

Information Literacy Concepts

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**Information Literacy Concepts:
An Open Educational Resource
by David Hisle and Katy Webb**

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INFORMATION LITERACY CONCEPTS

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Table of Contents

Introduction:

What is Information Literacy?

CHAPTER ONE:

How Libraries Work

CHAPTER TWO:

What's Credible Anymore? Fake News and evaluating the information you encounter during your research

CHAPTER THREE:

The Information Landscape: an Overview of information types and when they appear in publication

CHAPTER FOUR:

Navigating the Information Landscape: Search Engines, Library Databases, Library of Congress Classification, and Discovery Tools

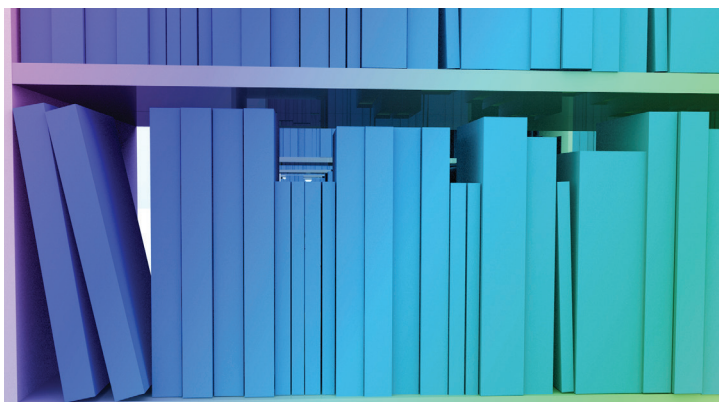
CHAPTER FIVE:

The Research Process: Settling on a topic, identifying key-words, and retrieving the information you need

CHAPTER SIX:

The Ethical Use of Information: About academic integrity, avoiding plagiarism, and scholarship as a conversation

GLOSSARY



INTRODUCTION:

What is information literacy?

What is information literacy and what does it mean to be information literate? The American Library Association defines information literacy as a set of abilities empowering individuals to recognize when information is needed and to be able to locate it, evaluate it, and use it effectively. While information literacy is often talked about on college campuses in terms of doing library research for papers and annotated bibliographies and other sorts of classroom assignments, we use and need information in every aspect of our lives.

Think about all of the informal research we do each day. We look up movie and book reviews, how-to videos on YouTube, product reviews, and strategies for parenting. We Google how to fill out some field on our tax forms, we look up job ads and tips on job interviews, how to spell or

define some unfamiliar word or acronym. We all have information needs, and being able to effectively identify and meet those needs is at the core information literacy. Being able to differentiate quality information from questionable information is also critical. Is that shocking article your sister posted on social media actually true? What about health advice offered by a friend? What about some surprising statistic you heard cited by a politician or political candidate?

The American Library Association asks to think about information literacy in six ways.

1. Authority Is Constructed and Contextual

When you use information, or choose one source of information over another, you presume a certain amount of expertise on the part of the information's author on the topic they are writing about. What gives the author that authority? What makes some information more authoritative than other information? What makes a piece of information authoritative can vary from discipline to discipline and be based on context. So for example, an author may be an authority on a given topic because of extensive experience, or because of extensive education. Even without deep experience or education, an author may bring authority to their writing based on their having witnessed or participated in some major event. In both cases, their authority is contextual. A physics professor may have authority when writing within their field, but be considered far less authoritative when writing in an unrelated field.

2. Information Creation as a Process

Information appears in a variety of forms. Depending on whether it is in the form of a newspaper article, a scholarly book, or a formatted report, the creation of information requires a process. Understanding how and why authors publish in a particular format, what those formats require in terms of fact checking, or sourcing, or expertise, what editorial oversight exists, the role of publishers—all these considerations may play into your thinking about the relevance of a particular information source to your research question.

3. Information Has Value

Information has value, and this fact has very real implications to researchers and information consumers in both how information is produced and how it is disseminated. It has economic value as a commodity, for example, as evidenced by intellectual property rights and other legal considerations, and by the considerable role of the publishing industry. Information also has educational and social value, with its ability to inform, educate, and persuade.

4. Research as Inquiry

One can think of research as an inquiry. A researcher asks a question, or identifies some gap in our current understanding of a topic, and in the process of filling that gap, new questions and new avenues for further research emerge.

5. Scholarship as Conversation

Scholarship on a given topic will grow and evolve over time. New theories, new interpretations, new experiments, new facts are always being discovered and debated. As the references or citations of any scholarly article demonstrate, every researcher is building on the work of many other researchers. Conscientious scholars will always go to great effort to indicate what previous work has informed their own work. College students are expected to adopt this practice as well, citing the work that informs their own work and situating their ideas and theories within the larger conversation taking place in their respective discipline.

6. Searching as Strategic Exploration

Over time, as you gain experience and your research needs grow more complex, you will likely develop sophisticated strategies for locating relevant information. Searching for information is rarely as simple as just plugging a keyword into a search engine or library database and getting all the books and articles you need. You'll likely try different ways of searching for information, and in different places. You may want to brainstorm, or talk to a librarian.

The five chapters in this text each look at a different aspect of information literacy but will collectively provide you with an overview of those concepts most critical to navigating today's information environment. After each chapter you will have the opportunity to test your understanding with a brief reflection. We begin by looking at the research process.



CHAPTER ONE:

How Libraries Work

We can always benefit from knowing a little more about how our campus libraries operate. Understanding the different roles the library and librarians play on your campus can help us to ask better informed questions and go deeper in our search for relevant and high quality information. Campus libraries are always changing to accommodate new technologies and the evolving needs of the students and faculty who use them, but the core functions of libraries remain mostly unchanged.

Access Services

Access Services is a major department in any library, though it will sometimes be called the circulation department. Access Services provides students with the means to

access a library's collections, meaning that they check books in and out and maintain borrower records. These borrower records, or library accounts, are usually only available to access services staff. In other words, if we have any questions about our library account, or want to check books in or out, or want to pay or contest a fine, Access Services is who can help.

Access Services may have other services as well. Course reserves are usually kept here, as is the technology (cameras, microphones, laptops, etc.) that your library may loan out.

Reference

Reference librarians assist students with locating relevant information for their projects. They can also (often) track down answers to especially challenging questions. Your library's reference department will probably have a service desk where you can ask question and talk to librarians. At some libraries, the reference desk is combined with access services.

Besides offering one-on-one assistance with research, reference librarians may also teach library instruction classes on your campus. If you are uncertain about the best places to look for information on a given topic, ask a reference librarian. Typically academic libraries will have librarians with specialized areas of expertise, so expect your library to have a business librarian, a STEM librarian, and so on.

Special Collections

Most large libraries will maintain special collections. These collections may be based on particular themes, often

with a focus on local history. Special collections are often comprised of primary documents. These primary sources may be letters or old photographs, drafts of a poet's works, or the correspondence of a notable scholar or politician.

