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Introduction

Welcome to Gale/ALISE bibliographic instruction support program. This site provides tips and suggestions for designing or supplementing bibliographic instruction programs that feature electronic resources. It is our intent to bring a solid contemporary design to the materials that we hope will be compelling to today's graduate library school students and library patrons.

User input is critical to the effectiveness of this site. We intend to update the materials every 90 days, and are counting on a sense of community and collegiality to help these materials meet the evolving needs of our user base. If you have any comments or suggestions for inclusion of additional materials, please send your input to: martha.misinale@gale.com. All user input and referenced materials are listed in the Acknowledgements section.

We believe that the timing is right for a stronger focus on the key competencies of instruction programs. As stated in the Spring 2001 issue of the Instruction Section Newsletter, information literacy issues such as lifelong learning and knowledge management have emerged on an international level. The research process and turning information into actionable knowledge via absorption, analysis, and integration are hot topics in both the educational and corporate worlds. This program is modeled after the 2001 ACRL, Objectives for Information Literacy Instruction: A Model Statement for Academic Librarians, and the 2000 ALA, Information Literacy Competency Standards for Higher Education.

Details of the Instructional Program

Gale has been working with the Association for Library and Information Science Education (ALISE) and a designated advisory board, to design this program. The program leverages the availability of the today's online information products by providing techniques and tools which are relevant in the instruction in the use of electronic databases.

The site is not intended to be a comprehensive treatise on bibliographic instruction. Instead, the program goal is to offer ideas and materials that will support and extend existing programs of bibliographic instruction. The program offers instructional materials in support of four major concepts of bibliographic instruction in the area of electronic databases, plus Web links that may be useful in bibliographic instruction programs.

During the course of preparation for this program, Gale has encountered many Web-based resources which we believe will be of use to practitioners. These include glossaries and dictionaries of library terminology, Web sites that provide well regarded professional overview content, and examples of instructional materials. For your convenience, we have also made this entire Web site available in Word and PDF download formats. These are listed in the Additional Resources section of this site.

Here is one scenario where this program may be useful. Library school is over, and the newly graduated librarian is now on the job and planning a bibliographic instruction program. The library subscribes to a variety of electronic content sources and users need training in order to make the most of these products. The goal is to develop a program to help them establish a foundation for effective information gathering and become competent and resourceful searchers.

Whether you are starting an instructional program, or enhancing an existing one, we believe that the four instructional modules described below will help you achieve your vision.

The four instructional modules include:

Instructional Module 1: Content Positioning

- Users will understand why it is important to determine the subject coverage of an information tool
- Users will understand why library reference content is authoritative, insightful, and unique as defined by experts
• Library reference content will be compared and contrasted to content available on the free Web in order to illustrate added-value provided

• Users will understand how to cite electronic content using conventions derived from the MLA Handbook for Writers of Research Papers, 5th edition

Instructional Module 2: Importance of the Reference Interview

• Users will learn how well-defined questions lead to successful research strategies

• Users will understand the function of the reference interview in the context of online information retrieval and in the construction of effective research strategies

Instructional Module 3: Leveraging the User Interface

• Users will learn how product interfaces operate

• Users will learn how to modify and narrow search results

• Users will learn how to find and use subject headings and other controlled vocabularies

• Users will learn how to locate and search related topics - Users will understand how reference databases provide access points to information elements; i.e., fielded searching

• Users will understand Boolean/logical and proximity connectors and other details of keyword searching including truncation

Instructional Module 4: Evaluation and Assessment

• Why evaluation and assessment are important to a bibliographic instruction program. Includes a step-by-step approach to evaluation and assessment in bibliographic instruction programs
Instructional Module 1: Content Positioning

"Digital literacy is the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers. . .Acquiring digital literacy for Internet use involves mastering a set of core competencies. The most essential of these is the ability to make informed judgments about what you find on-line."
(Paul Gilster, Digital Literacy 1997)

The amount of information available today has passed the flood level. And it continues to increase without limit. The introduction of the Internet into the information stream has been the single largest contributor to the overflow. More, now than ever before in history, it is necessary to develop critical evaluation skills in order to become discerning navigators and explorers of this unparalleled volume of information.

Today anyone can be a publisher. There are virtually no rules or regulations governing the creation of Web sites. There are no mandatory monitors, censoring content, requiring dates and signatures. You can publish anonymously or create a new identity. It is a wide-open, wild frontier where anyone and everyone can report news, write fiction, offer opinions, post propaganda, tell jokes, or buy and sell products and services. And it seems as if everyone has. There are literally millions of Web sites. The credibility of what is being published on the Web is a major concern among parents, librarians, teachers, researchers, students, and consumers. To address this concern, to evaluate the reliability, the accuracy and objectivity of Web sources, critical thinking skills must be developed and practiced. What are the indicators of a credible source? The criteria to guide the evaluation process are outlined below. These are the questions which users must ask in order to identify reliable information sources.

How to identify reliable sources

1. Authority - Is there an author? Is the Web site signed? Is it clear who is responsible for the content? Is there a copyright holder? Is there contact information or a means to verify the legitimacy of a person or organization? What are their credentials? The domain can determine several key pieces of information. The common URL domains are defined as follows:

<table>
<thead>
<tr>
<th>Domain</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>.gov</td>
<td>indicates Web pages sponsored or written by U.S. government agencies</td>
</tr>
<tr>
<td>.org</td>
<td>advocacy or noncommercial organization, including nonprofit groups</td>
</tr>
<tr>
<td>.com</td>
<td>the ubiquitous URL that identifies commercial or marketing sites; generally for profit Web sites</td>
</tr>
<tr>
<td>.edu</td>
<td>Web pages sponsored by an educational institution</td>
</tr>
<tr>
<td>.net</td>
<td>Internet networks</td>
</tr>
<tr>
<td>.int</td>
<td>international organizations sites</td>
</tr>
<tr>
<td>.ca, .jp, .uk, etc.</td>
<td>represent country domains</td>
</tr>
</tbody>
</table>

2. Purpose - What is the purpose and goal of the Web site? Who benefits? Why was the Web site created? The reliability of the information can be affected by the motivation of the Web site sponsors.

3. Accuracy - Does the information seem accurate from what you may already know? Are there errors in spelling or typos, formatting or linking problems? Is the information documented and edited? Is there a bibliography? Do the sources seem scholarly, or even reasonable?

