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Using the ACRL Information Literacy Competency Standards for Higher Education to Assess a University Library Instruction Program

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Abstract

The Reference and Instruction Department at Oregon State University (OSU) was charged with creating a vision and goals for its instruction program. This article describes how we used the recently published ACRL Information Literacy Competency Standards for Higher Education as a framework for an initial self-study of our instructional practice and for promoting the concept of information literacy at our institution. The process of assessing our current practice led to discussions with library and campus faculty about the value of information literacy and to a clearer articulation of our instructional mission.

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Using the *ACRL Information Literacy Competency Standards for Higher Education* to Assess a University Library Instruction Program

Information literacy competency is a more common element of general education requirements in higher education [1]. Consequently, an effective library instruction program will incorporate the concept. The Reference and Instruction Department at Oregon State University's (OSU) Valley Library was charged with preparing a vision statement for our instruction program with specific goals. In articulating our vision, we realized we must understand how information literacy competencies were being addressed. In this article, we describe the initial self-study of our instruction practice using the ACRL Information Literacy Competency Standards for Higher Education [2] (ILC's) as a benchmark. We discuss the results of our assessment, detail the follow-up to that effort, and describe the challenges and successes we experienced both within and outside the library.

Evaluation of Instruction

The motivation for evaluating library instruction programs is both internal and external. Library instructors desire to meet the needs of their students and want to know how effectively they do so. Accrediting agencies place increased emphasis on accountability for demonstrating student learning outcomes.[3]

Bober, Poulin, and Vileno [4] point out several compelling reasons for evaluating library instruction. One of these is to use the results for improving the quality of the program. A second reason is for professional development of teaching staff. A third reason is more strategic; proving the value of such instruction furthers the larger educational goals of the various disciplines and the institution as a whole. It is only this type of accountability that will result in institutionalized curricular changes. All of these reasons played a role in approaching our own program assessment. Evaluations of entire programs are not common.[5] Our review of the recent library literature found nothing similar to our initial self-assessment process. As Colburn and Cordell point out "assessment in library instruction programs most often means assessment

of the instruction session…[which] has not, in most cases been particularly useful." [6] Our

instruction program evaluation has been comprised of largely this type of "reaction" data from

students and the requesting faculty member. The evaluation materials for library instruction

programs created by the Research Committee of the Library Instruction Round Table [7] do not

include any approaches similar to our standards-based program evaluation.

One means of assessing a program is to select benchmarks for comparison. One looks

at the "gap" between existing practice and desired position, and analyzes what needs to be

done to close that gap. Certainly standards for library instruction programs in academic

institutions have existed for years. The ACRL ILC's seemed the logical benchmark, however,

because it provides the most current model and has been adopted by several states' Boards of

Higher Education.

We developed an assessment tool for our current instruction practices using the ACRL

ILC's as a framework. The results served as the basis for discussions with the library's teaching

faculty about our goals for our program and the measures needed to reach them. In addition, we

identified "priority" competencies to use as a starting point for conversations with key faculty and

programs on campus.

Overview of the existing program

OSU is a Carnegie I Research institution with Land, Sea and Space grant status. There

are approximately 17,000 undergraduate and graduate students from every state in the nation

and about 80 other countries. Instruction in the use of the library has been a part of librarians'

responsibilities for many years here. Our "program" has consisted largely of individual sessions

requested by faculty for discipline-based classes at all levels, from freshmen to graduate

students. Classroom space has always been provided in the library. In the 1970's and 1980's,

several credit courses were developed, usually 1 or 2 credit seminars, for various disciplines

such as English, Chemistry, Engineering and Agriculture. Additionally, printed (and now web based) materials such as subject research guides and help pages for specific tools have been provided. With the increase in electronic access and resources, online tutorials have also evolved. Although we have attempted over the years to include a more systematic introduction to research proficiency in fundamental areas of the undergraduate program, such as the writing intensive curriculum, we have been largely unsuccessful.

OSU does not currently have an information literacy requirement as part of its baccalaureate core program. Like many academic libraries, we would like to see information literacy instruction better integrated into the curriculum. [8] We believe we first need to raise awareness and promote the importance of this set of skills as an essential part of creating students who can be successful both during their academic careers and beyond. Additionally, we want to position the Library and its instructional program as a significant resource to achieve this end. We can build awareness about the value of information literacy through our individual contacts with faculty and through our instructional work with students. To effectively articulate these ideas on campus, however, we needed to be clear among ourselves as a teaching faculty what we are trying to accomplish with our current instruction efforts as well as what we want to work towards.