Technical and Discovery Services

Technical services largely refers to acquisitions and cataloging, with the former purchasing books and journals for the library and the latter integrating them into the collection. You will rarely see these librarians, as they typically have no public service role, but they make up a big part of staff in any large library. The search (discovery) tools themselves also require time and staff to develop and maintain, so your library will also have staff devoted to operating and improving the library catalog interface and whatever other local discovery tools are available for research.

Services You Can Expect

Your library may have a print collection with thousands or even millions of volumes--it may provide you with instant access to millions of electronic articles and books. But no library owns every title. You may need some seminal work on your topic--or perhaps just the next book in a series you are reading for pleasure--that is not part of your local library's collection. This does not mean that the item is unavailable to you. Expect your library to have an interlibrary loan service to help fill in the inevitable gaps in its collections.

Interlibrary loan services borrow the materials we need from other libraries and make them available to us. Some requests can be filled quickly. For example, if you need an

article, it may take only a day or two for the library to fill the request. A book may take a week. Rare titles may take longer. Some interlibrary loan programs are free of charge, others may require a small fee. Some programs will request media on your behalf, while other may not. Your library's interlibrary loan program should have their policies clearly stated on their web site.

Also expect your library to offer special programming throughout the year. This might include exhibits and displays, guest speakers and lecture series, workshops, or even exam time stress relievers. For example, game nights are popular at some libraries during exam periods. Other libraries may offer yoga, pet therapy events, or snacks.



CHAPTER TWO:

What's Credible Anymore? Fake News and evaluating the information you encounter during your research

Fake News, Information Bubbles, and Filter Bubbles

Whether the agenda is to sway public opinion, to affect the outcome of an election, or simply to make money, the proliferation of fake news creators and distributors has complicated our already complicated information environment. Perhaps as bad, “fake news” has become an easy way to dismiss stories and information we don't like without addressing the actual content of such stories.

When you get your news primarily from one source or from one partisan perspective, you are operating in an information bubble. You encounter stories that confirm your

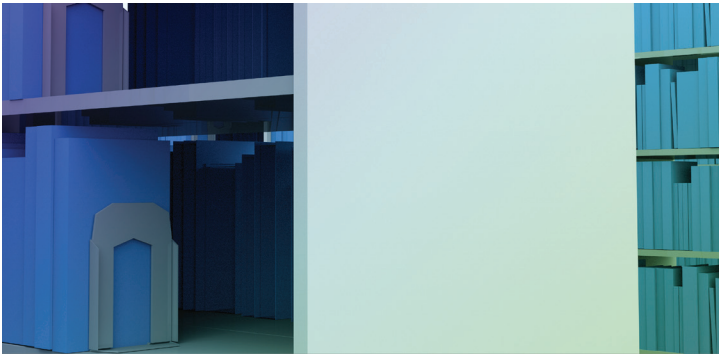
view of the world and avoid stories that challenge those views. Information bubbles have a natural appeal—they provide us with stories and perspectives that reinforce what we already believe about the world.

Information bubbles happen naturally when we seek out news and news sources that align with our world views. This isn't limited to politics and current events either. They can happen within professions and within organizations too. Social media can also create information bubbles, as like-minded friends share articles they haven't verified but that conform to some preconceived idea of the world. And once a story has been shared enough times, “fake news” can take on an unearned mantle of authority.

Worse, “filter bubbles” are making it more difficult to step outside of those information bubbles. Social media and search engines use algorithms to rank what appears in your feeds and search results. These algorithms look at your previous engagement with social media posts and search results in order to provide you with content that aligns with your interests. These sorts of tailored experiences online--whatever their virtues--limit our information gathering in ways we can't anticipate. The algorithms are always changing and usually closely guarded by the companies that create and implement them.

This chapter outlines some strategies that you can use to evaluate particular sources of information and particular articles you may encounter. But this is only part of the solution to separating truth from fiction in the information we encounter. Better information habits are required of us.

Until we apply skepticism and critical thought to the information that aligns with our world views just as we would for information that challenges us, we set ourselves up to be fooled by fake news. Until we expand our information bubbles to include more perspectives and coverage from a more diverse community of scholars and reporters, we limit what we can know and learn about our world.



Evaluating Information

Being able to critically evaluate the information we encounter on the web is a hugely valuable research skill. Why? Because so much information can be found online, and not everything we read is true. Sometimes information can be narrowly accurate, yet still be so biased, selective, or leading as to make the information essentially useless for research purposes. Some information may have once been accurate, but is now simply be too out-of-date to be useful. Sometimes the authors of an article are not experts on what they are writing about. And sometimes the problem is not the accuracy of the information, it's the lack of research-quality detail and substance.

Being a critical consumer of information is helpful not only in school, but also in our daily lives. Just as we need the information in our college papers to be based on reliable, quality sources, we also want the health advice, product reviews, and other kinds of information we personally use to be reliable.

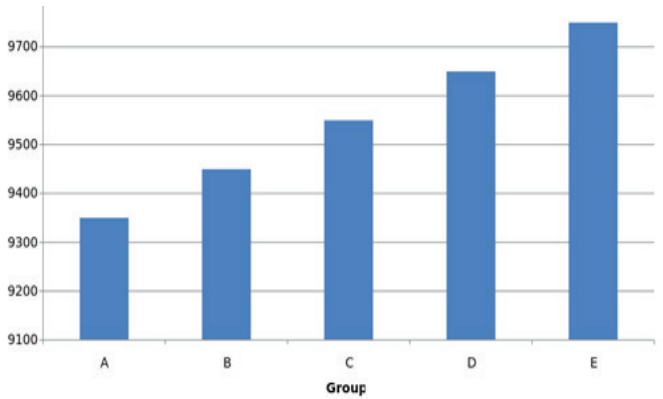
Accuracy

How do we really know that a given piece of information is accurate? While there is no single rule that guarantees the correctness of the information in a given article or website, there are ways to increase your confidence that the information is factually correct.

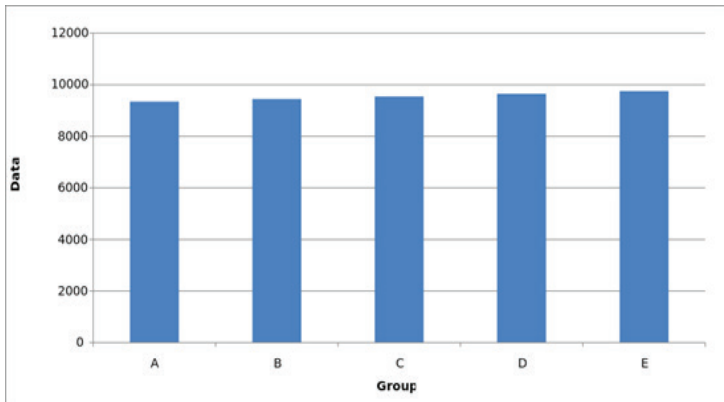
If statistics or quotes are provided in an article or on a web page, does the author provide their source? Can that statistic or quote be verified by a reliable second source? If you encounter a quote, might that quote be overly selective or misleading? And can statistics be correct but still misleading?

