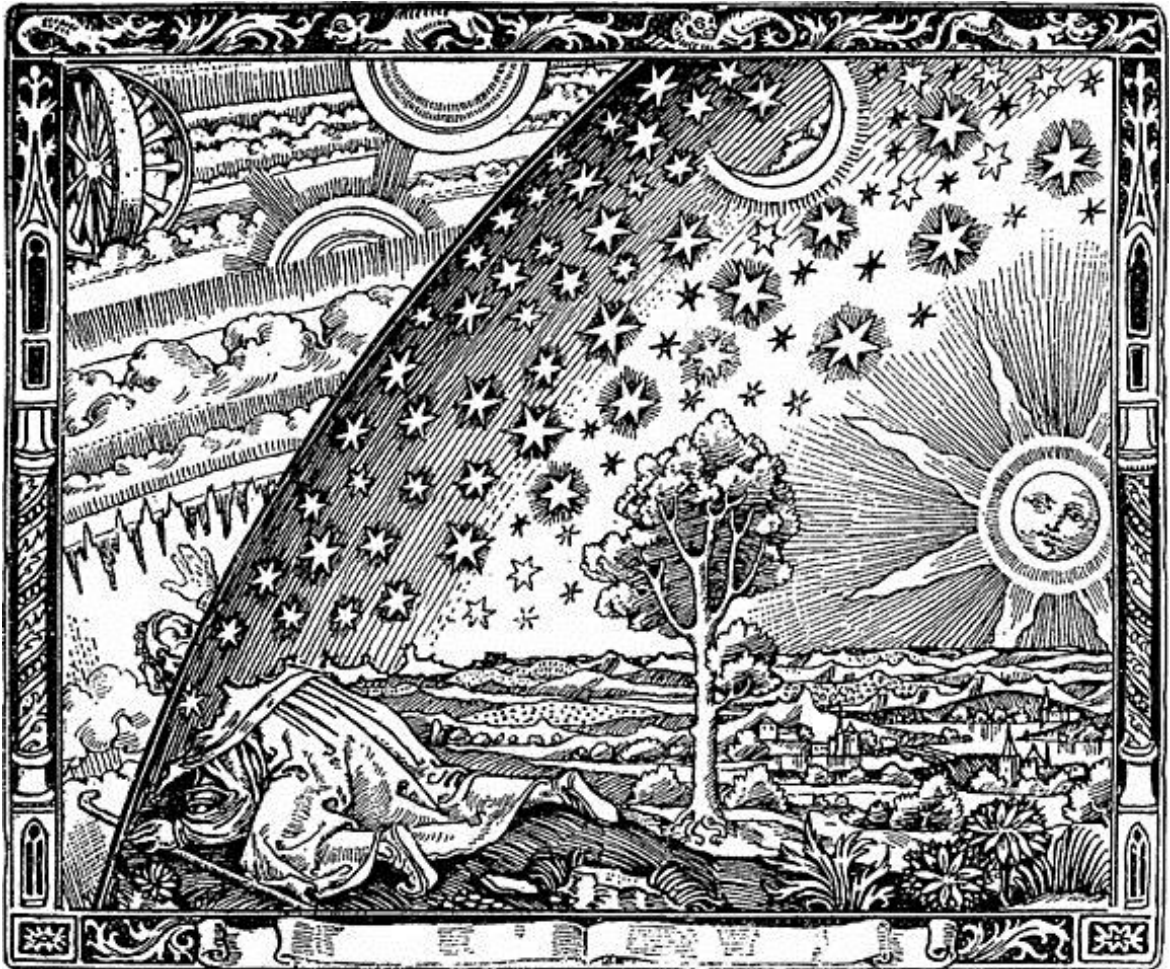


INFORMATION LITERACY

Basic Research Skills



Source: Keck (n.d.), Engraving by unknown artist in the 1888 edition of *L'Atmosphère* by Camille Flammarion

Information Literacy

Basic Research Skills

An open education resource
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2019

Introduction for instructors:

We all stand on the shoulders of those who came before us. This Open Educational Resource (OER) is nothing if it is not an example of that. I have pulled from years of experience, my many colleagues who may not have realized they were my valued teachers and the work of fellow professionals I have known only through their writings and presentations. The intent of this OER is twofold: to offer a free or low cost quality text to our students in a one-unit information literacy course and to offer a starting place to anyone who wishes to develop their own class or OER. It is intentional that this text is not San Diego City College specific because the skills we teach in our LIBS 101, and are reflected in this OER, are transferable skills. This allows students to take what they learn here and apply it to any information need in any environment: academia, careers, life-long learning, bar bets, or what have you. It is not an attempt to be a comprehensive book on information literacy, but rather a brief overview in support of this one-unit class. Assignments and class activities are used to delve deeper into the basic skills presented here.