4. Objectivity - Is the information presented without bias? Or are there subjective statements or opinions? Consider carefully the choice of words. Are they employed to inform or are they trying to sell, manipulate, or persuade you? Are there logical errors or conspicuously missing facts or issues? If there is advertising on the page, is it clearly differentiated from informational material? Are there games, contests, giveaways, or celebrity endorsements?
5. Currency - Every credible Web site should include the date it was created and when it was last revised. Then the data should be examined to determine if it is up-to-date. Do the links work? Is there contact information for individuals who are responsible for the content of the Web site? Can you even determine if someone is maintaining the site?

6. Coverage - Is there a description detailing the coverage and scope? Is there a print equivalent for comparison? Is there an indication the content is complete? Or, are there signs that the Web site is still under construction? Is the same level of detail applied evenly throughout the site? The same depth of coverage? Can you recognize any obvious omissions?

7. Audience - Who is the intended audience?

With practice, one can develop their evaluation skills. It is interesting to compare Web sources against these criteria. Or to apply each indicator to a well-established publisher and see how the sources measure up.

The Library Reference Alternative

While the Web is incredibly popular and has certainly increased awareness of information throughout the world, there is a powerful alternative to Web content. Information professionals and knowledgeable researchers know that humankind's recorded knowledge did not begin in 1998. Authoritative reference content is probably as old as the printing press itself. Scholarly journals, magazines and other periodicals have a long and distinguished history of presenting content prepared by insightful and hard working experts, sharing their knowledge with their readership.

First in print, and now accessible as electronic databases, library reference tools are compilations of facts and/or analysis designed to answer questions. These tools are typically based on a well-defined editorial scope and are compiled by subject matter experts. There are many types of reference tools, including directories, subject specific essays, encyclopedias, almanacs and much more. Reference materials, in both print and electronic formats, are designed for easy access and to enable users to quickly and precisely locate the material that will answer their question.

Periodical indexes and now databases enable secondary research by the user. Whether printed product or electronic database, these reference tools facilitate access to a defined number of secondary published sources. They have powerful access mechanisms, usually consisting of several approaches to the content, including: keyword searching, use of a controlled vocabulary, fielded searching, and features like Boolean searching, truncation or wildcard functionality, proximity searching and more. Today, the electronic database version of these periodical access products will also include immediate access to the complete text of the original articles.

It is clear that with the focus and construction of library reference tools, precise access to authoritative, insightful, and even unique content is a given. This represents a powerful alternative to the broad recall and lack of credibility typically found on the World Wide Web.

A number of publishers and other organizations provide products of this nature. Generally available on a number of Web compatible platforms, all of these tools score very highly as reliable, credible sources.

Online resources derived from the world of library reference always provide access to a wide range of authoritative and reliable content. Periodical databases are vast collections of journals, magazines, newsletters and newspapers that have been identified, carefully selected, and organized by subject. They include the peer-reviewed, also known as refereed, journals critical to scholarly research in all disciplines. Refereed sources only publish articles after they are reviewed and approved by a group of scholars who are experts on the topic; they are important to the researcher as the researcher knows that these articles are authoritative, scholarly, and are part of a recognized body of knowledge in a particular field. In addition to peer-reviewed sources, many periodicals include editorial boards that are respected worldwide by the scholarly community and the users who take advantage of this content. The writers and authors that contribute to the publications are professionals in their fields. These works are copyrighted and the creator of periodical databases must negotiate with the original publishers for online rights. These organizations
then aggregate these sources and make them available on the Web online services which have become commonplace in library reference rooms.

The world of library reference works has also migrated into electronic formats that provide for the more powerful access that online databases allow. Online directories allow powerful multiple access point searching. Today a user of a business directory can ask for the companies that are located in a specific geographical area, are involved in a particular kind of business, have sales or revenue figures within a defined range and so on. The online medium has enabled this type of searching, which would have been incredibly labor intensive in a print directory, usually arranged alphabetically. Online access through well-defined interfaces has enabled researchers to take advantage of multiple access points and to be able to combine concepts using Boolean connectors.

One of the latest trends in electronic reference is integration of various content types into a single interface. It is now possible to access directories, reference and periodical content, and even primary sources in a single search. These tools are often defined according to the user's need and level. For example, all appropriate authoritative sources that are necessary for research are collected in one place and targeted to the sixth-grade student, the high school senior, or the Ph.D. candidate.

Library reference publishers, like everyone else, have witnessed the explosive growth of information on the Internet. These publishers were providing access to critical content years before the Information Revolution spawned the Web. Reference publishers have been hearing from librarians and researchers for decades concerning the sources that are important to them. Similarly, periodical aggregators have been working with publishers for more than 20 years to acquire the rights to sources deemed valuable to scholarly and other user communities. However, today's Web user does not generally know this history. It is critical that bibliographic instruction and information literacy programs educate on this less well-known alternative. Users will appreciate this value-laden counterpoint to the open Web. It is up to us to provide today's Web user with the understanding of this powerful alternative.

How does the library distinguish authoritative library reference content from open Web sources for its clientele? In most libraries today, it is common to see Web-based front-ends to electronic library reference tools to position content. Library-created front-ends should include descriptions of the content the user is about to access including scope, coverage, size and update information. These content descriptions can consist of abstracts or blurbs, or even mouse-overs, depending upon the technology available.

Traditional print reference tools typically provided content overview information, including scope, coverage details and more in the preface of the work. While electronic products do not include a preface, vendors will provide content overview data in the Help and/or About files within the product, and often include useful content overview on their Web sites or in other marketing materials. Libraries can use this content to create useful introductions to the electronic products. Content descriptions should provide sufficient information to the user to encourage them to use the product for appropriate reference questions.

**Table 1: Internet Content: reliability and authority**

A summary of the Internet content authority discussed above has been tabulated to illustrate that almost all open Web sources span the reliability spectrum.

<table>
<thead>
<tr>
<th>Refereed/Peer reviewed journal articles</th>
<th>Peer reviewed or refereed journals are considered most authoritative and reliable because other expert scholars have reviewed the writing and information.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Periodical indexes and reference books</td>
<td>Well researched, written by subject experts, reviewed by editors for accuracy.</td>
</tr>
<tr>
<td>Electronic Library Reference Files and Tools</td>
<td>Look for front-end descriptions to determine what content you are searching.</td>
</tr>
<tr>
<td>Government site sponsored by government agencies</td>
<td>Government or public agencies sites serve as an ideal...</td>
</tr>
</tbody>
</table>

Gale - ALISE - Bibliographic Instruction Support Program
and registered under .gov domain.