They can. Misleading graphs (or distorted graphs) are common online. Truncated graphs, while perfectly appropriate in many cases, are a particularly easy way to deceive. Let's look at a quick example. The graph below shows rather dramatic change across groups A through E.

INFORMATION LITERACY CONCEPTS



But notice that the Y axis does not begin at 0. Instead it begins with 9,100. If the Y axis did begin with 0, we would see much less dramatic variation across the groups:



Quality information sources will cite their statistical data so that researchers can go to the original source and see the data for themselves.

Quotations can also be taken out of context, as in the example below.

“This would be the best of all possible worlds if there were no religion in it.”

-John Adams

This quote has appeared on many websites and in articles, and it seems clear in meaning. So how could such an unambiguous quote still deceive us? If we look at the full context of the quote, which appeared in a letter Adams once wrote to Thomas Jefferson, it shows a very different meaning:

“Twenty times, in the course of my late reading, have I been on the point of breaking out, ‘this would be the best of all possible worlds, if there were no religion in it!!!!’ But in this exclamation, I should have been as fanatical as Bryant or Cleverly. Without religion, this world would be something not fit to be mentioned in public company--I mean hell.”

-John Adams

Whatever one thinks of Adam’s perspective, his views are clearly misrepresented in the original quote, despite it being taken word-for-word from his own writings.

Authority

When we quote from an author or article in a college-level research paper, we are presuming that the source in some way strengthens the argument we are trying to make, or provides some insight into our research question. But this requires that the sources we use have some kind of authority on our topics. And how do you know that they do? Why quote or cite an article we've discovered on the web and not, say, the opinions of our parents or our friends?

Our educations and life experiences provide each of us with unique expertise, but not all expertise is relevant to a particular research question. A famed political scientist may be an authority on game theory, for example, but that hardly qualifies him or her to conduct heart surgery, or draft technical drawings. The quality of your research very much depends on the authority of your sources, so it is important we learn what we can about the authors we cite and what qualifies them to speak authoritatively on a given topic.

When you evaluate an article or website for use in college-level research, consider these factors:

- What is the author or organization's credentials?
- Are any credentials even provided? If not, why do they deserve to be cited?
- Is the author qualified to write about this topic? What is their area of expertise? Is the author affiliated with an educational or research institution?



Objectivity

When we talk about objectivity, we are largely talking about the author's objectives in producing and publishing the information. Why does the article or website exist? What are the biases of the authors or the organization behind the information? Bias isn't necessarily bad. Just because an author or organization has a particular point of view does not mean that their information is inaccurate or lacks authority. The very reason that many groups exist is to advocate for a particular position, and to that end they often collect or generate a lot of high-quality research. That said, you will want to be aware of the objectives of the authors or groups. And in order to write a well-rounded paper, you will likely want to collect information from authoritative groups with different perspectives as well. When all your information comes from just one side of a debate, your paper will lack balance and perspective.

Do note that all perspectives are not equally informed by relevant expertise. If you are presenting multiple perspectives in a paper, be sure that all those perspectives are informed by authoritative sources.

When considering objectivity, also pay close attention to advertising that appears on a website. The purpose of some websites is to sell a particular product, not necessarily to educate. While they may host articles as well, the articles are basically just ads for the product. Even more insidious, companies may run elaborate advertisements on legitimate websites that are meant to look and read like normal articles, but are in fact just promotional materials. “Sponsored content” on legitimate news websites is increasingly common. These articles may be written by industry lobbyists or political partisans and can appear alongside legitimate news stories. Often all that distinguishes “sponsored content” from real news is a small, easily overlooked label. Do not be fooled.

Ask yourself...

- Is the information fact, opinion, or propaganda?
- Is the information well-researched? Is there a bibliography or citations or references at the end?
- Is the author objective and unbiased? Bias isn't always disqualifying, but you will always want to be aware of what the author's bias is.

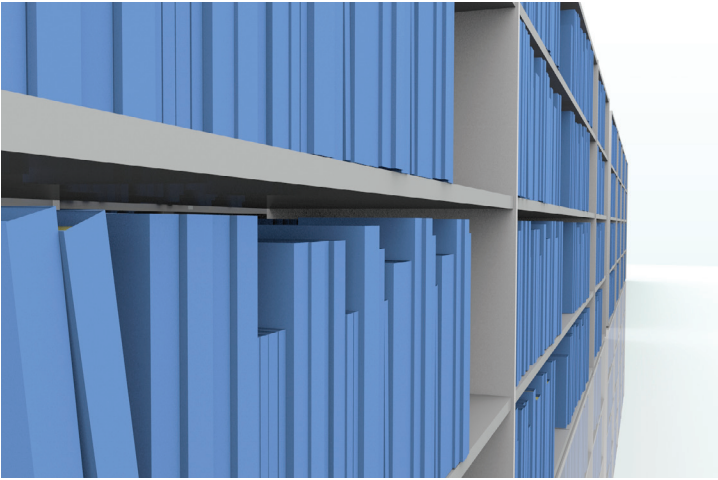
Currency

Some of your research projects may require very up-to-date information. For example, if you are researching present-day population statistics, you won't want to use the 1980 census figures. If you are writing about public sentiment on a hot-button social issue, old data is worse than useless--it may be downright deceptive. When we talk about currency, we're talking about how current the information is in a book or article. For some projects and disciplines older information might be fine. But for many research topics, currency is a major consideration.

Sometimes the only information available is a bit more aged than is ideal. In those cases we make a judgement call about whether to use it in our work. Often though, we can track down more recent statistics with a little detective work. For example, what is the source of the information? The US government is one popular source for statistical information. If the government statistics you encounter in an article are dated, perhaps newer statistics have been released since the article was published. Going to the information's source is good first step.

Ask yourself:

- When was the information published or produced? Will dated information still be relevant to my research project?
- With web-based articles, how many dead links appear on the site? Does the site still receive regular updates appropriate to the content?



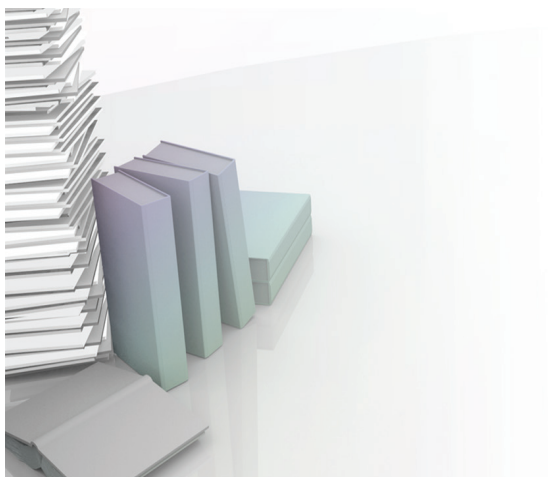
Coverage

Earlier when we talked about objectivity, we also talked about bias. While bias is not inherently bad, you would not want your total pool of resources to reflect the same bias. Otherwise you are only getting part of the picture. In part, this is what “coverage” asks: what part of the picture are you getting with your information resource?