Assessing our Current Practice

The assessment of our current instruction practice involved surveying and analyzing our library's instructors regarding their use of competencies in their teaching. We also produced a statistical summary examining our instruction over the past year.

In creating the survey instrument (see Appendix 1) to make this assessment, we tailored the ACRL ILC's to our institutional situation. We reordered them based on a more logical research strategy, dropped some which seemed inappropriate for our situation, and integrated

some of our own competencies which had been developed during the revision of our online

tutorial. We selected those ILC's which seemed most appropriate for introduction at the lower

division academic level, and, those which librarians seemed to be uniquely qualified to teach.

The survey was distributed to our library teaching faculty, who responded to the

following questions based on the previous year's instruction in each discipline for which they

were responsible. For each selected outcome/performance measure, we asked librarians to

indicate:

1. How do you teach this? Choices included:

    a. one-shot general sessions

    b. one-shot subject specific sessions

    c. a credit course

    d. a Web-based tutorial

    e. one-on-one at the Reference Desk

2. At what level do you teach this? Choices included:

    a. lower division undergraduate

    b. upper division undergraduate

    c. graduate

3. Ideally, at what level would this outcome be introduced to students?

    a. Lower division undergraduate

    b. upper division undergraduate

    c. graduate

Library instructors found the survey very difficult to complete. Difficulties arose from

several factors. First, librarians tend to "teach to assignments," that is, we teach what is needed

for students to complete the research assignment as given by the classroom instructor.

Identifying competencies within these very disparate types of assignments is difficult because

assignments may or may not concretely address specific information literacy competencies. Conversely, assignments may address parts of multiple competencies. Second, inclusion of the "outcomes" with the competencies and performance indicators introduced duplications, discrepancies and contradictions that were difficult to reconcile. In many instances, librarians may have taught one of the outcomes or a piece of an outcome, but the majority of the performance indicator or the competency was not addressed.

Primary competencies determined

We analyzed 27 surveys in terms of the frequencies with which the ILC's were addressed.[*] Our survey results confirmed that our librarians felt the competencies and outcomes included in the survey are ideally introduced to students at the lower division undergraduate level. In spite of the "ideal" level of introduction to lower division undergraduates, much of our instruction on all these competencies takes place in upper division and graduate level sessions. Several competencies surfaced as "priorities" (see Figure 1). They are addressed more often than others and at all levels of instruction from lower division undergraduate to graduate students. The top eight competencies in priority order as determined by their total frequency across all types of instruction include:

1) 1.1.e. Identifies key concepts and terms that describe the information need.

2) 2.3.a. Uses various search systems to retrieve information in a variety of formats.

3) 2.1.c. Investigates the scope, content and organization of information retrieval systems.

4) 2.2.b. Identifies key words, synonyms and related terms for the information needed.

5) 2.2.d. Constructs a search strategy using appropriate commands for the information retrieval system selected.

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[*] For additional information or copies of the raw data, please contact Jeanne Davidson; Jeanne.Davidson@orst.edu or 121 The Valley Library, Oregon State University, Corvallis, OR 97331.

6) 2.3.c. Uses specialized online or in person services available at the institution to retrieve information needed.

7) 1.2.c. Identifies the value and differences of potential resources in a variety of formats.

8) 1.1.c. Explores general information sources to increase familiarity with the topic.

[Figure 1]

These priorities can be seen particularly in the one shot classes, both General and Subject Specific. The ordering of these competencies is not as clearly defined in the online tutorial or the credit courses. In these two categories, the majority of our "priority competencies" placed within the top 50%, but numbers 2, 3, and 6 fall very low in the frequency observations. These are also very small samples within the overall observations**.**

Four of the eight priority competencies are addressed substantially at the Reference Desk (see Figure 1). The top eight outcomes that are addressed at the reference desk, in priority order, (competencies also identified as "priority" competencies are indicated by *) included:

1) *1.1.e. Identifies key concepts and terms that describe the information need.

2) 2.3.b. Uses various classification schemes and other systems to locate information resources within the library or to identify specific sites for physical exploration.