| Educational Institution – sources with .edu extensions. Schools, colleges and universities that provide and update verifications and contact information. | While a school Website may be part of the school's educational mission, the Website is also a marketing tool to attract students and teachers |
| Commercial Web sites (.com) where author and/or contact information, currency, and accuracy can be verified. Company Web sites if services are provided or product information is available. Site will be maintained and regularly updated. | Think "commerce," "business," or "marketing." - 30% of sites on the Net are trying to SELL something! Proceed with caution. |
| News Web sites registered under .com or .net domains. Are articles authored? Copyright holder provided? Legitimacy: Is there a print version? Can the enterprise be contacted at an address or phone number. | Professional journalists best perform news reporting. Beware of sites where no sources are credited. |
| Nonprofit organization sites (usually include the .org domain) when contact and update information is provided. | Many organizations have an agenda to raise funds or solicit support both financially and philosophically. Beware of .org sites that cannot provide proof of legitimacy. |
| Personal Web pages (usually with .com or .net extensions) Sites created by individuals should be judged for their objectivity or bias. | Sites where author, currency and contact information are not available must be considered questionable. |

In the end, some Web sites will remain beguilingly deceptive. Despite being aware of the criteria listed above, it may be necessary to apply common sense, or judge the information on its own merits. Some Internet sites may not match the quality criteria and still provide valuable information, while other sites, while demonstrating bias, opinions, or even paranoia, may also contain carefully documented reports with detailed bibliographies. In the end, the choice to use or cite a Web site is the researchers. However, being aware of the quality criteria will certainly assist in being able to recognize the range of content credibility that is out there.

For information on how to cite electronic publications, visit http://www.gale.com/customer_service/citing.htm
Instructional Module 2: Importance of the Reference Interview

Despite the best service intentions of professional reference librarians, many library users remain unaware of what the person sitting behind the desk can do for them. On the other hand, top-flight researchers and library users know that the key to effective research is the interaction between the reference professional and the user. Not only is the reference librarian extremely knowledgeable about the resources available at a particular library, they also are masters of a negotiated interview technique which both clarifies and provides direction to the users' efforts to meet an information need.

The purpose of this section is twofold: (1) to enable individuals or users who are being exposed to the bibliographic instruction program to understand how to take advantage of professional reference staff when conducting research; and (2) to utilize the concepts present in the reference interview to help library users define a research strategy which leads to answering a specific question or a successful conclusion to a project.

At the end of this section, you will be able to:

- position the functionality of the professional reference staff so that users will understand how to interact with and take advantage of reference expertise when conducting their own library research
- instruct your users on the core concepts of the reference interview
- enable users to understand that the path to successful research always begins with a well-defined question
- understand that the purpose of the reference interview is to specifically relate the research question to the appropriate reference resources that will answer that question
- relate the techniques of the reference interview to the research process so that users can more effectively conduct their own research

It is essential that any bibliographic instruction program inform the target audience regarding the core functionality of the reference staff. If the instruction program does nothing else, this key understanding can lead to successful research.

The instruction program also offers librarians a unique opportunity to share the concept of the reference interview with users. Users unfamiliar with the reference process may wonder, "Why is this person asking me all these questions?" The reference interview process of posing questions may appear, on the surface, intrusive. However, once the users are educated on the function and reasoning behind the librarian's series of questions, they will come to appreciate how this process is their key to effective and efficient use of the library's resources.

The reference librarian is the guide to communicating that the library is a structure of knowledge, and how users might navigate that structure to successfully meet their research goals. In Communicating Professionally: A How-To-Do-It Manual for Librarians, by Catherine Sheldrick Ross and Patricia Dewdney, the user approaches the reference desk with four unspoken questions.

1. Am I in the right place?
2. Are you available to help me?
3. Have we made contact?
4. Have you understood my question?
Elements of the Reference Interview

Given the four points described above, developing a relationship between the user and the reference professional is a key portion of the research process. Professional terminology is often a barrier to user understanding. Therefore, it is best to define the elements of the reference interview in end-user terms. A useful mnemonic to enable understanding of this process is QUEST, and we are listing the key elements of the reference process in descending order, from the more important elements to the less important ones, as follows:

<table>
<thead>
<tr>
<th>Question</th>
<th>Defining the topic. What is my question or information need?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use</td>
<td>What is the information for? Are we looking for an answer to a question, writing a brief paper, or doing research for a comprehensive term paper or thesis?</td>
</tr>
<tr>
<td>Evaluate</td>
<td>What materials or content sources will meet this need? Do I already know specific sources I want to include?</td>
</tr>
<tr>
<td>Sources</td>
<td>Do I need a single piece of information, a few good articles, or a large amount of data?</td>
</tr>
<tr>
<td>Timeframe</td>
<td>Does the type of information I need have to be very recent, or do I want or need information no matter how old it is? How much time do I have to find an answer?</td>
</tr>
</tbody>
</table>

During the reference interview, the librarian uses open or neutral questions to get as much information from the user as possible. A good leading question is "How did you hear about this?" The librarian gathers as much information as the user can provide, and then restates the question to confirm its understanding. Once the librarian and the user negotiate an understanding, the search begins.

The Quest

The question defining the topic is the first and most important step in the reference interview process. This is an exchange of dialogue between the librarian and the end user to determine the "real" question. As stated by reference guru William Katz, this "dialogue between the user and the librarian," helps a user define his or her true information need. The public does not necessarily share the common assumption that individuals have difficulty "framing" questions. Yet experienced reference librarians have come to believe that the original question put to them by a user is rarely the "real" question.

Katz also points out that the reference interview process begins with a presentation of the question by the client. The "interviewer" can listen to the question passively without comment, or actively, evaluating and summarizing the "message," and framing other questions to clarify the real purpose of the initial discussion so that it can be acted upon appropriately. Thus begins a process of "negotiation" based on a give and take between mediator and client. The client can be asked to define how much and what kind of information is needed; how the information is going to be used; whether or not any information has already been identified by the client; or how much time is available or desirable to spend on the question.

Katz suggests that the mediator remain aware of verbal and nonverbal cues as the negotiation continues. These cues might indicate how well issues are being communicated and understood. An experienced mediator can instinctively identify errors in information that might be impacting the clarity of the request. The ability to communicate effectively drives the process throughout. Dewdney and Mitchell believe that conversation failure is the rule rather than the exception. However, they also believe the reason dialogue is an effective means of communication is not because thoughts of the participants are in perfect harmony, but because cooperation can discover and address this lack of harmony.

Felix Chu points out that a client's needs may evolve into something very different from the original question. A restatement of the question can confirm its understanding. If the client and mediator agree on this understanding, the
formulation of a search strategy can begin. An information search is successfully concluded when the quality and quantity of results are deemed satisfactory.