Is the material presented at an appropriate level? An article may contain correct information, but may lack the sort of depth of content necessary for research purposes. Does the resource add new information or does it simply compile information easily found elsewhere? If the work merely compiles the work of others, would those original sources be more appropriate for use in your work?

When considering accuracy, authority, objectivity, currency, and coverage, there are often no clear-cut answers.

An article that may be appropriate for one kind of research question may not be appropriate for another. Make deliberate, informed judgements, as the quality of your sources will greatly impact the overall quality of your work.



CHAPTER THREE:

The Information Landscape: an Overview of information types and when they appear in publication

Students often encounter a checklist of different publication format requirements when they receive their first major research assignment. They may be asked to use a certain number of books as sources, or a certain number of scholarly journal articles; they may be asked to use several different formats for the same paper.

Before starting on a research assignment, students may not have thought much about these different kinds of sources and why each exists. Some formats will be relevant to one research question but not others. Which are likely to be

most useful to you will depend on both your assignment requirements and the nature of your research question. Let's look briefly at the major formats you are likely to encounter.

Scholarly Journals

Scholarly journals are the gold standard when it comes to high-quality research sources and you will likely be asked again and again to use scholarly journal articles as you move through your degree program. Scholarly journals go by other names. You may see them called academic journals, or peer-reviewed journals, or refereed journals, but they all refer to the same thing. Here's what you need to know about them.

Researchers and scholars publish their work in scholarly journals. You may read about some new discovery or research study in a newspaper article, or see it covered by a science reporter on cable news, but these sources are simply reporting on what was originally published in a scholarly journal article.

Because scholarship builds on earlier scholarship, it is essential to the community of researchers and scholars that their literature is as correct and rigorous as possible. To ensure that only quality articles are published, scholars use the process of peer-review.

Let's walk through an example:

Jim Schultz is a professor of sociology. He recently completed a study of student groups on campus, and has written an article. Because scholarly journals can be very narrowly focused on highly specialized fields of study, Jim's first step

is to identify a journal that publishes the kind of research he has conducted. He may consult with a librarian or with colleagues in order to identify promising journals.

Jim investigates the formatting and citation style required by a promising journal, formats his paper accordingly, and submits his article for possible publication. The editor of the journal reviews the article and determines that it could be a good fit for the journal. The research is within the mainstream of research in the field and it contributes original knowledge to the field.

The editor then sends the article to a small group of scholars experienced with Jim's kind of research. These scholars are anonymous and will go through the article with a fine toothed comb, scrutinizing the methodology of the study and making sure other aspects of the article (such as its review of the existing literature and its discussion of findings) are of sufficient quality for publication. The reviewers make notes on where the article could be improved, on important citations missing from the literature review, and every other aspect of the paper.

Jim doesn't know who his reviewers are, but he received their comments. From there he makes revisions to his work and resubmits the article to the journal. If this revised version of his article is accepted, his work will be published in that journal.

The peer-review process is the most rigorous process we have for ensuring quality; it is also a major requirement for most forms of faculty tenure. For both these reasons

expect scholarly journals to loom large in your future research in college.

Tip: most databases and discovery services will include a check box for scholarly or peer-reviewed journal articles. By checking it off, you will only get scholarly articles in your search results.

Trade and Popular Publications

Many of us grew up reading magazines like Time or Newsweek. Whether at the grocery store or the newsstand, the overwhelming majority of the magazines we encounter are considered *popular* publications. This includes titles ranging from *Popular Science* to *Rolling Stone*. What makes these titles *popular*? Briefly put, the business model of these publications depends on advertising dollars; how much the publications can charge for advertising space depends in large part on the number of readers (i.e., how popular the title is with readers.)

Plenty of experts and authorities write articles for popular publications. But it should already be apparent that the motivations of popular publishers are different than those of scholarly journals. The editors of popular magazines decide what to publish based at least in part on whether the content will sell more copies. Articles are fact-checked, but without the same scrutiny that peer-reviewed articles undergo.

Popular magazines can be perfectly adequate for some kinds of research, but expect to find them less and less useful as research sources as you progress through your classes.

They simply lack the authority and coverage essential to college-level research.

A second kind of magazine will likely be more useful-*trade publications*. Trade publications (sometimes called trade rags or trade magazines) are similar in many ways to popular magazines. They rely on advertising dollars to stay in business and they do not provide the same rigorous peer-review process that scholarly journals do.

The real difference between popular and trade publications is audience. Most popular titles are written for general audiences. This means that the language is at a relatively low reading level and few technical terms are included. The publications presume their readers know little about the content area. With trade publications, the audience is a particular industry or job field.

An example of a trade publication is *Advertising Age*. For those in the advertising or publishing industries, *Advertising Age* is an important source of current information on the state of the industry. The magazine presumes that the reader already has a good working knowledge of advertising, so the articles are more narrowly focused and likely to include industry-specific terminology and concepts.

As a way to learn about a new job field, or to stay current on new technologies and trends in your future professions, trade publications are an important go-to source.

Newspapers

Newspapers will probably not be a common source of information for your college-level research papers. Newspaper articles are edited and fact-checked, but without the same scrutiny as a peer-reviewed article. Newspaper articles typically lack depth and background information. Their real value is in their immediacy. Newspapers provide current coverage of events and so can be helpful to us when our research topics are historical in nature. We will have more to say about the immediacy of newspaper articles later in the chapter when we talk about the information time line.

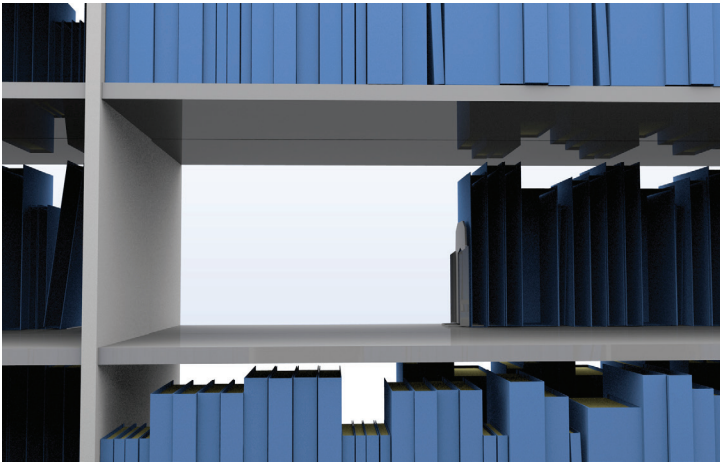
Monographs

Monographs (also known as books) provide detail and comprehensive coverage of topics that isn't duplicated by other formats. Books, or monographs, are sometimes neglected as sources by new student researchers. They cannot be accessed quite as quickly as electronic articles, and one often has to physically locate a book to determine whether it will really be useful on a given project.