3) 1.1.d. Defines or modifies the information need to achieve a manageable focus.

4) *2.3.c. Uses specialized online or in person services available at the institution to retrieve information needed.

5) 2.5.a. Selects among various technologies the most appropriate one for the task of extracting the needed information.

6) *2.3.a. Uses various search systems to retrieve information in a variety of formats.

7) *2.1.c. Investigates the scope, content and organization of information retrieval systems.

8) 2.1.d. Selects efficient and effective approaches for accessing the information needed from the investigative method or information retrieval system.

In addition to the survey of our library teaching faculty's intuitive use of the ACRL ILC's, we looked at the statistics compiled from our instructor reports during this period. Our current instructional program consists primarily of one-shot sessions connected to specific classes and assignments. Eighty seven percent of our instruction in 1999/2000 related to a particular discipline (see Figure 2).

[Figure 2]

Our instruction statistics indicated that although 61% of our sessions are for upper division (300, 400 level) undergraduate and graduate courses (see Figure 3), 52% of the students we teach are in lower division undergraduate (100, 200 level) classes (see Figure 4).

[Figure 3]

[Figure 4]

Discussions with Library Faculty

Three primary issues were gleaned from the formal and informal discussions with library teaching faculty. First, we recognized that we lacked a clearly articulated mission and goals for our instructional program. We also realized that teaching librarians did not agree on the fundamental role or desirability of teaching to outcomes and/or to the ACRL ILC's. We also found that moving to a more programmatic approach to instruction, assuming all agreed it was desirable, requires a variety of types of support.

Without a clearly articulated mission statement, we cannot incorporate library instruction goals into the mission and goals of the library as a whole. In addition, without a clear conception of the impact of either meeting or not meeting library instruction goals, we cannot clearly express the needs we have for resources and administrative support. This lack of clarity and articulation also hampers fully engaging with faculty in constructive conversations related to the role of information literacy in the university's curriculum.

Library instructors did not all agree that a more programmatic approach to our library instruction would be beneficial. Our discussions highlighted the recognition that outcomes-based teaching and adopting the ACRL ILC's as the basis for an instruction program is a fundamental change in approach for many librarians. A change of this magnitude presents support issues in areas such as instructional design and assessment. In addition, librarians also need strategies for communicating library instructional goals and methods more clearly to university faculty.

Several librarians expressed the need for additional resources and training in instructional design, especially related to classroom activities and assignments. Most class sessions we do are designed in response to assignments designed by faculty members in the discipline areas. Librarians need to be able to negotiate with faculty about the information literacy goals for any given assignment. Then they must be able to help tailor the assignment to better support the mutually agreed upon outcomes.

Assessment of student learning is also an important area needing additional support. Librarians often think of assessment as a formal process, but informal strategies for assessing student learning can be easily incorporated as class session activities. Assessment, both formal and informal, can be very effective for engaging faculty in conversation about goals for library instruction.

Much work remains to be done in identifying the fundamental role of the ILC's in our instruction program. We all agreed with the essence of what they promote, and our survey of instructional practice demonstrated that we try to incorporate many of the major ideas into our instructional sessions. However, if we adopt them as the basis for our program, must we move to outcomes-based instruction? If so, what does that look like in terms of everyday teaching practice, specifically to our traditional "teaching to assignments"? Finally, are the ACRL ILC's the best articulation of the "outcomes" we want to address?

University-Wide Discussions

This assessment of current practice also led to the identification of needs for university-wide participation. Having determined core competencies ideally taught at the lower division undergraduate level, we identified two heavily enrolled first-year programs and the Writing Intensive Curriculum (WIC) program as potential partners for collaboration. In addition, the importance of involving faculty across campus in continuing discussions of ILC's led us to identify two key committees for contact in the coming year: the university's Advancement of Teaching Committee, and the Baccalaureate Core Committee.

Collaboration has already begun with the English composition program. We asked to be involved with a recent curriculum revision of the required first year composition course. Several of the library's instructors have been involved in emphasizing and developing a library research component for the program. We have also begun collaborating, albeit on a smaller scale, with Communications 111, another heavily enrolled course in the baccalaureate core. The coordinator of the (WIC) program has long been an advocate for information literacy. She regularly invites librarians to the seminars she holds for WIC faculty. We have been invited to work with faculty on creating assignments that promote information literacy. She is also in favor of the idea of using juniors and seniors enrolled in WIC program courses for a broad-based

assessment of student information literacy competence which we anticipate conducting in the coming year.