We would be interested to know if others find this OER, in-part or in-whole, useful. If you do choose to use this or any part of this, please let us know. You just know we will be collecting the stats on it. Best of luck to us all.



Multangular Tower, York, Great Britain

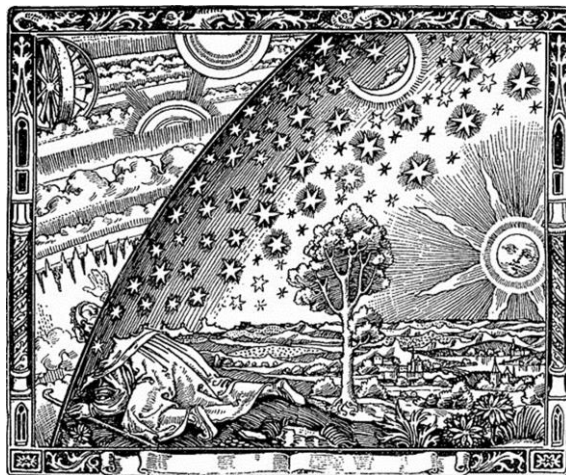
Introduction for students:

Do you ever use Google? How about library databases? If so, you know that you can sit down, type something in and get results. That shows you are computer literate. Because information literacy is often confused with computer literacy, most people think they should already know or do already know how to do research effectively and efficiently. Just knowing how to perform a search on a computer does not make person information literate. Although it isn't brain surgery, as one of my first mentors assured me, it is a set of skills that need to be learned. It is not built into our DNA.

Some students use the first few articles or books they find on a topic and write a paper from that. That is not really doing research nor does it shout, "I am information literate." A true research project is having a question or a theory and looking for an answer, proof and/or supporting evidence. Information literacy is not only doing research, but also understanding information, how it is created and organized, how to use it and the realization that research takes time. More often than not, multiple searches will be required to find what you need.

This small book is intended to get you started on the way to becoming information literate and knowing how to do library research. These skills will: transfer from institution to institution no matter if it be a college, university, or public library; allow you to learn what you want when you want by putting you in control of database searching; show you how to find answers to questions you may not know you have; support not only your academic endeavors, but help you keep abreast of the information in whatever field you choose; and may aid you in all life's questions. Use the index at the end to clarify new terminology.

Education takes us out of our comfort zone. Information literacy empowers us to continue our education far beyond our schooling. Inherent in learning is the need to challenge our assumptions. Sometimes we do not even know we have assumptions until we learn something new that shakes our mind into a new understanding. This is why learning is so amazing and so fun.



Source:
Keck (n.d.)
Engraving by
Unknown artist in
The 1888 edition of
L'Atmosphère
By Camille Flammarion

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Section 1: Research and the Scholarly Conversation

- A. Two Kinds of Research: original and library
- B. Scholarly Conversation

A. Two Kinds of Research: original and library

Original research

Does the image of a white coat bedecked person in a lab with test tubes and beakers bubbling over come to mind? You are correct. That scene is an example of this kind of research. Surveys, tests, archeological digs, soil sampling, tracing monarch butterfly migration, surveying the public to discover how to get us to use public transportation and such are also original research. So researchers start with a question or two, devise an experiment, survey or other method that they believe will answer their question. These experts in their fields collect the data, analyze it and write up their results (and rewrite) which are then published as articles or as books. You and I come along with our library research question and we:

1. search for information
2. find it in that article or other place the researcher wrote it
3. evaluate the information
4. read it and think about it in relation to all our other research
5. use it to write a paper, make an argument, decide how to vote on something and so on.
6. repeat 1-5 above as needed

One thing to notice when reading original research is that the authors of the study will almost certainly begin with a review of the library research (e.g. published articles and books by academic experts) they read before and while they do their original research. This is often called a *literature review* or *review of the literature*. The word *literature* here is not supposed to evoke Shakespeare or Angelou. Rather here the term *literature* refers to the collection of works written on a topic. So basically, the authors did the same kind of library research to write their literature review as you do when you have a research paper or project. It is that same library research that we will be talking about in this book. You will use it for your papers in undergraduate classes all the way through your master's or doctorate degrees: Yes, Master's and/or Doctorate. You might as well go for it.