Part of the challenge of using books for a project is that library catalog records tell us relatively little about what a given book contains. A typical book record will include title and author, publication information, a handful of subject headings assigned to the book, location information, and (sometimes) a table of contents. This is enough information to identify promising book titles to further investigate for use in research, but not enough to know definitively whether a book directly or sufficiently addresses a research question. With print books, you will want to physically locate

and investigate the book. This can be difficult to do when a student researcher is conducting their research online.

Ebooks are one option for off-site researchers. Besides including the full text of their print-version equivalents, they are usually full text searchable. That means you can much more quickly determine whether a given title is going to be useful for your research project.



Grey literature

Sometimes important information for a project comes not from books or articles, but from a thesis or dissertation, or from the proceedings of a conference. Grey literature is a catch-all term for these types of sources. Other examples of grey literature include technical documents and formatted reports, such as those produced by industry and various think tanks.

Grey literature has traditionally been more difficult to track down for student researchers, but a great deal of grey

literature is now available in databases. Organizational websites and think tank websites also create and distribute grey literature.

Social media, blogs, vlogs

Similar to newspapers, the real value in social media content is in the immediacy of the information. Social media provides real-time coverage of and reaction to events. How and whether social media is a viable source of information will depend on the nature of your research project.

The Information Timeline

The information timeline is one way for us to think about how different kinds of publications provide different perspectives on a topic based on when they are published, from when information on a topic or event appears in initial broadcasts or web-based reports to far more comprehensive analysis and coverage in peer-reviewed scholarship and books. Understanding the information timeline lets us know when we can expect information sources to appear in publication, and more broadly improves our understanding of the role each type of source plays in our research. Different formats of information, after all, have varying levels of research depth, credibility, and proximity to the event you might be researching.

Let's walk through an example. If you are writing a college research paper about the terrorist attacks on 9/11, these are some common information types and when they became available.

On the day of the attacks, the only information you would find would be from news websites, broadcast media such as CNN, and social media. This breaking news content can provide immediate information on the event, but can also lack context and background information. Coverage may be confused and facts may be misreported.

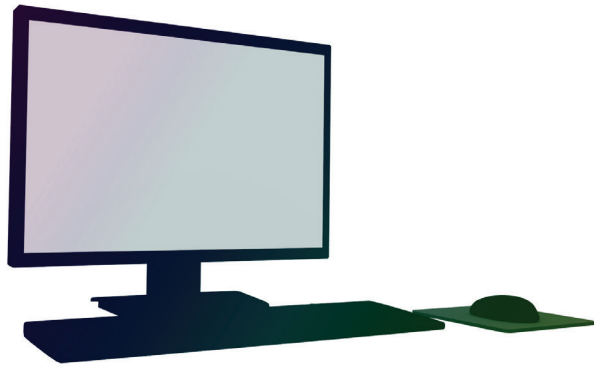
The following day stories are published in newspapers. Newspaper articles often provide more in-depth actual information than the television or online news sources. These newspaper articles will begin the task of contextualizing the attacks and will include additional fact-checking. They will also synthesize much of the reporting of the previous day.

Popular magazine coverage appears one to two weeks later, with articles on the attacks appearing in publications such as Time and Newsweek. Magazines often provide greater context to a story than is found in newspaper or web-based articles, and will develop the background of a story in greater depth. Articles may be authored by national security experts and others with relevant expertise. While the articles will not be extensively sourced at this point, analysis is much more robust than that found in social media or newspapers.

After about six months, scholarly journals will begin to publish articles on the attacks. These journal articles provide peer-reviewed, discipline-specific research relevant to the attacks. These scholarly articles are written by experts, are formally objective, and likely include original research and analysis. Note that they are also likely to be very narrowly focused. Trade publications may also provide relevant trade

and industry-specific information and analysis around this time.

Finally, books will begin to appear a year or so after a story or event. Books are useful for their in-depth research-based information about your topic; the best of them will also include extensive footnotes, background information, context, and analysis.



CHAPTER FOUR:

Navigating the Information Landscape: Search Engines, Library Databases, Library of Congress Classification, and Discovery Tools

Some of your college instructors may have grown up in a very different information environment, using different research tools to find the information they needed. Instead of electronic databases, they may have used indexes like *The Readers' Guide to Periodical Literature* to identify promising articles and then located the full text of the articles in large bound volumes of print journals in library stacks or on microfilm. To find print books, they may have used a card catalog. Card catalogs allowed library patrons to search for print books in one of three ways—alphabetically by title, alphabetically by author, and by the handful of subject headings that were assigned to books based on their content.

Browsing physical shelves, browsing subject-related print journals and indexes, and following citations found in the references of books and articles were all essential research strategies.

To some degree these strategies remain essential to conducting research, though the tools have changed dramatically over the last couple of decades and research behaviors have evolved accordingly. The electronic indexes of today are much more powerful research tools. Today's library databases allow you do full text searches of millions of articles at once. Ebooks have made the large print collection optional for many kinds of research.

Has something been lost in this change from print to electronic collections? Perhaps so. Browsing physical books and scholarly journals was once a terrific way to come up with interesting research questions and make connections between different concepts, different experiments, and theories, and this strategy is far less common today. After all, why browse library shelves for long hours for information when you can quickly find what you need to answer a research question with just a few thoughtful keywords? In that sense the improvements to the accessibility and searchability of information may actually put today's researchers at a bit of a disadvantage.

Making conscious choices about where you do your research requires an understanding of what tools are available and when each tool is best suited to addressing a particular research need. For example, as we discovered earlier, peer-reviewed scholarly literature is the gold standard for

many types of research. A simple vanilla Google search is unlikely to connect you with scholarly literature, so it would be a poor choice of search tool for finding scholarly articles. The Library Catalog is also a poor place to locate peer reviewed scholarly literature, though it might be ideal for finding books and films. Let's briefly look at the most popular research tools, along with the kinds of content you can expect to find in each.

Library Catalogs

Library catalogs allow researchers to search the local print collection at their library. Typically the catalog is a useful way to find print books, though ebooks, microform, films, and special collections records are also likely to be included. A library catalog allows users to search by author, title, journal title, subject, and often by series, ISBN/ISSN, publisher, and call number as well. A catalog may search all these fields at once, or only the fields you have selected to search.

