

Student Learning Outcomes: Assessment Plan for Information Fluency

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Suffolk University's Mission Statement places students at the center of its efforts and value structure, and emphasizes academic excellence through teaching, based on the application of theory and research to practice and public service. The Mildred F. Sawyer Library's Mission Statement identifies three education goals: students should be able to find and evaluate information, learn rather than amass information, and turn information into knowledge. Additionally, students are expected to become independent, self-sufficient, self-directed lifelong information users.

As stated in the Association of College and Research Libraries' *Information Literacy Competency Standards for Higher Education* (available: <http://www.ala.org/ala/acrl/acrlstandards/informationliteracycompetency.htm>), information literacy is a set of abilities requiring individuals to recognize when information is needed and to have the ability to locate, evaluate, and use effectively the needed information. Information literacy forms the basis for lifelong learning. It is common to all disciplines, to all learning environments, and to all levels of education. It is global, applicable to all cultures. It enables learners to master content and extend their investigations, become more self-directed, and assume greater control over their own learning.

An information literate individual is able to:

- determine the extent of information needed
- access the needed information effectively and efficiently
- evaluate information and its sources critically
- incorporate selected information into one's knowledge base
- use information effectively to accomplish a specific purpose
- understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally.

Learning Objectives

Identified learning objectives may be grouped by content, skills and abilities, attitudes and values. Each of these groups may, in turn, be evaluated by level of achievement. Students first encounter course-based information needs in the core curriculum. The priority concerning the core curriculum requirements is to provide each student has the necessary skills and values to undertake a "research" paper. Students later use and expand upon these basic information skills as they progress through courses supporting their chosen major field of study (discipline).

The following objectives, outcomes and skills are "mapped" to ACRL's *Information Literacy*

Competency Standards for Higher Education (2000) and generally grouped using the Project SAILS Skill Sets (Project for Standardized Assessment of Information Literacy Skills -- <http://www.projectsails.org/plans/skillsets.html>, last accessed 2004 February 21).

Meeting the Requirements of the Core Curriculum

Content:

Improve information fluency by further developing student skills and abilities to:

- understand the components and stages of the information search process used to undertake an information-based course assignment, such as submitting a "research" paper
- identify, locate, retrieve and evaluate information sources for use in course assignments
- understand the ethical and legal use of information when presenting and supporting a course assignment
- become more familiar with the resources and services provided by the Sawyer Library to meet information-related course assignment needs

Details:

Developing a Topic

- Defines or modifies the information need to achieve a manageable focus (1.1.d)
 - Explains his/her reasoning regarding the manageability of a topic with reference to available information sources. (1.1.d.2)
 - Narrows a broad topic and broadens a narrow one by modifying the scope or direction of the question. (1.1.d.3)
 - Uses background information sources effectively to gain an initial understanding of the topic. (1.1.d.5)
 - Consults with the course instructor and librarians to develop a manageable focus for the topic. (1.1.d.6)
- Identifies key concepts and terms that describe the information need (1.1.e)
 - Lists terms that may be useful for locating information on a topic. (1.1.e.1)

Identifies and Distinguishes Among Types of Sources

- Identifies the value and differences of potential resources in a variety of formats (e.g., multimedia, database, website, data set, audio/visual, book)(1.2.c)
 - Identifies various formats in which information is available. (1.2.c.1)
 - Demonstrates how the format in which information appears may affect its usefulness for a particular information need. (1.2.c.2)
- Differentiates between primary and secondary sources (edited 1.2.e)

Selecting Finding Tools: identifying types, purposes and scopes of coverage for finding tools and selecting them based upon that information