Library research

Library research is finding published academic books and articles and other information written by experts on your topic to support a thesis or answer questions. It is the kind of research most students are expected and often required

to do when assigned to write a paper. As you have seen above, library research is included as background for original research.

Just as original research does, library research starts with thinking through a topic or question. To find information and answers, most library research will involve the use of databases.

A database is a way of organizing information or lists of information on a topic. A library's catalog, for example, organizes what a library owns. We can search it, discover an interesting book and find it via a call number or, if an e-book, read it online. Library catalogs provide access to books, media and periodicals owned by or accessible through the library. (Notice, library catalogs do not have articles in them, but more about that later.) Different databases have different kinds of information. Some include **only** lists of books, or **only** e-books, or **only** periodicals, or **only** media or **only** articles. Some databases have access to combinations of these and other types of information.

Some databases have and/or list information on just about any topic you can imagine: everything from azaleas to Zanzibar. Some have and/or list government documents. Others have and/or list just health information or just chemistry information, or just psychology information and so on. Some databases have scholarly academic information and some have popular information like you might find in *Time* or *Newsweek* magazines. Some have both.



Sources:	
http://www.fnal.gov/pub/today/archive/archive_2014/images/Nutshell140502_Figure01.jpg	https://www.esc.gov/isMain.asp
https://blog.epa.gov/blog/tag/women-in-stem/	https://www.loc.gov/

Authors do the research and publish their work. Database providers, such as EBSCO and ProQuest, acquire the work or the right to list the work. Libraries buy the database. You and I search the database to find information. When we write our papers, we join the scholarly conversation.

This book provides the fundamental strategies of research that you will be able to use in any database in any library (public, college, or university). These strategies

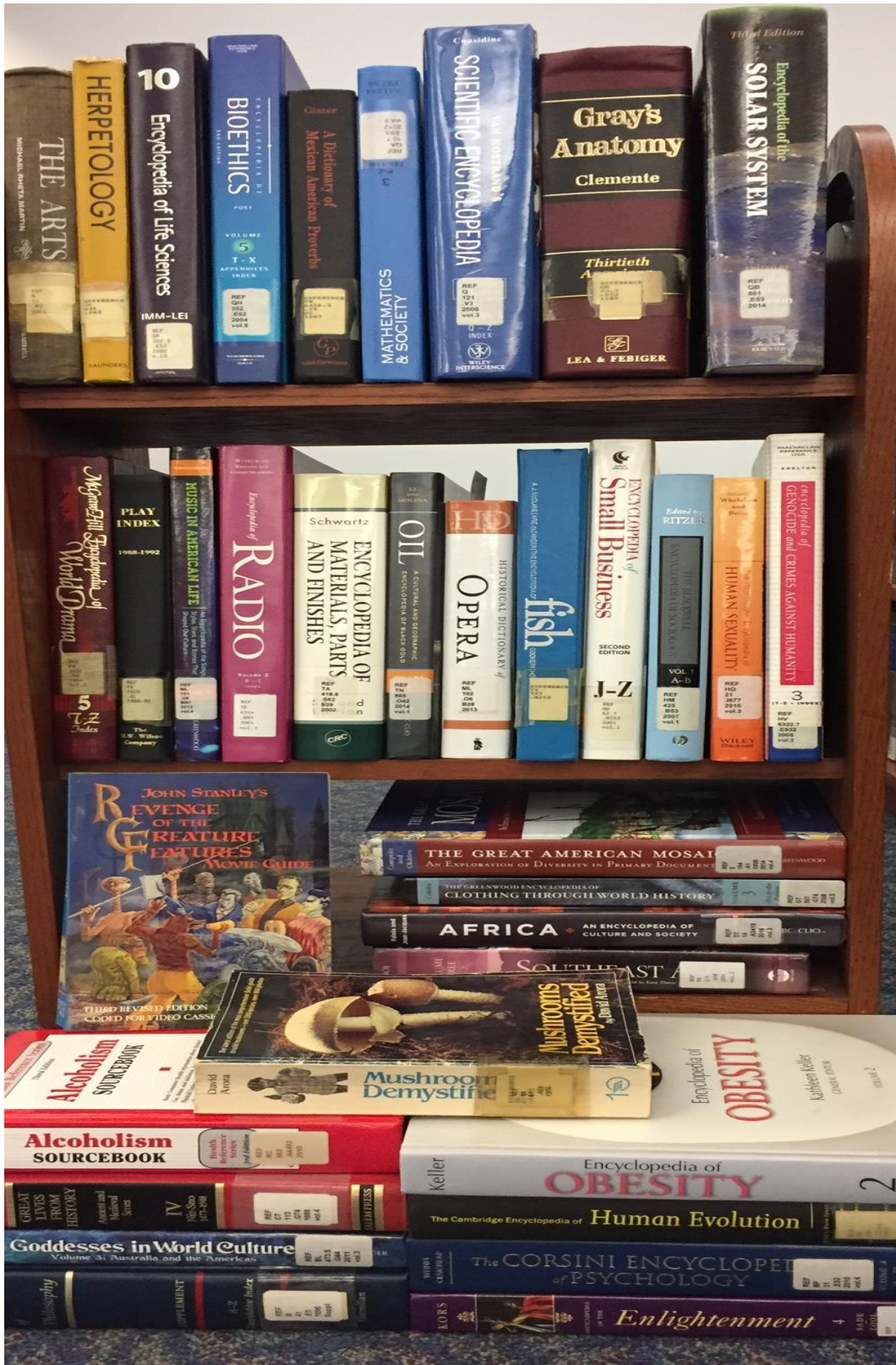
will enable you to keep current in your professions and support self-directed life-long learning.