Note that when doing searches in library catalogs, you are usually not searching the full text of the books and other materials that are indexed by the catalog. As we said earlier, we are searching though the subject headings each item in the catalog has been assigned, along with a few other basic pieces of information about the book. Book records in catalogs are thus quite sparse compared to the more extensive indexing found in article databases. The subject headings assigned to books come from a "controlled vocabulary" that ensures the same language and terminology is used to describe similar topics. So for example, if your subject

search is giving you poor results, you may not be using the correct “controlled vocabulary” to describe your topic.

Tip: A subject search on “feline” is likely to give you very few results, because books about felines use the controlled vocabulary term “cats.” One you have found an item on your topic, you can look at the item’s record and see the subject headings that the item has been assigned. You can then click on the subject heading to see other items in the catalog that has been assigned that same subject heading.

Library Databases

You will often hear about databases in academic libraries. Library databases are an important resource for researchers, both student and professional, and understanding how they work will make your library research in the future easier and more productive.

So what is a library database? A database is just a searchable collection of information. We use different kinds of databases every day. Apple’s iTunes is a database of songs to buy. Amazon.com is a huge database of products for sale. Even your cellphone includes a database of family and friends’ names and phone numbers. Library databases are collections of magazine and newspaper articles, book chapters, conference proceedings, and other kinds of digitized research material.

Different library databases contain different kinds of content. Most databases only include articles for a particular subject area. An example of a subject-specific database is the *Cumulative Index to Nursing and Allied Health Literature*

(CINAHL,) which contains the full text to over 600 different nursing and allied health related journals. Naturally, the CINAHL database would be a poor place to find English Literature or History articles, but would be excellent for finding high-quality articles for nursing or other health-related areas like nutrition.

Some databases contain only certain formats of material. *ProQuest Newsstand* contains hundreds of reputable national and international newspapers, but only newspapers—no journals, no book chapters. *Films on Demand* contains only videos. *ACLS Humanities E-Book* contains only ebooks. So be aware not only of a database's subject area, but also of the kinds of material formats it contains.

Finally, a few databases are multi-disciplinary. This means that a single database might cover many different subject areas. These large multi-disciplinary databases are often the best, first stop when doing library research. *ProQuest Research Library* is an example of a multi-disciplinary database. You'll find articles in *ProQuest Research Library* on a wide variety of topics, from political science and psychology to English literature and education.

Because databases contain such a huge amount of content, you will want to think about ways to weed unhelpful items out of your search results. Before you begin a database search, select any limiters that you'd like to use. Limiters filter out content that you know you don't need. So for example, do you need articles from only a particular date range? There's a limiter for that, which will weed out articles outside that particular range. Only interested in scholarly articles? Mark

off that limiter, and all but scholarly articles will be weeded out of your search. While different databases may look different, the tools are all generally pretty similar.

One thing to note is that not every database or database record is available in full text. A database might contain hundreds or even thousands of different full text journals, but may also include article records where the full text is not available. These abstract-only article records may not be immediately useful to you, but most libraries have an interlibrary loan service that can quickly request the full text of the articles for you. If you have questions about using interlibrary loan and accessing items beyond your library's collections, speak with a librarian.

Tip: Databases typically focus on particular areas of study, such as communications or engineering, and they can be enormously helpful for finding discipline-specific information relevant to your topic. But ask yourself if your research topic has a multidisciplinary angle and choose your databases accordingly. For example, if you are researching bullying in schools, you may want to do your searching in databases from a number of database categories, as the topic touches on a number of literatures: Education, Sociology, Child Development & Family Relations, etc. Think about the whole range of places where published research on your topic is likely to appear.

Discovery Services

Library discovery services are the newest of the tools available to student researchers. Discovery services allow a user to conduct a search across multiple collections at once. Whether you need books from your library's physical

collection, a piece of microfilm, a newspaper article from the 1800's, or a scholarly article just published in a well-regarded journal, a discovery service will provide relevant search results.

It has long been a dream of libraries to provide their users with a single search tool that searches across their entire collections, both print and electronic. Discovery services represent their current best effort at creating such a tool, allowing users to search the full contents of a library's local print collection and a majority of the database content in a single search.

Discovery services are not without issues that you need to know about. While the content of most databases subscribed to at your local library may appear in its discovery service search results, the content of some databases will not. Determining which databases are included in your local discovery service and which are not can be difficult.

Another shortcoming of discovery services is the lack of discipline or database-specific search tools. For example, consider the nursing database CINAHL. While articles located in CINAHL may appear in keyword searches in your local discovery service, you will not have access to CINAHL's special subject heading controlled vocabulary tool unless you conduct your search within the database itself. Or a student researcher interested in finding content on certain kinds of businesses and industries may want to search for information using NAICS (North American Industry Classification System) codes. These six digit codes can be searched in select business databases, but a discovery service is unlikely

to provide that same functionality, even if the articles and reports themselves will appear in discovery service search results.

Tip: For research projects where you are asked to have a mix of books and articles as references, discovery services can be ideal places to begin your research. Discovery services can also be helpful when your research topic is multidisciplinary in nature (i.e., it touches on the literature from several fields of study,) as it draws in search results from databases in a number of different fields in a single search.

Google

Google is a terrific tool for locating information across the more than 30 Trillion web pages it indexes. What can you expect to find with a Google search, and what is likely to be excluded? While Google indexes and connects you to a massive amount of information, it does not necessarily own the content it indexes. Books and scholarly journals are typically not free, and so Google is a poor way to find these types of sources. More exactly, Google may lead to you useful book and article citations, but is unlikely to give you full access to those books or articles. Still, Google can be useful for gaining a global understanding of an unfamiliar topic, and can connect you to useful sources such as professional organizations and federal documents.

TIP: Vanilla Google searches can be made more powerful by taking advantage of a few useful tricks. For example, you may want to only search a particular domain or website. Do so by adding "site:" before or after your search terms. For example:

site:.edu or site:.gov

You can also have Google provide you with only certain types of results. For example, if you only want to see PowerPoint presentations or PDFs in your search results, try:

Filetype:pdf or filetype:pptx

Google Scholar

Google Scholar indexes peer-reviewed articles in much the same way that vanilla Google indexes web pages. Unfortunately, Google Scholar does not own the content of the articles it indexes. So while a Google Scholar search may yield genuinely useful, high quality results, the full text of the articles may not be available. Note, though, that there are two major exceptions:

- Content owned by your library

If the article in your Google Scholar search results is owned by your library, you may have access to it in your Google Scholar results. Click on “settings” and then “library links” to see if your campus is set up to work with Google Scholar, or just check with your local librarians. A “Google Scholar” link that automatically connects you to content your library owns may be available on your library’s website.

- Open Access Journal articles

Because of the high cost of peer-reviewed journal subscriptions, a number of journal publishers have switched to an open access publishing model. In addition, many universities have adopted open access mandates, requiring that their researchers make copies of their research freely available

in institutional repositories. Accessing these open-access articles requires no special fees or affiliations.