- Explores general information sources to increase familiarity with the topic (1.1.c)
 - Describes the difference between general and subject-specific information sources. (1.1.c.1)
 - Demonstrates 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.c.2)
- Investigates the scope, content, and organization of information retrieval systems (2.1.c)
 - Distinguishes among indexes, online databases, and collections of online databases, as well as gateways to different databases and collections. (2.1.c.4)
 - Selects appropriate tools (e.g., indexes, online databases) for research on a particular topic. (2.1.c.5)
 - Identifies the differences between freely available Internet search tools and subscription or fee-based databases. (2.1.c.6)
 - Distinguishes between full-text and bibliographic databases. (2.1.c.11)
- Uses various search systems to retrieve information in a variety of formats (2.3.a)
 - Recognizes the format of an information source (e.g., book, chapter in a book, periodical article) from its citation. (2.3.a.3)
 - Uses different research sources (e.g., catalogs and indexes) to find different types of information (e.g., books and periodical articles). (2.3.a.4)
- 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 (2.3.b)
 - Uses call number systems effectively (e.g., demonstrates how a call number assists in locating the corresponding item in the library). (2.3.b.1)
 - Explains the difference between the library catalog and a periodical index. (2.3.b.2)

Selecting Search Terms

- Identifies key concepts and terms that describe the information need (1.1.e)
 - Identifies and uses appropriate general or subject-specific sources to discover terminology related to an information need. (1.1.e.2)
- Identifies keywords, synonyms and related terms for the information needed (2.2.b)
 - Identifies keywords or phrases that represent a topic in general sources (e.g., library catalog, periodical index, online source) and in subject-specific sources. (2.2.b.1)
 - Identifies alternate terminology, including synonyms, broader or narrower words and phrases that describe a topic. (2.2.b.3)
- Selects controlled vocabulary specific to the discipline or information retrieval source (2.2.c)
 - Identifies when and where controlled vocabulary is used in a bibliographic record, and then successfully searches for additional information using that vocabulary. (2.2.c.4)
- Implements the search strategy in various information retrieval systems using different user

interfaces and search engines, with different command languages, protocols, and search parameters (2.2.e)

- Identifies and selects keywords and phrases to use when searching each source, recognizing that different sources may use different terminology for similar concepts. (2.2.e.4)

Constructing the Search

- 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) (2.2.d)
 - Demonstrates when it is appropriate to search a particular field (e.g., title, author, subject). (2.2.d.1)
 - Demonstrates an understanding of the concept of Boolean logic and constructs a search statement using Boolean operators. (2.2.d.2)
 - Demonstrates an understanding of the concept of proximity searching and constructs a search statement using proximity operators. (2.2.d.3)
 - Demonstrates an understanding of the concept of nesting and constructs a search using nested words or phrases. (2.2.d.4)
 - Demonstrates an understanding of the concept of browsing and uses an index that allows it. (2.2.d.5)
 - Demonstrates an understanding of the concept of keyword searching and uses it appropriately and effectively. (2.2.d.6)
 - Demonstrates an understanding of the concept of truncation and uses it appropriately and effectively. (2.2.d.7)
- Implements the search strategy in various information retrieval systems using different user interfaces and search engines, with different command languages, protocols, and search parameters (2.2.e)
 - 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. (2.2.e.3)
- Reviews search strategy and incorporates additional concepts as necessary (3.7.b)
 - Demonstrates how searches may be limited or expanded by modifying search terminology or logic. (3.7.b.1)

Database Mechanics

- Investigates the scope, content, and organization of information retrieval systems (2.1.c)
 - Identifies the source of help within a given information retrieval system and uses it effectively. (2.1.c.2)
 - Identifies and uses search language and protocols (e.g., Boolean, adjacency) appropriate to the retrieval system. (2.1.c.7)
- Implements the search strategy in various information retrieval systems using different user

interfaces and search engines, with different command languages, protocols, and search parameters (2.2.e)

- Uses help screens and other user aids to understand the particular search structures and commands of an information retrieval system. (2.2.e.1)
- Uses various search systems to retrieve information in a variety of formats (2.3.a)
 - Describes search functionality common to most databases regardless of differences in the search interface (e.g., Boolean logic capability, field structure, keyword searching, relevancy ranking). (2.3.a.5)

