES THE ABILITY TO");

7. Introduction and practice of IL concepts and skills through librarian-led sessions, classroom lecture and activities, outside Management major modules, and research and writing assignments, most often as part of regular coursework (Illustrated in Figure 2 as “IS ALSO”);
8. Assessment of IL competency through varied means including authentic performance assessments of research papers or portfolios using rubrics and standardized tests as being selected and approved by Management faculty within next couple of semesters (Illustrated in Figure 2 as “INCLUDES THE ABILITY TO”); and
9. Shared responsibility of IL teaching and assessment between library faculty and faculty members within and outside of the library (Illustrated in Figure 2 as “MAY ENCOMPASS”).

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