B. Scholarly Conversation

Have you ever walked into the middle of a conversation and, though you understand the words your friends are using, you don't know what they are talking about? You then figure it out and join in adding to the conversation. Doing library research is catching up in a conversation and when you write your paper, give your presentation or defend your thesis, you are contributing to that conversation.

Depending on your topic, that scholarly conversation may have been going on for a thousand years or more: all the way back to the great thinkers of ancient eras. Conversations in philosophy, science, education, agriculture, engineering and drama did not start yesterday. No matter what you are studying, part or all of your topic has been explored before. Your paper or project will integrate other's writings, contributions and thoughts on your topic. Your paper/project now becomes a part of the conversation. Maintaining the integrity of the conversation requires citing sources in your work so we know who you invited into your conversation (i.e. whose work you read and used in your project).

Scholarly conversations are dependent upon robust discussion and critical thinking that challenge the researchers' methods, analyses and conclusions. Debate is not only healthy but necessary to move the conversation forward and advance our species. In section 2 you will see how this works via the peer review process.



Section 2: Understanding Information

- A. Flow of information
- B. Evaluation of information: standard approaches, at the sentence level, confirmation bias
- C. Primary, secondary and tertiary sources
- D. Information in scholarly and popular sources
- E. Current and contemporary sources

Information can be seen through a few different prisms. Here are a few we will explore. We can look at the format (print book, e-book, article, e-article, webpage, etc.). We can look at information and their sources to determine if they are good enough to use for the purpose we intend to use it. We can look to see if the authors have first-hand knowledge of what they are writing about or if they are using information they learned from others. We can look to see the qualifications of the authors. We can look at sources through the eyes of the creators and acknowledge their work by properly quoting and citing (See 3D). We can look to control if the work is current enough for our needs.

A. Flow of Information

Information resources can include books, articles, websites, encyclopedia entries, interviews, blogs, correspondence, institutions or associations among others.

All formats can be:

- electronic or in paper: for example, you can find articles and encyclopedias in print and online.
- general or specific: for example the *Encyclopedia Britannica* is a general encyclopedia and the *Encyclopedia of Bioethics* is specific. *Historical Dictionary of the U.S. Presidency* is a general book and *Barack Obama, the Story* is specific.
- searched: OK, almost all formats, but think about it. Most books have an index in the back which can be used to search the contents of the book.

You will find there are exceptions to everything in this book. OK, almost everything. The idea is to find the information to answer your question no matter if it is in a print or electronic resource. Do not just stick with only print or only electronic resources. Get out of your comfort zone because the point is to find the information you need. None of us should depend solely on paper or electronic resources and neglect the wealth of information found in the other.

You want to know what kind and how much information you need so that you can look for appropriate information sources. To know what kind of source you need, it is important to know what kind of information to expect when you open a book, a magazine or a reference source such as an almanac. **They each offer different kinds of information.** For example, you want to know about Lincoln's

Gettysburg address. The text of the address might be found in an almanac or a government website. If that is all you want, there is no need to find books on the Battle of Gettysburg. At the other end of the information-needs spectrum is if you want to know how the public at the time felt about the Battle of Gettysburg and Lincoln's subsequent address. You will not only want the text of his speech, but information written at the time the speech was given as well as recent analysis of the event. That kind of information could be found in newspapers of the time and current books and periodical articles. The kinds of information you need (deep analysis, original research, a quick statistic) will drive the kinds of sources you use and, therefore, the kind of source for which you will look.