Evaluating and Revising Search Results

- Reviews the initial information need to clarify, revise, or refine the question (1.4.a)
 - Decides when it is and is not necessary to abandon a topic depending on the success (or failure) of an initial search for information. (1.4.a.3)
- Assesses the quantity, quality, and relevance of the search results to determine whether alternative information retrieval systems or investigative methods should be utilized (2.4.a)
 - Assesses the relevance of information found by examining elements of the citation such as title, abstract, subject headings, source, and date of publication. (2.4.a.3)
 - Determines the relevance of an item to the information need in terms of its depth of coverage, language, and time frame. (2.4.a.4)
- Reviews information retrieval sources used and expands to include others as needed (3.7.c)
 - Examines footnotes and bibliographies from retrieved items to locate additional sources. (3.7.c.1)
 - Follows, retrieves and evaluates relevant online links to additional sources. (3.7.c.2)

Retrieves Sources

- 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)(1.3.a)
 - Determines if material is available immediately. (1.3.a.1)
- Uses various search systems to retrieve information in a variety of formats (2.3.a)
 - Uses effectively the organizational structure and access points of print research sources (e.g., indexes, bibliographies) to retrieve pertinent information from those sources. (2.3.a.6)
- 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 (2.3.b)
 - Uses call number systems effectively (e.g., demonstrates how a call number assists in locating the corresponding item in the library). (2.3.b.1)
- Uses specialized online or in person services available at the institution to retrieve information needed (e.g., interlibrary loan/document delivery, professional associations, institutional research offices, community resources, experts and practitioners) (2.3.c)
 - Retrieves a document in print or electronic form. (2.3.c.1)

- Differentiates between the types of sources cited and understands the elements and correct syntax of a citation for a wide range of resources (2.5.c)
 - Determines whether or not a cited item is available locally and, if so, can locate it. (2.5.c.2)

Evaluating and Selecting Sources

- Assesses the quantity, quality, and relevance of the search results to determine whether alternative information retrieval systems or investigative methods should be utilized (2.4.a)
 - Evaluates the quality of the information retrieved using criteria such as authorship, point of view/bias, date written, citations, etc. (2.4.a.2)
- Identifies gaps in the information retrieved and determines if the search strategy should be revised (2.4.b)
- Examines and compares information from various sources in order to evaluate reliability, validity, accuracy, authority, timeliness, and point of view or bias (3.2.a)
 - Locates and examines critical reviews of information sources using available resources and technologies. (3.2.a.1)
 - Investigates an author's qualifications and reputation through reviews or biographical sources. (3.2.a.2)
 - Investigates validity and accuracy by consulting sources identified through bibliographic references. (3.2.a.3)
 - Investigates qualifications and reputation of the publisher or issuing agency by consulting other information resources. (3.2.a.4)
- Determines probable accuracy by questioning the source of the data, the limitations of the information gathering tools or strategies, and the reasonableness of the conclusions (3.4.e)
 - Determines when a single search strategy may not fit a topic precisely enough to retrieve sufficient relevant information. (3.4.e.2)
 - Determines when some topics may be too recent to be covered by some standard tools (e.g., a periodicals index) and when information on the topic retrieved by less authoritative tools (e.g., a Web search engine) may not be reliable. (3.4.e.3)

Documenting Sources

- Selects an appropriate documentation style and uses it consistently to cite sources (5.3.a)
 - Describes how to use a documentation style to record bibliographic information from an item retrieved through research. (5.3.a.1)
 - Identifies citation elements for information sources in different formats (e.g., book, article, television program, Web page, interview). (5.3.a.2)
 - Demonstrates an understanding that there are different documentation styles, published or accepted by various groups. (5.3.a.3)
 - Locates information about documentation styles either in print or electronically, e.g., through the library's Web site. (5.3.a.7)