Learned reference interview techniques are also strengthened and supported by more elusive characteristics shared by individuals who are successful in the investigative pursuit of information, regardless of the topic or discipline. Katz defines these traits as including: the ability to organize data and information into a useable format; an awareness of the totality of information resources and the probability of success for the strategies of an information search in any specific situation; a sensitivity to use, uses, and users of information; a strong tradition of service which demands attention to client satisfaction; imagination; perseverance that keeps an information professional from giving up when logical sources yield nothing; judgment when to ask for more information from the user as well as when to stop; and accuracy, thoroughness and orderliness.

Occasionally, exchanges in the reference interview can be viewed as humorous. Reference librarians are used to dealing with situations like these:

- Homophones, a word the librarian interprets with one meaning while the user means the other: e.g., Wales/Whales; China/china.
- User misunderstands and, in turn, conveys this misunderstanding to the librarian: i.e., "I need the book Catch Her in the Eye" (Catcher in the Rye)
- User understands the concept but does not use the correct terms: i.e., I need the book "Battle of the Planets" - (War of the Worlds)

The Use
What is the information to be used for? Is it to answer a research question, or is it a one-time, problem-centered inquiry ("I need to know the population of Bangladesh?")

Evaluating the Materials
What types (quality) of materials are needed? Materials are available in the form of books, magazines, newspapers, and the Internet. Evaluate the best materials within and between these types. Are electronic copies acceptable?

Sources
Determine how many sources (quantity) are needed, and whether the topic is historical or current. Research papers require more sources than a problem-centered inquiry. For historical topics, the date of publication is not as relevant as for current topics. "Effects of WWII on England's economy" could use older sources than "effects of the European Common Market on England's economy" because the former are static and have not greatly changed in the last 50 years, while the latter is a current event.

Timeframe
How important is currency or retrospective coverage? What period of time must be covered? How soon is the information needed? Is the report due tomorrow, or does the user have the luxury of time? Some journals and books not available in the library or over the Internet can be ordered through interlibrary loan. The user might also be referred to another library.

Once the question is defined and the materials located, the librarian closes the reference interview with a statement such as "Does this answer your question?" Based on the user response, the conclusion of the reference interview is a mutual decision between the librarian and the user. However, the reference librarian is also available to answer any follow-up questions, or assist with any problems that may occur in the research process.

How can researchers utilize the techniques of the reference interview to more effectively conduct their own research? William Badke, in his book, Research Strategies: Finding Your Way Through the Information Fog, outlines an effective research strategy. Badke clearly agrees that the key to successful research is a good question. He cautions against using topics that are too broad and emphasizes focusing on a particular aspect of a topic. Badke
suggests that researchers obtain a working knowledge of a topic and develop the research question from that working knowledge. Typically, reference sources provide useful overview coverage of a topic that would allow a researcher to develop a working knowledge.

When a reference librarian asks, "Where did you hear about this topic?" it allows him/her to first refer to overview reference sources to give the researcher this overview knowledge. From this point, the researcher can refine their focus to an actual research question, which facilitates direction into more detailed reference sources to provide data for the research effort. When the researcher is taking steps that parallel the thinking of the reference professional, a true partnership can develop between the researcher and the assisting librarian as they move through the investigative process.
Instructional Module 3: Leveraging The User Interface

Library school is over, and the newly graduated librarian is now on the job and planning a bibliographic instruction program. The library subscribes to a variety of electronic content sources and users need training in order to make the most of these products. The goal is to help them establish a foundation for effective information gathering and become competent and resourceful searchers. This module will focus on user interfaces. See the other modules for coverage of content positioning, the reference interview, and evaluation and assessment.

With the goal of leveraging the interfaces provided by your vendors without having to retrain for each individual product, this section looks at some of the valuable components to cover. Nothing is set in stone. The trainer will know the audience and the products better and can determine the best order for the components, which sections need elaboration and which to skip over lightly or not cover at all.

What Makes a Good Searcher?

Two important attributes of a good searcher are flexibility of thinking and an understanding of how information is delivered. These relate very closely to how one approaches the product interface.

Flexibility of thinking

The most important characteristic of successful information gathering is flexible thinking, and every student has the potential to increase this capability. It sounds obvious, but it is worth noting as it seems to encourage students (at all levels) to believe that effective searching is within their grasp; and starting out with confidence is a strong first step. Flexible thinking includes the recognition that different authors use different terminology to describe the same subjects, e.g., one author may discuss cars while another talks about automobiles. In this context, synonym development is often a part of the search strategy and it is included at another point. Also, different database vendors present their content with different points of access, e.g., one may focus on subject access and another on relevance ranking. Understanding different methods of access will be discussed later in the section.

It is very easy to get into the habit of using the same search methods repeatedly. If patrons get great results with a particular search mode or strategy, they may continually start out with the same approach for the next search topic even if it might not be the most efficient way to begin. A good interface will offer ways to refocus using limits and links. The Bibliographic Instruction program should encourage students to explore options and expand possibilities through the interface.

Understanding how information is delivered

Understanding what constitutes a database, what a record is, and what different kinds of databases are available will enable the student to understand the framework better.

- Understanding what a database is: A broad definition for the term database is any collection of information that is organized according to some principle or rule. For more information on the database concept, see Appendix.

- Understanding a record: A database is made up of records, which are made up of fields. There is usually one record for every item in the database, and multiple elements in each record. For more information on records and fields, see Appendix.

- Different database types: There are multiple kinds of databases used in research. The nature of the content is a determining factor in what access points are developed for the interface. A reference database is generally a compilation of facts and analysis designed to answer questions. Some are based on a well-defined editorial scope, e.g., Associations Unlimited, while others are broader in nature, e.g. Encyclopedia Britannica Online. A periodical database, like Expanded Academic ASAP, is an organized collection of journals from many publishers. These types of databases may contain
bibliographic information (brief description of record with information to help locate the full record) and/or full text records where the complete text of articles, essays, plays, etc. are present in the database.

How Does the Product Interface Operate?

Having determined what type of database is being used, the next step for the student is to learn how that database works.

What search modes are available and displayed up front?

Depending upon the nature of the database, there may be multiple ways to access information, and some of these might be reflected in focused search modes. Students will want to consider the following: In a literature database, are there special search options for Topic? Author? Title? In a database that is primarily periodicals, are there special search modes for Subject? Publication name? In a history database, is there a search mode for Time Period? Are there broader modes like Keyword? Fulltext? Just what are the choices available?

If there are special modes, students can be encouraged to note how to get to them, how to determine whether they appear as selections on a navigational column or links at the bottom of the entry page or icons placed on the main page. Having noted the placement, they can click on one to see how the navigational column or links or icons change as they move about the product. Do all of them remain options at each point, or does one need to go back to the main page to access them once a search has been entered? Point out that in most Web search products, the Home, or database icon/link will usually go back to the main point of entry. For some new searchers, going back to the starting point provides a sense of familiarity and context.