Sounds obvious, but how many of us have a question and simply go to the computer before thinking through what kind of information we need to get the answer to a question? Before looking for an answer, ask yourself, "In what kind of resource would the answer most likely be?"

How information moves from simply being an idea to information we can consume is explained nicely in the following chart from the University of California. Notice particularly the time frame for the production of these formats. What does that tell us about the content? Also note the "written by" and "audience" columns. They will come in very handy later when we talk about how to determine if something is good enough to use for whatever it is we are trying to do. The chart below is adapted from University of California, Los Angeles (n.d.).

Flow of Information

The flow of information is a conceptual timeline of how information is created, disseminated, and found. Information is dispersed through a variety of channels. Depending on the type of information, the time it takes to reach its audience could range from seconds to minutes, days to weeks, or months to years. Knowing how information flows helps you understand what types of information you need and how to search and obtain the targeted information.

<i>Report of Experiment or Phenomena</i>	<i>Time Frame</i>	<i>Review Process</i>	<i>Where to Look</i>	<i>Written by</i>	<i>Audience</i>
News (Internet / TV / Radio Services / Newspapers)	Seconds/Minutes	No formal peer-review process	Websites TV news newspapers	Journalists	General public
Magazines (print and online)	Days / Weeks	No formal peer-review process	Article Databases Library catalog	Professional journalists	General public to knowledgeable layperson
Conference Proceedings	Presented immediately, sometimes published 1-2 years later	Possible peer-review	Article Databases Conference websites	Specialists in the field, usually with PhDs, graduate students, post-docs	Scholars, specialists, and grad students
Journal articles (print and electronic)	Average 3-9 months	Formal peer-review process	Library catalog Article databases Journal website Google Scholar	Specialists in the field, usually PhDs, graduate students, post-docs	Scholars, specialists, and students
Review articles	Average 1-2 years	Formal peer-review process	Article databases Review journals Google Scholar	Specialists in the field, usually with PhDs, graduate students, post-docs	Scholars, specialists, and students

<i>Report of Experiment or Phenomena</i>	<i>Time Frame</i>	<i>Review Process</i>	<i>Where to Look</i>	<i>Written by</i>	<i>Audience</i>
Technical Reports and Government Documents	Months to years	No formal peer-review process	Library Catalog .gov websites	Specialists in the field, with PhDs, graduate students, post-docs	Audience varies depending on document or report
Books, E-books	Average 1-3 years	Editorial process, not peer-review	Library catalog E-book Collections	General authors, journalists & specialists in the field (usually with PhDs)	General public to specialists
Reference Sources, Encyclopedias	Average 10 years	Editorial process, not peer-review	Library catalog E-book Collections	Specialists in the field, usually with PhDs	General public to specialists
Websites and Blogs	Seconds/minutes to years	none	Web search tools	Anyone	General public to Specialists

Using the lead in the water in Flint, Michigan as an example, most of us heard about it first in news media. Reading the chart from left to right, we can see how long it takes +/- to get the news report. Now take a minute and read the two far left columns from top to bottom. Information also flows this way, though its path may vary and skip around a bit. Before news reports, government information was created. There were the initial news reports. The phenomenon was studied and technical reports were made. Scholars researched and wrote peer reviewed scholarly articles on many aspects of the phenomena: social, economic, health, political... More news media reports, technical reports and scholarly articles were (and will be) written. Books, as you see above, take time to reach us, but are already appearing about Flint. It is useful to read this chart left to right to understand each kind of format. It is equally important, however, to read this chart from top to bottom to grasp how information develops from an instantaneous news feed or blog to well researched articles, technical reports and books. What do the differences in time between the appearance of a news media report and a scholarly article on the same topic tell us about the information those sources contain? This is only one criterion to have in mind when reviewing sources. See below for additional useful criteria.

B. Evaluation of Information: standard approaches, at the sentence level and confirmation bias

My Uncle John was a good source of information on how to make chili and I could ask Aunt Margaret about what it was like to be a Rosie the Riveter (women who left their traditional roles in World War II to work in factories building aircraft and other war machines). But, if we wanted to find the nutritional value of chili, or maybe how food and culture in the southwest



Source: pixabay.com

influenced each other, we might need a book or an article. If we wanted to delve into cross cultural patterns of contributions by women to the war effort in World War II, we would need more than Aunt Margaret's memories.