TIP: The option to do an “advanced search” in Google Scholar currently only appears after an initial search. Once you have done a search, look for the downward arrow on the right side of the screen to select “advanced search.” From here you can search for articles by title, author, or publication.



CHAPTER FIVE:

The Research Process: Settling on a topic, identifying keywords, and retrieving the information you need

We will approach the research process in this chapter by looking at examples of student research. Before that, though, we need to cover some basic, essential terms.

Limiters

Have you ever searched online for a product to buy? Then you have probably used limiters. For example, suppose that you

Boolean Operators

When librarians use the phrase “Boolean operators,” we refer mainly to the words AND, OR, and NOT. These

words work a little differently in library search tools than they do in every day speech. Having a working knowledge of Boolean operators and integrating that knowledge into your searches will make your future research both quicker and more effective.

How Keywords Work

We conduct keyword searches in Google often daily. The basic process seems clear—we type in a word or string of words and Google provides us with a ranked list of websites on which those words appear. This is how we find products to buy on Amazon and how we find the music we enjoy on iTunes or Spotify.

Choosing a topic and keywords: a scenario

Colleen’s composition instructor has assigned a research paper to the class. Colleen has never written a college-level research paper before and is uncertain about the best topic to help her succeed on the paper. Recently a younger cousin of Colleen told her about some negative experiences on Twitter and remarked on how social media can make otherwise pleasant people yell at total strangers. Colleen thought this might be a promising idea for a research paper, and she consulted with her composition instructor. The instructor was supportive of Colleen’s topic, but felt it was too broad a topic. Colleen would need to narrow her topic to a more researchable question. Colleen accepted this, but struggled. She mused on her initial topic idea: “How does Twitter af-

fect the way people talk to each other?" What aspect of this topic most engaged her? How could she narrow it further?

The journey from choosing a topic to completing a research-based assignment is called the research process. It is made up of all the necessary steps you complete to be successful in finding the information you need. Choosing a topic is an important early part of that process.

Flexibility is a virtue when choosing a topic, and your finished topic may not always look exactly like your original one. Your original topic might be too broad (as in Colleen's case) or too narrow, or there may not be enough information on your topic, or you may discover a more interesting one as you conduct your research.

Once you have a general idea of your topic, you may be tempted to head straight for the library databases to begin your search, and you may not initially see a lot of useful information. This does not mean you have a bad topic. Begin instead with a search for background information, especially if you are not familiar with the subject area. This will help to better inform and define your topic.

As you search for background information, look for keywords that you may be able to use as search terms within the databases. These may be words that you see over and over as you read through the information on your topic. Your keywords may also be synonyms or related terms.

Colleen reflected on her topic. Twitter seemed like a good, solid keyword. But was there a better, more succinct

way of describing “the way people talk to each other?” How about “communication?”

She now had two keywords: Twitter and Communication. Because she wanted to find articles that mentioned Twitter and communication within the same article, Colleen knew to include the Boolean operator “AND” in her initial search:

Twitter AND communication

As you recall, Boolean operators like AND, OR, and NOT allow researchers to construct more complex searches, providing only items with the required keywords in their search results, or excluding content from their results.

Still, Colleen was not satisfied with her initial search results. Using advice she had received in a library instruction class, she experimented with her keywords.

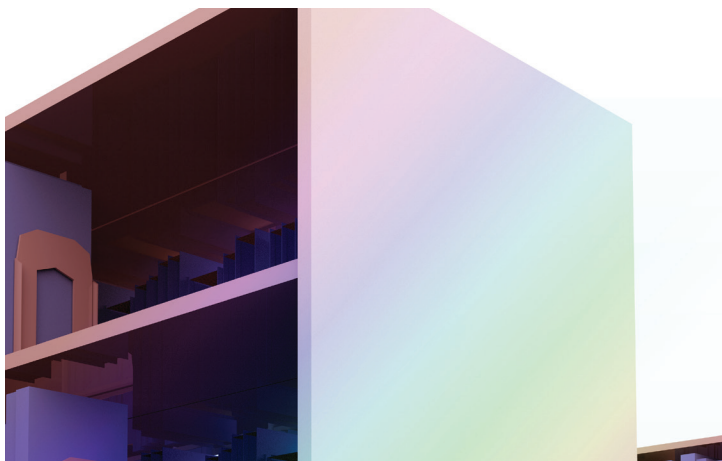
Instead of “Twitter,” she tried “social media.” Instead of “communication,” she tried “personal communication.” She found useful results this way, but still wasn’t satisfied. She reflected more on how Twitter affected the way people talk to each other. It certainly seemed like people were meaner on Twitter than in real life. Was there a useful keyword in that? A keyword related to anger or aggression?

Anger and aggression are synonyms, and she wanted to find articles that included either of the terms. She knew the Boolean operator “OR” would be helpful, and wrote:

“social media” AND “personal communication” AND
(anger OR aggression)

By using "OR," she knew articles using either term would appear in her search results, provided the other two key-words were also present.

One result Colleen noticed was on cyber bullying. That's it! Not only had Colleen narrowed her topic sufficiently, she had already found some articles.



CHAPTER SIX:

The Ethical Use of Information: About academic integrity, avoiding plagiarism, and scholarship

Why we cite

To participate in college-level research is to engage with a chain of debate and scholarship that extends well beyond any individual scholar or researcher's efforts. As new knowledge builds on or upends older established knowledge, a conversation of sorts develops across time. When we conduct or synthesize the research or writings of others in a college-level research paper, we participate in that conversation. Key to holding this vast enterprise together is the notion of citation.

Citation is how scholars acknowledge or point to the work of earlier scholars. Ideally, citation provides a stan-

Standard means for tracking down the research of others by providing sufficient information about the original source so it can be easily found. Citations typically include things like article titles, journal titles, authors, dates, and publication information. Citations will look different depending on citation style, discipline of study, and the format and nature of the information itself. The purpose is the same: to make the original source of any information you reference easily findable by others. This is our responsibility as participants in research. One day others may use your work in their own research, and those future authors will be obligated to cite you.

Citation also allows you to avoid plagiarism. Most every educational institution has some sort of academic integrity policy that outlines a student's responsibilities as a researcher. These policies may vary slightly from institution to institution, but typically warn against two behaviors:

1. Committing plagiarism. Plagiarism is when we use the ideas or research of others and fail to attribute those ideas or research to the original authors. This is a form of theft easily remedied by extensive use of citation. Did you get an idea from a book, article, or website? Cite it as specifically as possible. Did you find a terrific graph or image online that you want to include in your paper? Cite it. Using a quote from any source? Cite.