What are the defaults?

When first entering the database, it is valuable for the searcher to note where s/he is placed. In other words, what is the default search mode or information page? Some databases default to a Basic or Quick Search mode, usually designed to give a broad (and sometimes, but not always, deep) retrieval at the start. Other products may go immediately to a Fielded Search where there is the option to start out with more specifics. Many will default to the option that offers the simplest point of entry and will reach the majority of users, experienced or not. After all, the purpose of the vendor is to provide positive results at the start in order to keep the user interested.

Some platforms allow for customization of the search interface. If the library has customized an interface, then as part of continued needs assessment, students can be encouraged to provide feedback about the customizable parts after using the products for a while.

Use of HELP files to access information about the interface

It is always valuable to discuss and show common points of access to the supporting documentation within the product in order to increase the searcher's sense of self-sufficiency. Most databases offer a HELP link, whether it be an icon, e.g., a question mark, or a link from the word HELP itself. Where there is a navigational column or cluster of overview links, HELP will likely be available from that point as well. In some cases, clicking on the HELP link leads to context related assistance from which one can move to a broader HELP index. In other cases, the link goes to the HELP index where there is a listing of the HELP contents.

How to Modify and Expand or Narrow Results

One of the most important processes leading to effective information gathering is evaluating the initial results and then modifying the search to improve the return. The assessment must be in the context of the amount and nature of information the user is seeking. In evaluating, the user is looking at the number and quality of the records returned. If very few records are needed and very few returned, and if those few hit the mark, that could be the end of the
There are times, however, that the search might need to be narrowed or broadened to find just the right information. Providing some basic ways to refocus should help the student understand the concept of evaluation better and come up with other ways on their own. There are multiple possibilities depending upon the context and interface. Each of these must be judged in relationship to the original strategy and the ultimate need and the options available. Good product interfaces will offer ways to revisit the search strategy and modify it and/or add limits to it. Here are a few things to consider:

- Re-evaluate whether the search method chosen was the best starting point and change to another if further consideration suggests such a change.
- Search prompt screens may provide limiting options that can be used to focus more, even after the initial search. Can DATE or DATE RANGE be added? Is there a place to input more TERMS aside from changing your first search statement? Can the search be restricted to specified sources?
- If a few good articles stand out, does the interface offer a way to make connections to related articles, subjects, and/or sources using LINKS? An interface with a controlled vocabulary as its foundation (see section on subject terms/controlled vocabulary) may offer links based on the terms with which the article was indexed in order to retrieve other articles with that focus.
- Are there any SORTing options available to view the results in a different order?
- Expand or narrow the search so that it looks for the desired information in more or fewer places, e.g., search the full text of the records rather than just the title to expand, if possible, and the reverse for fewer records. In other words, a full-text search is broader than just searching words in the title.
- Does the interface offer a way to return easily to the original statement without losing it? Does it do that with a button in the navigational section or must one go outside of the interface and use the browser's back button? If returned to the original, the statement can be changed to reflect a different approach that is broader or narrower at the start based on initial evaluation of the results. For example, searching for information on the race to the moon, the search could be expanded to include "space travel" rather than just searching on content related to the moon. Or searching for the term "dogs" may yield an unwieldy number of citations. Narrowing the search to a particular breed, or adding additional concepts (e.g. dogs and diet) may provide better results.

How to Find and Use Subject Headings and Other Controlled Vocabularies

Librarians and database producers have tried to resolve problems of variety and ambiguity of language by creating controlled vocabulary for subject indexing in databases. The structures that make up the vocabulary are known as authority files, and the process of assigning controlled vocabulary terms to content is called indexing. The word descriptor is also used to describe these terms. And the term thesaurus might be used as well if it includes a listing of synonyms or suggests other, broader, or narrower terms. To the librarian, these distinctions have meaning and value, but to the user, the terms are used interchangeably, and that is fine as long as the concept of controlled language is communicated as having value for the searcher. There are multiple types of controlled vocabularies, e.g., subject headings, company names, people names, organization names. Students need to understand that the purpose is to offer common terminology and formatting for input of, and therefore retrieval of, content. For a definition of controlled vocabulary, see Appendix.

The important things to point out are how the student can determine if the product is based on a controlled vocabulary and then how to access it. The HELP section should indicate the different ways to utilize the vocabulary, if present. Note if the interface offers a way of browsing the subject vocabulary, allowing the user to look for information by topic. For example, with the InfoTrac Web interface, when terms are entered in a Subject Guide
search, the interface directs the user to a portion of the subject guide, which organizes the information by topics. This organizational structure helps to narrow the choices down to the information most closely answering the research question.

Results of a subject search may be displayed on the screen in different ways depending upon the product. When the product offers a second level breakdown, often referred to as subtopics or subdivisions, the organization of that area of knowledge becomes more visible to the user and further definition of the topic is possible. When this additional level is available, the interface is basically asking what the user wants to know about this subject. A Subject search is ideal if one has a general idea of what is being looked for and wants help in pinpointing the most relevant records.

If the interface does not offer the option up front to browse the controlled vocabulary, the student will want to look for answers to the following questions. What methods does the product offer to search the content assigned to specific descriptors? Is there a fielded search method available with that capability? From the fielded search, is there a link to any of the controlled vocabularies where one can browse and then select?

As the student gains an understanding of the subject structure in the product, the interface's links within records, based on that structure, will be more easily understood.

**How to Locate and Search Related Topics**

Some product interfaces offer a Subject Guide that also serves as a thesaurus to some extent. It may include *See references* and/or *See Also* references.

- A *See* reference generally directs the searcher from a term which is not used in the database to the controlled indexing term used in that product, a term which may be similar to the search term but spelled or phrased differently. For example, the searcher may enter "Princess Diana Memorial Fund" and be led to that phrase, but rather than finding content there, find a *See* reference to "Diana, Princess of Wales, Memorial Fund."

- Various circumstances, e.g., changes in a culture, may affect language, and indexing experts may decide that a heading is outdated. If a heading once used has been changed, a new *See* reference may be added from the old to the new indexing term or all old references may be mapped to the new one.

- A *See Also* reference links to a list of other topics that are related but not a direct match to the entered search terms. It essentially suggests that if the topic entered is of interest, here are several others which might also be of interest and which may even be closer to the mark. The *See Also* terms may be as specific as the original term but they may address a different facet of that subject.