Rosie the Riveter
Source:nps.gov

Standard approaches

We saw in Section 2A that we need to understand the kind of information we need to determine if we need an article, book or blog. But the *why* of doing research will also determine the resources you use. Ask yourself, “Why am I doing research? What am I going to do with this information?” Answers could include: write an academic paper, see who wins a bet or get family history straight so it can be passed on. In this section we are asking, “Is the information good enough for how you will be using it?” If you are writing an academic paper on women’s contributions in WWII, you will need more than an interview with Aunt Margaret. You will need scholarly and/or peer reviewed sources.

Before you get into looking at the list below, what criteria would you use to determine if something would be acceptable to use in an academic paper? What would your professors expect to see? You probably can create a list very similar to what you will read below. Read it anyway, because the whole purpose of this book is to bring together in one place all the bits and pieces that go into good research. You don’t want to miss any of the best bits!

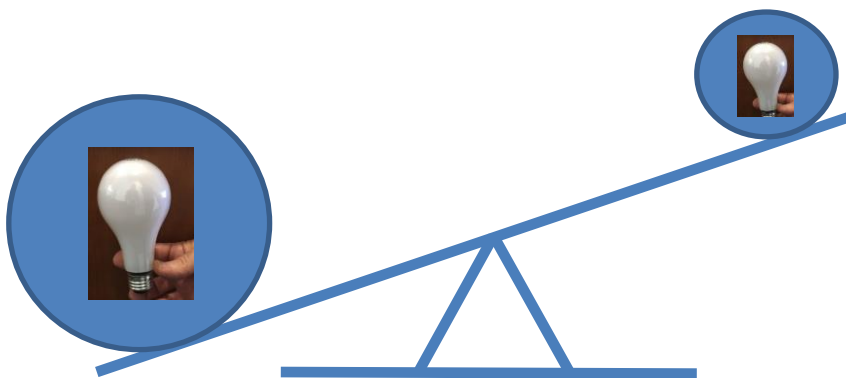
What you are going to do with the information will determine how credible the information needs to be. If Grandma tells you to eat your greens because they are good for you, that should be good enough and you ought to eat them! If you want to write a college paper on why greens should be part of a healthy diet, you are going to need credible, peer reviewed, scholarly sources of information.

When writing a college paper, you will need credible information. You will look for scholarly books and peer-reviewed journal articles written by experts on your topic (See 2D for deeper look at scholarly and peer-reviewed resources). Perhaps there is a university professor who is highly regarded in the field of Balkan folk dancing. Imagine that professor writing an article on the importance of eating green vegetables. Is that professor an expert in the field? Would that article be peer reviewed? Would that be a good one to use for a paper about the nutritional value of greens? No, no and nope. But articles about Balkan folk dancing written by said professor would be perfect for a college paper on Balkan daily life and culture.

Here is what University of California, Los Angeles (n.d.) asks of their students:

When evaluating a resource for credibility and appropriateness consider these questions:

- Who is the author(s)?
- When was the source published? How current is the information?
- Is the information directly applicable to the situation at hand?
- If not, how close is it to the current situation?
- What underlying assumptions have been made in the data?
- Is there any reason to suspect bias of any sort in this data source?
- How good is the evidence given by (or cited) in the source?
- Is there any potential conflict of interest?
- Is any significant data omitted?
- Are there any other data sources which should be consulted?
- Are there conflicting potential causes for the event?
- Are there any fallacies in the reasoning?
- What reasonable conclusions are possible?



Another standard way to evaluate information is the C.R.A.A.P. test (Blakeslee, n.d.). Its easy to remember acronym, along with its usefulness, makes this test popular.

C.	Currency	Ask how current the information needs to be? If doing a study on DNA testing, you want to be sure you have current information. If, however, you are studying the impact of Lincoln’s speeches through time, you still want current research, but you may also need research done over the last 150 years.
R.	Relevance	Not only is the information on your topic, but does it answer some of your questions? Is it meaty enough?
A.	Authority	Who is the publisher? A recognized professional organization or publisher in the field? Who is the author? An expert in the field? Is this expert writing about what s/he is an expert in or has s/he strayed into unfamiliar waters? For example, is a surgeon writing about school reform?
A.	Accuracy	Does the information have an internal logic or do the authors make cognitive leaps? For example, the authors might write that they found 80 % of college students eat vegetables every day and conclude that at least half of college students must be vegetarian. What? No, that does not follow logically. Another needed accuracy check is how does the information complement or contradict other information from other credible sources? Before we believe that the moon is made of cheese because a credible <i>looking</i> source says so, we would want to ask, what do other credible sources say?
P.	Purpose	Purpose is about bias and intent. Some things are written specifically to get us to believe one thing over another (think politics) or to buy a specific product (think infomercial, or any ad campaign). Journalists and academics do everything in their power to minimize bias through professional ethics and by using the peer review process. (See 2D for more on peer review.)