The charge to the university's Advancement of Teaching Committee is to provide professional development for faculty across the university focused on teaching. We anticipate that this committee may be a key point of contact to begin working with faculty on design of assignments to address information literacy.   The university Baccalaureate Core Committee is another important point for collaboration because any university-wide information literacy competency requirement must be approved by this committee.

Benefits and Conclusions

The assessment itself served as a good introduction to the ACRL ILC's for the library's teaching faculty. Many had not had the occasion to really look at the competencies and grapple with how they fit within our teaching practices. Many of the library faculty reiterated what we had already concluded in preparing the assessment, the standards, performance indicators and outcomes were sometimes redundant and, in their totality, overwhelming.

The results of the assessment also highlighted the inefficiencies in our current program such as teaching the same things at all levels of the curriculum. This provided an additional impetus to identify areas within the university curriculum upon which to focus our efforts, especially at the lower division undergraduate level. Comprehensive work with lower division students will hopefully provide a foundation upon which to base teaching higher level skills and concepts in upper division subject-based classes.

Following completion of the assessment we discussed the ramifications of outcomes-based instruction and a more programmatic approach to library instruction. By increasing the awareness of everyone's current instructional activities and philosophies, these discussions created a venue in which library faculty could focus on instructional issues.

We recognized some important differences in philosophy of and approaches to library instruction. Some of these differences can be alleviated with assistance and professional development. Although others remain, we were able to identify common ground upon which to build a shared understanding of our instructional mission. We can now communicate this mission and its goals more widely among library staff and administration as well as when working with faculty outside the library. Finally, we have identified several major initiatives currently underway and have taken the opportunity to participate.

Endnotes

1. Carla Higgins and Mary Jane Cedar Face, "Integrating Information Literacy Skills into the University Colloquium: Innovation at Southern Oregon University," *Reference Services Review* 26, no. 3-4 (1998): 17-31; Carroll H. Varner, Vanette M. Schwartz and Jessica George, "Library Instruction and Technology in a General Education 'Gateway' Course: The Student's View," *The Journal of Academic Librarianship* 22 (December 1996): 355-359; Rachel F. Fenske and Susan E. Clark, "Incorporating Library Instruction in a General Education Program for College Freshman," *Reference Services Review* 23 (fall1995): 69-74.

2. Association of College and Research Libraries, *Information Literacy Competency Standards for Higher Education*. (Chicago: Association of College and Research Libraries, American Library Association, 2000).

3. Nancy W. Colburn and Rosanne M. Cordell, "Moving from Subjective to Objective Assessments of Your Instruction Program," *Reference Services Review* 26, no.3-4 (1998): 125-137.

4. Christopher Bober, Sonia Poulin and Luigina Vileno, "Evaluating Library Instruction in Academic Libraries: A Critical Review of the Literature, 1980-1993," *The Reference Librarian* 51/52 (1995): 53-71.

5. ibid.

6. Colburn and Cordell, p.125.

7. Diana D. Shonrock, ed., *Evaluating library instruction: sample questions, forms, and strategies for practical use.* (Chicago: Research Committee, Library Instruction Round Table, American Library Association, 1996).

8. cf. Bober, Poulin, and Vileno.

References Cited

Association of College and Research Libraries. 2000. *Information Literacy Competency Standards for Higher Education.* Chicago: Association of College and Research Libraries, American Library Association.

Bober, Christopher, Sonia Poulin and Luigina Vileno. 1995. Evaluating library instruction in academic libraries: A critical review of the literature, 1980-1993. *The Reference Librarian* 51/52: 53-71.

Colburn, Nancy W. and Rosanne M. Cordell. 1998. Moving from subjective to objective assessments of your instruction program. *Reference Services Review* 26 n.3-4: 125-137.

Fenske, Rachel F. and Susan E. Clark. 1995. Incorporating library instruction in a general education program for college freshman. *Reference Services Review* 23 (fall): 69-74.

Higgins, Carla and Mary Jane Cedar Face. 1998. Integrating information literacy skills into the university colloquium: Innovation at Southern Oregon University. *Reference Services Review* 26 n. 3-4: 17-31.