Some interfaces may not use an underlying subject guide or may not make it visible if they do. In the latter case, it is useful to determine whether the platform supporting the interface is mapping terms to one another. The librarian can determine if this is being done effectively, in which case it should be transparent to the user.

**How to Utilize Multiple Access Points To Information Elements, e.g., Fielded searching**

The primary areas of content in a database may have search modes dedicated to them, as mentioned in an earlier section of this module. The *fielded mode* offers the opportunity to combine multiple fields into one search strategy very easily. A fielded mode is one that breaks down the components of a record to make each element searchable. In this way, it often offers the greatest flexibility in creating search expressions, and therefore the finest control over the results. A fielded mode is often offered as a search *template*. Or it may also be offered as a single box into which users can type a *command line* using combined fields. On a template, the elements may be presented as Pick lists, Pull down menus, and/or Entry boxes where input may be typed. Generally the searcher may choose as few or as many criteria as desired. The more criteria chosen, the more precise the retrieval will be. Depending upon the need, that may or may not be desirable.
The fields available will depend in part upon the content of the database. In a bibliographic database, the primary elements of a record may include article title, publication name, publication date, author, named persons, geographic location, subject, abstract (summary). In a full-text database, there might also be a full-text field included. A directory database might have elements like company name, address, state, phone number, Web address, etc. Depending upon its content, there might also be fields for sales, number of employees, membership, publications produced and more. In a literature database, there may be fields, as appropriate to the content, for genre, author nationality, occupation, gender, literary movements, literary themes, dates, and location of birth or death and full text.

Some of the labels that have been used with various products for a fielded mode are Advanced Search, Extended Search, Custom Search, Power Search, and Fielded Search. Once the students understand the concept, they will be able to find this mode regardless of its label.

**How Boolean/Logical Operators, Proximity Connectors And Other Details of Keyword Searching Can Advance the Search Process**

Using the controlled vocabulary or subject searching capabilities enables very precise retrieval. Another popular method to cover in the Bibliographic Instruction program is searching by Keyword. Users will need to be shown that this term is used in several different ways in the library/information world. In many contexts, a Keyword search is intended to mean that the "key words" in the search strategy are being searched in the full content of the records. Other labels that might be used when referring to this type of search are Free Text or Full-text search. For a definition of Free Text, see Appendix.

The other interpretation of Keyword searching is that the interface looks for the search "words" in "key fields" of the records. For example, Keyword might search *title, abstract and indexed* fields. Or the interface might offer the choice, as on the InfoTrac Web platform, of searching "words" in either "key fields" or full-text.

No matter what terminology is used for this, the strategy is still using "uncontrolled vocabulary." And since one can never be sure of what words and phrases will be used in any article, essay, etc., it is important that the student have at hand several companion or alternative strategies to subject searching. Several options to point out are Boolean/logical operators, wildcards, proximity operators, and quotation marks.

**Logical Operators** (also known as *Boolean operators*, named after mathematician George Boole) create relationships between search terms. There are three logical operators - AND, OR, NOT. For a definition of logical operators, see Appendix.

Search systems follow a particular order of processing when there are two or more operators in a search expression. Although AND, OR, NOT is a common order of processing, it can vary and the trainer can point out where the interface defines its implementation of this. The use of parenthesis, also known as nesting, can change the order of processing of the logical operators. For information about Nesting, see Appendix.

Another way to expand the retrieval is through synonym development. Here the student will come up with various ways to state the search topic, e.g., car or automobile or van or coupe or sedan, etc. This is based on the Boolean "or" concept and the interface will look for *any* of these variations.

Often, it will be advisable to find more than just exact matches to a search term. Using **Wildcards**, one can match both the singular and plural forms of a word, words that begin with the same root (also called truncation or word variants) and words that can be spelled in different ways.

The student will want to note which characters the interface uses for wildcards and whether the system does any automatic truncation within any of its search modes. These options may be restricted to certain fields or search methods. The point here is that the trainer can point out where in the HELP screens or other documentation the user can find details on this. A character or symbol used in one database may mean something different in another.
• The asterisk (*) and percentage symbol (%) are common characters used to expand word roots, e.g., *pigment* matches pigment, pigments, pigmentation, etc.

• In InfoTrac Web and GaleNet databases, the exclamation point (!) stands for one or no characters and is especially useful when matching the singular and plural of a word but not other forms. For example, *product!* matches product and products, but not production. One could do *labo!r* to match labor or labour.

• These same platforms also offer a question mark (?) to replace exactly one character and is especially useful when uncertain of the spelling. For example, *defen?e* finds both defense and defence. Also, *psych????y* matches either psychology or psychiatry but not psychotherapy.

Proximity Operators allow more precise specification of relationships between words and/or concepts. They provide a way to establish the desired distance between words. Proximity operators are used between search terms to indicate that the terms must occur in a record within a specified distance of each other for that record to match. Words that are close to each other are more likely to be related than words that are far apart. For more information about proximity operators, see Appendix.

Quotation Marks, in most Web products, allow for retrieval of the exact phrase that is contained within quotes. Some systems will offer additional possibilities like adjacent terms, use of + or - signs and so forth. It is best to steer the student toward the HELP screens for this information rather than trying to cover it all in a session. Since they will be learning multiple products, developing resourcefulness is a key to using the interface most efficiently

Precision-Recall Continuum and Online Searching

While there is a lot of detail, there is not a great deal of theory when providing instruction in online searching. In the early days of online searching, the idea of a precision-recall continuum was put forth as a mechanism for understanding and manipulating search strategies.

The precision - recall continuum provides a frame of reference for determining an appropriate starting point for a search strategy as well as offering a guideline for adjusting the search strategy if retrieval is not forthcoming as expected. Therefore, one may hear reference to precision search strategies or recall strategies when discussing or evaluating online research.

In broad terms, precision can be defined as - are the items retrieved relevant to the search topic? Whereas, recall can be defined as - did I get everything available on the topic? In other words, precision is a narrow search and recall is a broad search. As a continuum, precision and recall are in inverse relationship to one another. If a search is precise, recall will suffer. Conversely, if a search is based on a recall strategy, precision may suffer.

Generally, to determine a starting point for search strategy, the researcher will make a determination if the topic being researched is well documented or elusive. Does the searcher anticipate getting a lot of records, or is it expected that relevant records will be hard to locate? If the researcher believes that the topic being searched is well documented, precision strategies are appropriate. On the other hand, if the researcher thinks that there is not much available on a particular topic, it might be best to begin with a recall strategy.