- Recognizes that consistency of citation format is important, especially if a course instructor has not required a particular style. (5.3.a.8)

Economic, Legal and Social Issues -- Other than Citation

- Identifies and discusses issues related to free vs. fee-based access to information (5.1.b)
 - Demonstrates an understanding that not all information on the Web is free, i.e., some Web-based databases require users to pay a fee or to subscribe in order to retrieve full text or other content. (5.1.b.1)
 - Demonstrates awareness that the library pays for access to databases, information tools, full-text resources, etc., and may use the Web to deliver them to its clientele. (5.1.b.2)
 - Describes the differences between the results of a search using a general Web search engine (e.g., Yahoo, Google) and a library-provided tool (e.g., Web-based article index, full-text electronic journal, Web-based library catalog). (5.1.b.4)
- Demonstrates an understanding of intellectual property, copyright, and fair use of copyrighted material (5.1.d)
- Uses approved passwords and other forms of ID for access to information resources (5.2.b)
- Complies with institutional policies on access to information resources (5.2.c)
- Preserves the integrity of information resources, equipment, systems and facilities (5.2.d)
- Demonstrates an understanding of what constitutes plagiarism and does not represent work attributable to others as his/her own (5.2.f)

Preparing for, and Succeeding Within, a Major Area of Study

Content:

Improve student information fluency by further developing their core-based research skills and abilities to:

- identify resources not owned by the Sawyer Library and determine how to retrieve them
- locate, organize and evaluate information from any source specific to the discipline
- examine and compare information from various sources in order to evaluate reliability, validity, accuracy, authority, timeliness, objectivity (point of view or bias) specific to the discipline
- demonstrate awareness of the scholarly communication processes for the literature of the discipline

Details:

Identifies and Distinguishes Among Types of Sources

- Identifies key concepts and terms that describe the information need (1.1.e)
 - Identifies and uses appropriate general or subject-specific sources to discover terminology

- related to an information need. (1.1.e.2)
- Decides when a research topic has multiple facets or may need to be put into a broader context. (1.1.e.3)
- Identifies more specific concepts that comprise a research topic. (1.1.e.4)
- Differentiates between primary and secondary sources, recognizing how their use and importance vary with each discipline (1.2.e)
 - Describes how various fields of study define primary and secondary sources differently. (1.2.e.1)
 - Identifies characteristics of information that make an item a primary or secondary source in a given field. (1.2.e.2)

Selecting Finding Tools: identifying types, purposes and scopes of coverage for finding tools and selecting them based upon that information

- Implements the search using investigative protocols appropriate to the discipline (2.2.f)
 - Locates major print bibliographic and reference sources appropriate to the discipline of a research topic. (2.2.f.1)
 - Locates and uses a specialized dictionary, encyclopedia, bibliography, or other common reference tool in print format for a given topic. (2.2.f.2)
 - Demonstrates an understanding of the fact that items may be grouped together by subject in order to facilitate browsing. (2.2.f.3)
 - Uses effectively the organizational structure of a typical book (e.g., indexes, tables of contents, user's instructions, legends, cross-references) in order to locate pertinent information in it. (2.2.f.4)

Selecting Search Terms

- Recognizes that knowledge can be organized into disciplines that influence the way information is accessed (1.2.b)
 - Finds sources that provide relevant subject field- and discipline-related terminology. (1.2.b.2)
 - Uses relevant subject- and discipline-related terminology in the information research process. (1.2.b.3)
- Selects controlled vocabulary specific to the discipline or information retrieval source (2.2.c)
 - Uses background sources (e.g., encyclopedias, handbooks, dictionaries, thesauri, textbooks) to identify discipline-specific terminology that describes a given topic. (2.2.c.1)
 - Explains what controlled vocabulary is and why it is used. (2.2.c.2)
 - Identifies search terms likely to be useful for a research topic in relevant controlled vocabulary lists. (2.2.c.3)