Shonrock, Diana D., ed., 1996. *Evaluating library instruction: sample questions, forms, and strategies for practical use*. Chicago: Research Committee, Library Instruction Round Table, American Library Association.

Varner, Carroll H., Vanette M Schwartz, and Jessica George. 1996. Library instruction and technology in a general education 'Gateway' course: the student's view. *The Journal of Academic Librarianship* 22 (December): 355-359.

Appendix 1: Survey Instrument

Dear Colleague:

The RI Instruction Workgroup is making an assessment of the OSU Libraries' current practice of library instruction. We are using the ACRL "Information Literacy Competency Standards for Higher Education" (http://www.ala.org/acrl/ilstandardlo.html) as the basis for this survey. Other documents which have been consulted and incorporated as appropriate are the ACRL Instruction Section "Objectives for Information Literacy Instruction by Academic Libraries (Draft)" (http://www.libraries.rutgers.edu/is/projects/objectives/Objs.html)[*] and "Information Technology Literacy Competencies" (OSU Libraries, http://osulibrary.orst.edu/staff/davidsoj/competencies.htm). It is our intent to describe as accurately as possible those library instruction activities and practices which most reflect what we are actually doing in our library instruction program.

For **each department** (see the Valley Library Subject Librarian List at: http://osulibrary.orst.edu/staff/sublist.htm) for which you are subject librarian please describe the bibliographic instruction which you provide. Indicate which of the standards, indicators and outcomes you address in your instruction activities (e.g., general v. subject specific one shot, credit class, etc.) and at what level (e.g., lower division undergraduate, upper division undergraduate, graduate) you address them. We are primarily interested in the information for those departments for which you **provide instruction for students** (not research centers, institutes, etc.)

We have provided 2 survey sheets and encourage you to make photocopies for additional departments for which you are responsible. We would like you to provide a sheet for each department even though you may not provide instruction for that department at this time.

Standards, Performance Indicators, Outcomes and Objectives

The RI Instruction Workgroup of the OSU Libraries in its use of the ACRL "Information Literacy Competency Standards for Higher Education" (http://www.ala.org/acrl/ilstandardlo.html) has determined to use a two level approach. Our initial level (provided below) is considered as a basic level, and we have selected portions of the ACRL document for inclusion. We have retained the number/letter designations of the ACRL document in order to make comparisons with the original document and other documents based upon it easier. In some cases we have reordered outcomes under the indicators to more accurately reflect the current OSU Libraries teaching approach. If we have chosen not to include an ACRL standard, performance indicator, or outcome we have omitted the number/letter for that item. We have also ensured that the information literacy competencies previously endorsed by the department (http://osulibrary.orst.edu/staff/davidsoj/competencies.htm) are all represented in this document as well.

Standard One
The information literate student determines the nature and extent of the information needed.

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[*] Since our use of the draft "Objectives" in 2000, they have been approved by ACRL and are currently located at: http://www.ala.org/acrl/guides/objinfolit.html.

Performance Indicators:

1. The information literate student defines and articulates the need for information.

Outcomes Include:
1.1.b. Develops a list of questions or a thesis statement related to the topic.

1.1.e. Identifies key concepts and terms inherent in the thesis statement or question.
- Can list terms that may be useful in locating information on a topic.
- Identifies and uses appropriate general or subject-specific sources to discover terminology related to an information need.
- Recognizes that a research topic may have multiple facets or may need to be put into a broader context.
- Can identify more specific concepts that comprise a research topic.

1.1.c. Explores general information sources to increase familiarity with the topic
- Knows that there are both general and subject-specific sources that can provide background information on a topic.
- Recognizes the difference between general and subject-specific information sources.
- Knows when it is appropriate to use a general and subject-specific information source (e.g., to provide an overview, to give ideas on terminology).

1.1.d. Refines and modifies the information need to achieve a manageable focus
- Understands that the initial question might be too broad or narrow.
- Narrows a broad topic and broadens a narrow one by modifying the scope or direction of the question.
- Understands that the desired end product will play a role in focusing the question.
- Understands that the search for background information will help provide an initial understanding of the topic that begins the process of focusing.
- Knows that the course instructor and librarians can assist in finding a manageable focus for the topic.