At the sentence level

So far we have discussed evaluating a resource by considering the publisher, the authors and so forth. We want to ask questions such as does this information fit with other information on the topic or is it very different? Is the information logical and does it make sense? Are statements made as fact actually opinion? We should also evaluate the resource at the sentence level. This means we need to use critical thinking as we read, not just when choosing what we read.

Consider this statement:

4 out of 5 dentists recommend Staybright toothpaste.

What information is missing from this statement that is needed to make it truly valuable and usable? You might ask, “Were all the dentists in the world surveyed? How many need to be surveyed to provide statistically significant results? When was this survey taken? Where was this survey taken?” What would you insist the speaker tell you to make the statements clear, complete and useful? A clearer more complete statement would be:

Four out of five dentists from Iceland randomly surveyed in a 2017 study recommend Staybright toothpaste.

Think through the following unrelated sentences. What other information would you need from the writer to make the information clear?

1. The importation of bananas has risen 18%.

Possible answers: Imported to/from where? In what year? 18% of what? All kinds of bananas?

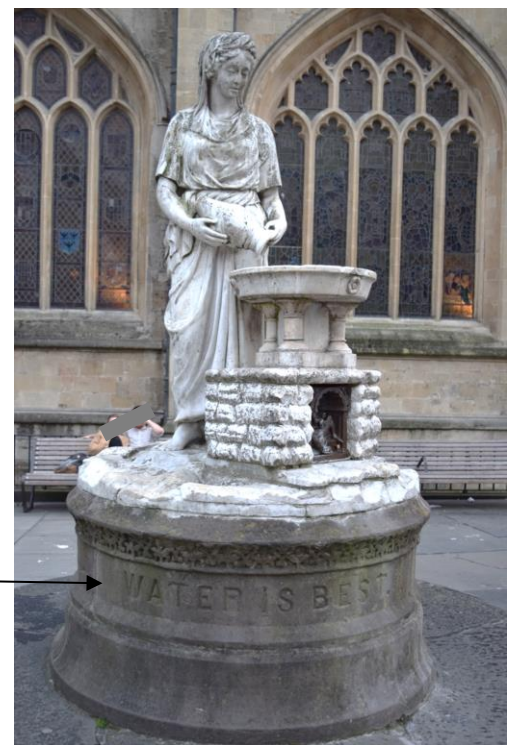
2. They support tax reform.

Possible answers: Who is “they”? What kind of tax reform (corporate, income, gasoline)?

3. Water is best.

Evaluate. Even if written in stone!

Possible answers: What kind of water (tap, spring...)? From where (Italy, Colorado)? Best for what (bathing, agriculture, making smoothies, fighting colds)?



Outside Bath Abbey, England

Confirmation bias

What about statements or concepts we think we “know” are true? What is your birthdate? How do you know that? There is a measure of trust in what we declare as our birthdate. We believe our parents and our birth record. Most likely we can trust our birth record as accurate just as we can trust the highly capable experts at The National Park Service (NPS): a very reliable source for all things flora, fauna and geologic in our nation’s parks. The professional at the NPS are trustworthy experts. According to the NPS, “The color of adult alligators can be

olive, brown, gray or nearly black.” This sounds reasonable. But, what about Claude? He resides in the California Academy of Sciences in San Francisco.



Claude does not confirm my bias (which was reinforced by the National Park Service) about the color of **all** alligators. He not only challenged my assumptions, but also made me aware of an assumption I did not know I had. Claude is rather cool about things like that though. Do we (and the National Park Service) need to qualify all our statements with, “To our knowledge the color of alligators is ...” or “The common color of alligators are...”?

So Claude teaches us at least three things: 1) It is a good idea to listen critically when statements are made 2) use language carefully so that we communicate what we want and 3) **most importantly** constantly be on the lookout for assumptions we hold. What other assumptions do I hold? What about you?