Database Mechanics

- Implements the search strategy in various information retrieval systems using different user interfaces and search engines, with different command languages, protocols, and search parameters (2.2.e)
 - Demonstrates an awareness of the fact that there may be separate interfaces for basic and advanced searching in retrieval systems. (2.2.e.2)
 - Formulates and executes search strategies to match information needs with available resources. (2.2.e.5)
 - Describes differences in searching for bibliographic records, abstracts, or full text in information sources. (2.2.e.6)

Retrieves Sources

- 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) (1.3.a)
 - Uses available services appropriately to obtain desired materials or alternative sources. (1.3.a.2)

Evaluating and Selecting Sources

- Develops a research plan appropriate to the investigative method (2.2.a)
 - Describes a general process for searching for information. (2.2.a.1)
 - Describes when different types of information (e.g., primary/secondary, background/specific) may be suitable for different purposes. (2.2.a.2)
 - Gathers and evaluates information and appropriately modifies the research plan as new insights are gained. (2.2.a.3)
- Assesses the quantity, quality, and relevance of the search results to determine whether alternative information retrieval systems or investigative methods should be utilized (2.4.a)
 - Determines the relevance of an item to the information need in terms of its depth of coverage, language, and time frame. (2.4.a.4)
- Examines and compares information from various sources in order to evaluate reliability, validity, accuracy, authority, timeliness, and point of view or bias (3.2.a)
 - Determines when the information was published (or knows where to look for a source's publication date). (3.2.a.5)
 - Recognizes the importance of timeliness or date of publication to the value of the source. (3.2.a.6)
 - Determines if the information retrieved is sufficiently current for the information need. (3.2.a.7)
 - Demonstrates an understanding that other sources may provide additional information to either confirm or question point of view or bias. (3.2.a.8)
- Recognizes prejudice, deception, or manipulation (3.2.c)
 - Demonstrates an understanding that information in any format reflects an author's,

- sponsor's, and/or publisher's point of view. (3.2.c.1)
- Demonstrates an understanding that some information and information sources may present a one-sided view and may express opinions rather than facts. (3.2.c.2)
- Applies evaluative criteria to information and its source (e.g., author's expertise, currency, accuracy, point of view, type of publication or information, sponsorship). (3.2.c.4)
- Searches for independent verification or corroboration of the accuracy and completeness of the data or representation of facts presented in an information source. (3.2.c.5)
- Recognizes the cultural, physical, or other context within which the information was created and understands the impact of context on interpreting the information (3.2.d)
 - Describes how the age of a source or the qualities characteristic of the time in which it was created may impact its value. (3.2.d.1)
 - Describes how the purpose for which information was created affects its usefulness. (3.2.d.2)
 - Describes how cultural, geographic, or temporal contexts may unintentionally bias information. (3.2.d.3)
- Determines probable accuracy by questioning the source of the data, the limitations of the information gathering tools or strategies, and the reasonableness of the conclusions (3.4.e)
 - Describes how the reputation of the publisher affects the quality of the information source. (3.4.e.1)
 - Compares new information with own knowledge and other sources considered authoritative to determine if conclusions are reasonable. (3.4.e.4)

Documenting Sources

- Selects an appropriate documentation style and uses it consistently to cite sources (5.3.a)
 - Demonstrates an understanding that the appropriate documentation style may vary by discipline (e.g., MLA for English, University of Chicago for history, APA for psychology, CBE for biology) (5.3.a.4)
 - Uses correctly and consistently the citation style appropriate to a specific discipline. (5.3.a.6)

Scholarly Communication / Structure of Disciplines

- Knows how information is formally and informally produced, organized, and disseminated (1.2.a)
 - Describes the publication cycle appropriate to the discipline of a research topic. (1.2.a.1)
 - Defines the "invisible college" (e.g., personal contacts, listservs specific to a discipline or subject) and describes its value. (1.2.a.2)
- Recognizes that knowledge can be organized into disciplines that influence the way information is accessed (1.2.b)
 - Describes how the publication cycle in a particular discipline or subject field affects the researcher's access to information. (1.2.b.4)