2. The information literate student identifies a variety of types and formats of potential sources for information.

Outcomes Include:
1.2.b. Recognizes that knowledge can be organized into disciplines that influence the way information is accessed
- Understands that there are three major disciplines of knowledge -- humanities, social sciences, sciences – and that there are subject fields that comprise each discipline.
- Understands the importance of relevant subject field- and discipline-related terminology in the information research process.
- Understands how books and journals fit within a particular discipline or subject field and affect the researcher's access to information.

1.2.c. Identifies the value and differences of potential resources in a variety of formats (e.g., multimedia, database, web site, data set, audio/visual, book)
- Recognizes that information is available in various formats.
- Understands that the format in which information appears may affect its usefulness for a particular information need.

1.2.d. Identifies the purpose and audience of potential resources (e.g., popular vs. scholarly, current vs. historical)

- Distinguishes characteristics of information provided for different audiences.
- Can identify the intent or purpose of an information source; this may require use of additional sources.

3. The information literate student considers the costs and benefits of acquiring the needed information.

Outcomes Include:
1.3.a. Determines the availability of needed information and makes decisions on broadening the information seeking process beyond local resources (e.g., interlibrary loan; using resources at other locations; obtaining images, videos, text, or sound)
- Can determine if material is available immediately.
- Knows how to use other services to obtain desired materials or alternative sources.
1.3.c. Defines a realistic overall plan and timeline to acquire the needed information
- Searches for and gathers information based on an informal, flexible plan.
- Acts appropriately to obtain information within the time frame required.

4. The information literate student reevaluates the nature and extent of the information need.

Outcomes Include:
1.4.a. Reviews the initial information need to clarify, revise, or refine the question
- Recognizes that a research topic may require revision, based on the amount of information found (or not found).
- Recognizes that a topic may need to be modified based on the content of information found.
- Understands that it is not always necessary to abandon a topic if an initial search for information was not successful.
1.4.b. Describes criteria used to make information decisions and choices
- Understands that the intended audience influences information choices.
- Understands that the desired end-product influences information choices (e.g., visual aids or audio/visual material may be needed for an oral presentation).
- Recognizes the need to consider various criteria, such as currency. (See also 2.4. and 3.2.)

Standard Two
The information literate student accesses needed information effectively and efficiently.

Performance Indicators:

1. The information literate student selects the most appropriate investigative methods or information retrieval systems for accessing the needed information.

Outcomes Include:
2.1.c. Investigates the scope, content, and organization of information retrieval systems
- Understands the structure and components of the system or tool being used, regardless of format.
- Can identify the source of help within a given information retrieval system and use it effectively.

- Can identify what types of information are contained in a particular system (e.g., not all databases are full text; content of catalogs, periodical databases, and Web sites).
- Demonstrates appropriate use of the library catalog (e.g., to identify book and journal holdings).
- Distinguishes among indexes, online databases, and collections of online databases, as well as gateways to different databases and collections.
- Selects appropriate tool(s)--indexes, online databases, etc.--for research on a particular topic.
- Recognizes the differences between Internet search tools and subscription or fee-based databases.
- Identifies and uses search language and protocols (e.g., adjacency) appropriate to the retrieval system.
- Determines the period of time covered by a particular source.
- Identifies the types of sources that are indexed in a particular database or index (e.g., an index that covers newspapers or popular periodicals and a more specialized index to find scholarly literature).
- Understands when it is appropriate to use a single tool (e.g., using only a periodical index when only periodical articles are required).
- Distinguishes between full-text and bibliographic databases.

2.1.d. Selects efficient and effective approaches for accessing the information needed from the investigative method or information retrieval system
- Selects appropriate information sources and determines their relevance for the current information need.
- Determines appropriate means for recording or saving the desired information (e.g., printing, saving to disc, photocopying, taking notes).
- Analyzes and interprets the information collected using a growing awareness of key terms and concepts to decide whether to search for additional information or to identify more accurately when the information need has been met.

2. The information literate student constructs and implements effectively-designed search strategies.

Outcomes Include:
2.2.a. Develops a research plan
- Understands that there is a process to searching for information.
- Recognizes that there are different types of information (e.g., background/specific), which may be suitable for different purposes.
- Gathers and evaluates information and appropriately modifies the research plan as new insights are gained.