2. Self-plagiarizing. This happens when you submit work you completed in one class for a different class. Most syllabi expressly forbid this. If you are considering using your previous work for a current project, be sure to cite

yourself and to note how extensively you are reusing the work. Also be sure to talk to your instructor. What constitutes self-plagiarism may seem murky to you, but your instructor may have bright red lines over what is and isn't allowed in a particular class.

Why are there so many citation styles?

One common frustration with student researchers is the need to learn more than one citation style. You may learn MLA in an English composition class, but may also need to learn APA for a sociology class, or Chicago style citation for a history class. Why are there so many? Styles have developed for the most part organically to reflect the needs of different areas of study. While the differences between styles may seem arbitrary, they emerge from how scholars in various fields cite sources and present their research. For example, historians often use the Chicago style. Why? One reason is that Chicago accommodates the footnotes and endnotes essential to history researchers in a way other styles do not.

A Glossary of Terms

Boolean operators

A method of searching created by mathematician George Boole that uses the terms AND, OR, and NOT to broaden or narrow a search. Keywords or controlled vocabulary subject terms are combined using these three “operators.”

For instance, AND allows two different but related terms to be searched, which narrows down your search to be more specific. An example would be PTSD AND soldiers, which would search all of the literature first on PTSD, but then limit to only the articles that were written about soldiers with PTSD.

The operator OR allows you to search two like terms and have the results of both searches appear on the same page. An example of using OR would be to search for PTSD OR Post Traumatic Stress Disorder, which would return results that used either of the two forms of the term. NOT excludes certain terms from being included in a search. In the same vein as the other example searches, you may be interested in finding out only about soldiers in the Army, but not other branches of military service. A search with not could be PTSD AND soldiers NOT Navy.

Catalog

An online tool in libraries that is usually used to find items housed physically in the library. Some libraries also list their eBooks and other electronic items in this search interface. You will not be able to search for journal articles by subject or title in the catalog.

Citation

A reference to where you found a specific piece of information or opinion that you have used in your paper. Citations will be found in a references list, bibliography, footnotes, or works cited page and follows a specific format, such as APA, MLA, or Chicago Style. In-text citations are used to mark the specific information that you are citing. Citing is important to give authors credit for their work and prevents you from plagiarizing. Another reason it is important to cite is to situate your work within the scholarly conversation happening on a topic.

Controlled vocabulary

Refers to the way that articles or abstracts are organized in a database by a set lexicon of terms that are defined by the creators. Seasoned researchers will take their keywords from their research topic and look them up in the thesaurus of the database to find out which terms the database vendor has used to tag the concept being researched. You may also find related terms in the thesaurus that you had not previously thought of. Some thesauri allow you to “explode” the topic, which means that all related

terms will be searched at once. In the U.S., the most common controlled vocabulary is the Library of Congress Subject Headings.

Discovery services

An online tool in libraries that searches multiple databases and the library's catalog at once. A discovery service is normally behind the search box on the front page of the library. Discovery services are great tools for finding a lot of research on a topic quickly, but they may bring back too many results from many different fields of study on a particular topic. Additionally, there will be certain databases that are not included in a discovery service, so it is still important to check the subject-specific databases on your topic to make sure that you have not missed any research that may not show up there.

eBook

A monograph that appears in electronic format, normally located in a database or on the web. eBooks are normally read online in a browser window or on an e-reader device.

Grey literature

Scholarly writing that appears outside the scope of the normal publishing channels (journals and books), such as reports, dissertations, theses, and conference proceedings. Grey literature is normally created by scholars in the field or graduate students,

but it does not undergo the same level of peer review as a journal article or scholarly book.

Multidisciplinary database

A broadly scoped database that includes articles from many different fields of study, rather than focusing on one specific academic discipline. A multidisciplinary database is a good place to start if you are in a general composition class or you are unsure what fields of study are undertaking research on your topic. Many experienced student researchers start in a multidisciplinary database to see what is published on a topic and then move into a subject-specific database that is tailored to their major.

Subject-specific database

A database that is scoped to include only journal articles, book chapters, citations, and sources from one particular academic discipline.

Scholarly or Peer-reviewed Literature

Scholarly literature usually appears in journal articles and books. It is written for an audience of other researchers in the field and it usually builds on the past research of others. The process to get a scholarly article published is rigorous, and includes peer review undertaken by other experts on the topic.

Popular publication

Examples of popular literature are magazines and newspapers. Articles in a popular periodical will be

written for the purpose of entertaining or informing a wide audience. You can find examples of popular periodicals on newsstands and in book stores. They are usually written by journalists.

Trade publication

Articles in trade publications are written for an audience of professionals that are already working in the field. They will usually include relevant trends, news, and reports on successful projects that other professionals may want to duplicate on their own.

Journal article

A written work that appears in a periodical that is published on a regular basis, whether that is monthly, quarterly, annually, etc. Journal articles are normally written by scholars, researchers, or experts in a field and they are peer reviewed by other researchers in order to ensure accuracy. Articles will usually have a methods section and a bibliography or works cited that situates the current information in the body of previous research on the topic. The writers are normally not paid directly for their contributions, rather, they are publishing on the topic because they are contributing to the formal scholarly conversation on a given topic.

Keywords

A method of locating library literature in a database that requires you to search using broad, user-de-

defined search terms to find all of the literature on a topic. Keyword searching is the type of library search most closely aligned to the way we naturally speak or write; look for the main ideas of your topic sentence to determine your keywords. Keywords may be separated by Boolean operators.

Magazine article

A written work that appears in a popular periodical that you would find in a bookstore or on a newsstand. These articles are written by professional journalists for a mass market audience and will be written at a lower reading level than a scholarly journal article. The purpose of a magazine article is to inform and often to entertain the reader. There will not be citations in this type of article.

Monographs

Put most simply, a monograph is a book. A monograph is a non-serial publication that is published on a particular topic; in academic libraries, this would normally be published by a special educational publisher or a university press. Different fields of study may publish monographs more than others. For instance, in the hard sciences, you will find fewer monographs published, since the focus is on bringing new research to light more quickly in journals. In a field like History, some professors will be expected to publish in monographic format to gain tenure at their university.

Newspaper article

A brief, article, or description of a current event that appeared in a daily publication. Newspaper articles are written by professional journalists and do not normally contain citations. They are written for the purposes of informing the general public about happenings in the world.

Periodicals

A publication that is regularly released monthly, quarterly, annually, etc. Individual articles are submitted by researchers for consideration in the journal and then peer reviewed before being accepted to be published. Journals are ranked by something called impact factor, which gauges the level of influence they will have on the field. Impact factor is determined by how many times past articles published in the journal have been cited by other researchers. Many journals are published by academic societies, professional associations, or university presses.

Reference Books

Usually located in a special collection of non-circulating books, reference materials include encyclopedias, dictionaries, and atlases. Most reference works include a summary of information taken to be factual, rather than analysis or new research on a topic. These works are a great place to start your research, as you will discover related terms and ac-

cumulate background information on
your topic.