In the context of the variations in interface discussed above, this implies the following ranking of search options, going from most precise to highest recall:

• Use of controlled vocabularies or subject headings

• Use of keyword searching in the "key fields" of the records

• Use of keyword searching in the full text of the record
There are other ways to manipulate precision and recall:

- Use of multiple concepts with the Boolean connector AND, will decrease recall and improve precision

- Using a high number of concepts, connected with the Boolean AND, will increase precision and decrease recall

- Use of synonyms with the Boolean connector OR, will increase recall

- Use of truncation will increase recall

- Using proximity connectors instead of Boolean connectors, will increase precision
Leveraging the User Interface

Appendix

What is a Database?

A broad definition for the term database is any collection of information that is organized according to some principle or rule. A telephone book is a database in this sense. It is organized alphabetically. A library's main book collection fits this description also when it is organized according to a classification system. Organization is the key characteristic of a database.

Imagine a collection or recipes arranged by the main ingredient in each dish (beans, grain, vegetables, fruit, fish, etc.) or by the type of dish (salads, breads, soups, desserts, etc.). Either of these can be considered a database. It could be computerized, but it wouldn't have to be. It could be on 3x5 cards and still be called a database. If this recipe collection consists of a pile of cards thrown randomly into a shoebox, though, it would no longer be considered a database, even though it might have the same recipes as the organized collection. The World Wide Web is generally NOT considered a database because it is not organized. In contrast, the Yahoo subject directory is a database (in this instance, a collection of sites), organized by subject.

Although a database can be any organized collection of information, in common usage the term database usually refers to information in electronic form.

Humboldt State University Library. Modified and used with permission.

Records and Fields

A database is made up of records. There is usually one record for every item in the database. In the recipe database used as an example in Link 1, each recipe is a record. In the library's catalog, each book or journal or video, etc., has a record. In an electronic research collection, each journal article has a record.

Records are made up of fields, which contain individual elements of information. In one of the recipe records, there might be an "ingredients" field listing all the foods needed to prepare the dish, an "instructions" field telling how to prepare the dish, a "servings" field telling how many servings the recipe will make, and a "nutritional analysis" field telling how many calories and nutrients are in each serving. All of those fields would make up the record for one recipe; all the records for all the recipes, organized in whichever way is chosen, would make up the database.

The records in academic databases have fields that describe books, articles, conference papers, Web pages, and other information sources. So, rather than ingredients and number of servings, their fields contain information such as author, title, subject, date of publication, etc. Humboldt State University Library. Modified and used with permission.
Controlled Vocabulary

The English language has many synonyms, words with almost the same meaning. There are also many opportunities for ambiguity in English, in which the meaning of a statement isn't clear and can be interpreted in different ways. A classic example of this is the sentence, "Time flies like an arrow." Does this mean that time passes quickly and never goes backwards, or is it a reference to “time flies“ which are like fruit flies, only they like arrows instead of bananas?

 Speakers and writers of English can choose among many ways of expressing the same idea, and this can cause problems for electronic searching. How do you know which words to use in your search? Do you have to think of all the synonyms and different ways to phrase your research topic in order to find enough information?

Librarians and database producers have tried to solve problems of variety and ambiguity of language by creating controlled vocabulary for subject indexing in databases. They do this by selecting which of many possible terms (words or phrases) will be used for each concept in the database. Professional indexers review records as they are entered into the database and add controlled vocabulary terms to them so that all the items about the same topic will have the same subject heading or descriptor. The controlled vocabulary terms are entered into special fields in each record and often displayed with the record in the database.

When a record is found that meets the search criteria, look at its descriptor field to see what controlled vocabulary terms were used to index that record. If any of the terms are appropriate to the topic, use them to expand or narrow the search. It is often possible to click on the term if it is hotlinked, or copy and paste it into a search form for a new or modified search. Humboldt State University Library. Modified and used with permission.

Free Text

Controlled vocabulary is an excellent way to retrieve records in a search, but it does not solve all the problems with language. It takes time to create a controlled vocabulary, and new terms are always coming into use. Some terms go in and out of use very quickly and therefore are never added to the controlled vocabulary. Sometimes no terms in the controlled vocabulary are a good match for the concepts being searched. (If there are no terms even close to the topic being researched, it may be advisable to determine if the correct database has been selected.)

To respond to these issues, database producers include searchable fields for free text terms in database records. Free text is "uncontrolled vocabulary." Concepts are expressed in free text fields without reference to the database thesaurus or subject guide. The usual free text fields are title and abstract (if included). In some fulltext databases, the entire text of the article is a free text field. Authors of the articles, rather than indexers, are usually the ones who decide on the terms in free text fields. Humboldt State University Library. Modified and used with permission.
Logical (Boolean) Operators

Logical operators allow finding the result of the intersection of search terms. There are three logical operators:

And
The and operator specifies that both words on either side of the operator must occur in the part of a record you're searching for that record to match. For example, alcohol and pregnancy finds only those records in which both the word alcohol and the word pregnancy occur.

Or
The or operator specifies that one or the other or both of the words on either side of the operator must occur in the part of a record you're searching for that record to match. For example, dreams or daydreams finds records in which either the word dreams or the word daydreams or both occur.

Not
The not operator specifies that the word before the operator must occur but the word after the operator must not occur for a record to match. For example, crime not murder finds all records in which the word crime occurs except the ones in which the word murder also occurs.

Nesting
Nesting (parentheses) can change the order of the evaluation process for Boolean operators. This is called Nesting because terms are grouped together in nests or smaller sections. When entries are nested, the search system performs the operation within parentheses first, then merges the result with the part of the entry outside the parentheses.

The search expression race or color and discrimination specifies that one wants to find records that contain either the word race or both the words color and discrimination. This expression is equivalent to the expression race or (color and discrimination).

The search expression (race or color) and discrimination specifies that one wants to find records that contain either or both of the words race or color and that also contain the word discrimination.
Proximity Operators

There are several common proximity operators. The following two have two components:

- X A letter that indicates the direction
- X A number that indicates the distance in words

Wn
The W (within) operator specifies that the word that follows the operator must occur within n words after the word that precedes the operator for a record to match. For example, the search expression shared w3 values matches any records in which the word values occurs three or fewer words after the word shared.

Nn
The N (near) operator specifies that the words on either side of the operator must occur within n words of each other in either direction for a record to match. For example, the search expression memory n5 repressed matches any records in which the words memory and repressed occur within five or fewer words of each other in either direction.

Proximity operators can be used only when searching indexes made up of individual words, such as a title index. They are most useful in indexes of large areas of text, such as an abstract or words in text index.
Instruction Module 4: Evaluation and Assessment

How do we measure and assess the effectiveness of a Bibliographic Instruction program?