2.2.b. Identifies keywords, synonyms and related terms for the information needed
- Identifies keywords or phrases that represent a topic.
- Understands that different terminology may be used in general sources and subject-specific sources.
- Identifies alternate terminology, including synonyms, broader or narrower terms, or phrases that describe a topic.

2.2.c. Selects controlled vocabulary specific to the discipline or information retrieval source
- Uses background sources (e.g., encyclopedias, handbooks, dictionaries, thesauri, textbooks) to identify discipline-specific terminology that describes a given topic.
- Can explain what controlled vocabulary is and why it is used.

- Identifies search terms likely to be useful for a research topic in relevant controlled vocabulary lists.
- Identifies when and where controlled vocabulary is used in a bibliographic record, and then successfully searches for additional information using that vocabulary.

2.2.d. Constructs a search strategy using appropriate commands for the information retrieval system selected (e.g., Boolean operators, truncation, and proximity for search engines; internal organizers such as indexes for books)

- Understands when it is appropriate to search a particular field, e.g., title, author, subject.
- Understands the concept of Boolean logic and can construct a search statement using Boolean operators.
- Understands the concept of proximity searching and can construct a search statement using proximity operators.
- Understands the concept of browsing and can use an index that allows it.
- Understands the concept of keyword searching and can use it appropriately and effectively.
- Understands the concept of truncation and can use it appropriately and effectively.

2.2.e. Implements the search strategy in various information retrieval systems using different user interfaces and search engines, with different command languages, protocols, and search parameters

- Uses help screens and other user aids to understand the particular search structures and commands of an information retrieval system.
- Is aware that there may be separate interfaces for basic and advanced searching in retrieval systems.
- Narrows or broadens questions and search terms to retrieve the appropriate quantity of information, using search techniques such as Boolean logic, limiting, and field searching.
- Identifies and selects keywords and phrases to use when searching each source, recognizing that different sources may use different terminology for similar concepts.
- Formulates search strategies to match information needs with available resources.
- Recognizes differences in searching for bibliographic records, abstracts, or full text in information sources.

2.2.f. Implements the search using research tools appropriate to the discipline

- Can locate major print bibliographic and reference sources appropriate to the discipline of a research topic.
- Can locate and use a specialized dictionary, encyclopedia, bibliography, or other common reference tool in print format for a given topic.
- Understands that items may be grouped together by subject in order to facilitate browsing.
- Understands a book's organizational structure (e.g., indexes, tables of contents, user's instructions, legends, cross-references) in order to locate pertinent information within the book.
- Understands and effectively uses the organizational structure of a typical book.

3.The information literate student retrieves information online or in person using a variety of methods.

Outcomes Include:

2.3.a. Uses various search systems to retrieve information in a variety of formats

- Recognizes that some material is not available online or in digitized formats and must be accessed in print or other formats (e.g., film, fiche, video, audio).
- Identifies research sources, regardless of format, that are appropriate to a particular discipline or research need.
- Recognizes the format of an information source (e.g., book, chapter in a book, periodical article) from its citation. (See also 2.3.b.)
- Understands that there are different research sources (e.g., catalogs and indexes) that are used to find different types of information (e.g., books and periodical articles).
- Recognizes search functionality common to most databases regardless of differences in the search interface (e.g., Boolean logic capability, field structure, keyword searching).
- Understands the organizational structure and access points of print research sources (e.g., indexes, bibliographies) and uses them effectively.

2.3.b. Uses various classification schemes and other systems (e.g., call number systems or indexes) to locate information resources within the library or to identify specific sites for physical exploration
- Understands how a call number assists in locating the corresponding item in the library.
- Uses call number systems effectively.
- Can explain the difference between the library catalog and a periodical index.
- Understands that different periodical indexes may have different scopes of coverage.
- Distinguishes among citations to various types of materials (e.g., books, periodical articles, essays in anthologies). (See also 2.3.a.)

2.3.c. Uses online or in person services available at the institution to retrieve information needed (e.g., interlibrary loan/document delivery)
- Can retrieve a document in print or electronic form.
- Understands that information not available locally can be retrieved through various methods.
- Identifies the appropriate service point or resource for the particular information need.
- Can initiate an interlibrary loan request by filling out and submitting a form either online or in person.
- Uses the Web site of an institution, library, organization or community to locate information about specific services, if appropriate.