Attitudes and Values

- students become confident and skillful information users
- students effectively take advantage of access to information and the use of technology available in the Sawyer Library, and elsewhere on- and off-campus
- students become ethical users of the intellectual property of others, understanding the social/ethical/political/economic implications of information and intellectual property
- students develop critical thinking skills

Assessing Learning Outcomes

Conducting student learning outcomes assessments is intended and designed to improve library services. Outcomes, as viewed by the Association of College and Research Libraries' *Task Force on Academic Library Outcomes Assessment Report* (available: <http://www.ala.org/ala/acrl/acrlpubs/whitepapers/taskforceacademic.htm>) are the ways in which library users are changed as a result of their contact with the library's resources and programs. The results from our outcomes assessment efforts may not be able to stand up to scientific scrutiny, but should be able to provide the staff of the Mildred F. Sawyer Library with a basis for informed judgment on which instructional methodologies work and which do not work.

The staff of the Mildred F. Sawyer Library note that information skills must be integrated into the curriculum and taught incrementally, not as a "one-time 50 minute presentation."

Processes:

Staff of the Mildred F. Sawyer teach the outcomes through application of these methods:

- individual encounters at the Reference Desk, in working with students at computer workstations, and in responding to e-mail or telephone calls
- in-depth research consultations
- bibliographic instruction classes held in the Library or in another part of the University
- through specific curriculum modules accessible on the library's Web site
- through our printed help guides, also accessible through our Web site

Staff of the Mildred F. Sawyer have identified the following measures to collect/compile data and measure how well outcomes are being achieved:

Direct Measures

- provide bibliographic instruction
 - + specific: number of classes conducted by course.
- answering reference questions
 - + specific: do reference questions asked change as the semester progresses from directional and

"basic" to content and "advanced?"

- collect and analyze vendor statistics
 - + specific "core requirements" example: collect information concerning the number of searches conducted, and the number of hits per search in October from EBSCO Academic Search Premier. Conduct "core requirements" instruction concerning the application of Boolean search techniques on this database. Then, collect information concerning the number of searches conducted, and the number of hits per search in November and December from EBSCO Academic Search Premier. As a result of the instructions, the number of hits per search should decline as students appropriately apply Boolean search strategies to more effectively find information.
 - + specific "major area of study" example: collect information concerning the number of searches conducted, and the number of hits per search in October from a subject-specific database. Conduct "major area of study" instruction concerning the application of Boolean search techniques on this database. Then, collect information concerning the number of searches conducted, and the number of hits per search in November and December. As a result of the instructions, the number of hits per search should decline as students appropriately apply Boolean search strategies to more effectively find information.
- recognition of primary versus secondary sources
 - + specific: pre/post testing
- using online catalogs
 - + specific: pre/post testing
- application of search strategies including Boolean, proximity, phrases, domain, etc.
 - + specific: pre/post testing
- evaluating information sources, such as Web sites
 - + specific: pre/post testing
- understanding intellectual property and copyright
 - + specific: pre/post testing

Indirect Measures

- determine what and how we influence students through the faculty
 - + specific: faculty surveys
- examine student bibliographies for selected courses as requested by faculty
 - + specific: review of bibliographies' citations of scholarly/non-scholarly articles
 - + specific: review of bibliographies' citations of web sites
 - + specific: review of bibliographies' citations of non-electronic sources
- use of other libraries' collections and resources
 - + specific: student surveys
 - + specific: faculty surveys
- input from the Mildred F. Sawyer Library Faculty Committee
- satisfaction surveys
 - + specific: student
 - + specific: faculty

Staff of the Mildred F. Sawyer Library use the assessment results to improve academic programs by:

- incorporating results and analysis into progress reports
- incorporating results and analysis into modifying/revising learning goals and objectives, instructional methods employed, and learning modules offered.