Introduction
The evaluation and assessment of the Bibliographic Instruction (BI) program is an essential part of the program. Clear objectives and the use of assessment tools can provide us with the necessary information to measure and evaluate our bibliographic instruction programs. Evaluation efforts provide the basis for improving the program.

As stated in the ACRL's "Objectives for Information Literacy Instruction," data gathered should give an indication that the instruction program is meeting the goals set forth by the "purpose" and "objectives" of the program.

Benefits of Evaluation/Assessment
- Gain necessary feedback for the improvement of the course
- Identify areas that require modifications
- Reveals instructional issues and opportunities
- Implicit informational and marketing function

A Step-by-Step Approach to Effective Evaluation and Assessment of BI Programs

The evaluation does not consist only of a survey given at the end of a lecture or training, but rather it should be a continuous/ongoing process from the beginning of the BI program.

Step 1: Needs Assessment
How do we determine key needs? There are various ways to determine the instructional needs of your constituencies, which includes:

1. Informal gathering of information can include examining existing programs, observing user behaviors and trends, and conducting small focus groups or other brainstorming sessions
2. Conducting interviews, surveys, and audits. (Oral or written)
3. Collaborating with faculty

There are many advantages to collaborating with faculty and going outside the library to obtain user input: "By integrating library instruction into the curriculum, both library staff and faculty can clarify instructional goals and expectations in the context of specific curriculum. While libraries will initially have to increase efforts to customize 'canned' courses for students, the potential exists for a much higher quality interaction with students at a time most appropriate for their library research needs."

Estrin, Jonathan. "From Bibliographic Instruction to Instructional Management: A Process-Oriented Approach for Reengineering Library Instruction Programs."
alexia.lis.uiuc.edu/review/6/estrin.bi.html (accessed 1/24/01)

Step 2: Objectives
Once the needs are identified, the objectives should be tailored to meet these needs. The design of the program should be based on clearly defined objectives that will then be used to measure the effectiveness of the program.

For example, the ACRL/BIS Task Force on Model Statement of Objectives (1987) lists several objectives that can
be used to benchmark the effectiveness of bibliographic instruction:

1. User understands how information is defined by experts and recognizes how that knowledge can help determine the direction of his/her search for specific information.

2. User understands the importance of the organizational content, bibliographical structure, function, and use of information sources

3. User is able to identify useful information from information sources or information systems

4. User understands the way collections of information are physically organized and accessed

Additional objectives, based on the needs of the institution's audience and unique aspects of the environment, should also be included.

**Step 3: Measuring success of the BI program**

Did the program meet its objectives? BI programs' objectives vary greatly according to target audience and type of institution. David Saia of the Graduate School of Library and Information Science University of Illinois at Urbana-Champaign states that although objectives may vary, there seems to be a consensus of what a successful BI program entails. The criteria for effective bibliographic instruction are as follows:

- User receives instruction at point of need
- Faculty partnerships with librarians
- Instruction is course-integrated
- Instruction is on a cognitive level, focusing on strategies, not tools
- Incorporates both print and electronic information sources and technology
- Instruction is interactive
- Allows user to be self-directed and self-sufficient

The mentioned criteria can be used as an evaluation tool; however, more detailed and specific measurements are needed.

What needs to be measured? Again, this will vary depending on the type of institution and based on each organization's objectives. Some examples of what to measure are listed below:

- How does the program fit with institutional goals?
- How did the program enhance library image?
- Participant reaction
- Learning outcomes
- Teaching effectiveness
- Overall effectiveness of instruction

How to measure? Several tools can be used:

- Observation-Self Assessment (pre and post concept)
• Survey (paper or Web based)
• Interviews (i.e. informal feedback)
• Questionnaires
• Tests

Sample Questions
Sample Questions to ask
Questionnaires, surveys, and tests can include questions derived from the four ACRL objectives mentioned above. The following examples are from William Badke's book "Research Strategies Finding Your Way through the Information Fog." Answers are provided in parenthesis.

1. What is the first step in completing a successful research project? (Define the topic)
2. What is considered the best way to define the topic? (Phrase the topic as a question)
3. How does a researcher obtain a working knowledge of a topic? (Via the use of reference sources)
4. What is the key to success in finding a good question? (Narrow your topic)
5. How can I locate books that will provide me with a working knowledge of a topic? (By using the library catalog or speaking with the reference librarian)
6. What is a common acronym for today's library catalogs? (OPAC-Online Public Access Catalog)
7. Who created the most common controlled vocabulary used in most libraries? (The US Library of Congress)
8. What is this controlled vocabulary called? (The Library of Congress Subject Headings)
9. What are the tools called that allow one to look up periodical articles by subject? (Periodical Indexes)
10. What are the Boolean operators or connectors that are often used in database searching? (AND, OR, NOT)
11. When doing keyword searching, what is the feature called that allows a researcher to search all variations of a word that begins with the same word stem? (Truncation)
12. What is the most common reason that information is put on the Internet and is available for free? (Commercial reasons, they want to sell you something)
13. What are refereed sources and why are they important to the researcher? (Refereed sources only publish articles after they are reviewed and approved by a group of scholars who are expert on the topic. They are important to the researcher as the researcher knows that these articles are authoritative, scholarly, and are part of a recognized body of knowledge in a particular field.)

Other sample questions can be found at:
www.acts.twu.ca/LBR/studyguide.htm

Step 4: Re alignment of objectives/BI program
• What was successful?
• What needs to improve?
• After careful examination of the feedback gathered through Steps 1-4, new objectives or realignment of objectives need to be considered.
Bibliography and Acknowledgements


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San Jose State University Library: Library Education and Assistance Program (LEAP) library.sjsu.edu/leap.htm

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Additional Resources

- Gale Documentation Library (http://www.gale.com/customer_service/technical_information.htm)
- Education Tools (http://www.gale.com/servlet/CSSubjectPageServlet?region=9&imprint=000)
- How to Cite Electronic Publications (http://www.gale.com/customer_service/citing.htm)

Dictionaries and Glossaries

- Medical College of Ohio Library - Information Science Glossary (http://www.mco.edu/lib/education/glossary.html)
- Multilingual Glossary: Definitions (http://www.libraries.rutgers.edu/is/publications/glossary/gd.html)

Professional Associations

- American Library Association Library Instruction Roundtable (http://www3.baylor.edu/LIRT/)
- Association of College and Research Libraries Instruction Section (http://www.ala.org/acrl/is)

Library Portals

- Internet Library for Librarians (http://www.itcompany.com/inforetriever/)
- Library HQ (http://www.libraryhq.com/)
- Internet Public Library Services for Librarians (http://www.ipl.org/svcs/)