4. The information literate student refines the search strategy if necessary.

Outcomes Include:
2.4.a. Assesses the quantity, quality, and relevance of the search results to determine whether alternative information retrieval systems or investigative methods should be utilized
- Determines if the quantity of citations retrieved is adequate, too extensive, or insufficient for the information need.
- Assesses the relevance of information found by examining elements of the citation such as title, abstract, subject headings, source, and date of publication.
- Evaluates the quality of the information retrieved using criteria such as authorship, point of view/bias, date written, citations, etc.
- Determines the relevance of an item to the information need in terms of its depth of information, language, and time frame.

2.4.b. Identifies gaps in the information retrieved and determines if the search strategy should be revised
2.4.c. Repeats the search using the revised strategy as necessary

5. The information literate student extracts, records, and manages the information and its sources.

Outcomes Include:
2.5.a Selects among various technologies the most appropriate one for the task of extracting the needed information (e.g., print, download, send files via e-mail, photocopier)
- Marks or records selected items or information relevant to the topic (e.g., uses mark functions in retrieval systems, records pertinent information from print resources)
2.5.c. Differentiates between the types of sources cited and understands the elements and correct syntax of a citation for a wide range of resources
    - Identifies citation elements for information sources in different formats (e.g., book, article, television program, Web page, interview).
    - Understands that the format of the source cited may dictate a certain citation style.
    - Understands that different disciplines may use different citation styles.
    - Understands that the appropriate documentation style may vary by discipline (e.g., MLA for English, University of Chicago for history, APA for psychology).
2.5.d. Records all pertinent citation information for future reference
    - Explains necessity to cite all references (e.g., to avoid plagiarism; to give credit to the author(s); to provide readers with an access path to the resource)
    - Understands how to use a documentation style to record bibliographic information from an item retrieved through research.
    - Uses correctly and consistently the citation style appropriate to a specific discipline.
    - Can locate information about documentation styles either in print or electronically, e.g., through the library's Web site.
    - Recognizes that consistency of citation format is important, especially if a classroom instructor has not required a particular style.

Standard Three
The information literate student evaluates information and its sources critically and incorporates

selected information into his or her knowledge base and value system.

Performance Indicators:

2. The information literate student articulates and applies initial criteria for evaluating both the information and its sources.

Outcomes Include:
3.2.a. Examines and compares information from various sources in order to evaluate reliability, validity, accuracy, authority, timeliness, and point of view or bias
    - Locates and examines critical reviews of information sources using available resources and technologies.
    - Investigates an author's qualifications and reputation through reviews or biographical sources.

- Investigates validity and accuracy by consulting sources identified through bibliographic references.
- Determines publisher or producer of information resources (e.g., sponsor of web site, journal publisher, etc.)
- Investigates qualifications and reputation of the publisher or issuing agency by consulting other information resources. (See also 3.4.e.)
- Determines when the information was published or where to look for that information.
- Recognizes the importance of timeliness or date of publication to the value of the source.
- Can determine if the information retrieved is sufficiently current for the information need.
- Understands that other sources may provide additional information to either confirm or question point of view or bias.

3.2.c. Recognizes potential sources of bias
- Understands that regardless of format, published and unpublished information reflects an author's, sponsor's, and/or publisher's point of view.
- Understands that, consciously or not, some information and sources may present a one-sided view and may express opinions rather than facts.
- Understands that some information and sources may be designed to trigger emotions, conjure stereotypes, or promote support for a particular viewpoint or group.
- Applies evaluative criteria to information and its source (e.g., author's expertise, currency, accuracy, point of view, type of publication or information, sponsorship).
- Searches for independent verification or corroboration of the accuracy and completeness of the data or representation of facts presented in an information source.

7. The information literate student determines whether the initial query should be revised.

Outcomes Include:

3.7.a. Determines if original information need has been satisfied or if additional information is needed

3.7.b. Reviews search strategy and incorporates additional concepts as necessary
- Understands that searches may be limited or expanded by modifying search terminology or logic.

3.7.c. Reviews information retrieval sources used and expands to include others as needed
- Examines footnotes and bibliographies from retrieved items to locate additional sources.
- Follows and evaluates relevant online links to additional sources.
- Uses new knowledge as elements of revised search strategy to gather additional information.

[Survey sheet example]