According to Hull in his 2017 interview with Leonard, “Confirmation bias is harmful when change is needed, when our traditional ways of knowing and acting do more harm than good. It supports group think, preaching to the choir, and xenophobia. It narrows the window of opportunities and makes one brittle and resistant to change.” On the website of the Center for Leadership and Global Sustainability, Hull (2017) continues his discussion:

People search for and remember facts that confirm their initial beliefs and ignore or forget unsupportive evidence. The explosion of information made accessible by the web makes it easy for people to find the support they crave. The slow, difficult, testable, and transparent scientific method is an

institution humans invented to help us overcome the confirmation bias... If confirmation bias wasn't enough of a threat to experts, expertise, and rationality, then its close cousin, identity protecting reasoning (**IPR**), is downright frightening... Most people rather doubt science and experts than question their identity or politics... Information of all types has never been easier to find. But the high quality, peer-reviewed, carefully produced arguments and facts tend to be less accessible, often disguised by jargon and hidden behind professional or disciplinary gates. And even if the information generated by experts is found, it is but one click away from half-baked, last minute, advocacy-driven drivel. People inexperienced with a topic have no way to know the difference between science and drivel. It is understandably [sic] that they instead accept the most frequently found, oft repeated arguments that just so happen to confirm their initial beliefs and assumptions.

HOW TO SPOT FAKE NEWS

- CONSIDER THE SOURCE**
Click away from the story to investigate the site, its mission and its contact info.
- READ BEYOND**
Headlines can be outrageous in an effort to get clicks. What's the whole story?
- CHECK THE AUTHOR**
Do a quick search on the author. Are they credible? Are they real?
- SUPPORTING SOURCES?**
Click on those links. Determine if the info given actually supports the story.
- CHECK THE DATE**
Reposting old news stories doesn't mean they're relevant to current events.
- IS IT A JOKE?**
If it is too outlandish, it might be satire. Research the site and author to be sure.
- CHECK YOUR BIASES**
Consider if your own beliefs could affect your judgement.
- ASK THE EXPERTS**
Ask a librarian, or consult a fact-checking site.

International Federation of Library Associations and Institutions
www.ifla.org

Source: International Federation of Library Associations and Institutions
<http://www.ifla.org/publications/node/11174> used per license found at
https://commons.wikimedia.org/wiki/File:How_to_Spot_Fake_News.jpg

Leonard’s (2017) interview with Hull continues, “‘The danger with confirmation bias is that it allows us to easily dismiss facts, because there are always alternative facts to confirm a bias,’ says Hull, whose research is focused on helping leaders and organizations achieve more sustainable futures. ‘So if someone presents a counter argument, it is in our nature to dismiss it as fake news.’”

Let us continue this discussion with some other things you need to know to understand information. When deciding whether or not to use an information resource, keep all the bits in this section in mind!

C. Primary, Secondary and Tertiary Sources

Primary source	an information source providing first-hand knowledge
Secondary source	an information source derived from primary sources
Tertiary source	an information source that summarizes and/or digests primary or secondary sources

One way to figure out if something is a primary source is to ask yourself, "Can I get any closer to the actual event/person I am interested in studying?" If you can, then it is probably not the primary source. If you read an article that was written **using** diaries and interviews as the source of information you would be using a secondary source. You can get closer to the event/person. If you read the diaries and interviews **themselves**, you are using primary sources. Diaries, interviews, trial records, autobiographies and original research are often given as examples of a primary source. A secondary source usually interprets a primary source. They can include books (such as biographies) and many periodicals. A novel or film (*The Great Gatsby* or *Star Wars*) or any other work of art is a primary source; a review of the film or a book analyzing or commenting on the novel is a secondary source.

Determining if something is a primary or secondary source can get blurry because it really depends upon what you are studying. A great **primary source** for women’s experiences in California during the gold rush is the *Shirley Letters*. These were written by Dame Shirley (Mrs. Louise Amelia Knapp Smith Clappe) who lived in gold rush towns and wrote letters about her experiences in 1851-1852 to her sister. If we use her letters to write a paper, we are using a primary source. If, however, she wrote about what she heard at the saloon on how mines were built, that part of her letter would be a great **secondary** information source about how gold mines were built even though we most often consider her letters **primary sources**. In his book, *Anybody’s Gold*, Jackson uses *Shirley Letters* as a **primary source** to write about Clappe and the California she lived in. When we use Jackson for a paper/project, therefore, we are reading a **secondary source**.

As you can see, the lines can be blurred. Newspaper reporters or foreign correspondents on the front lines of a war reporting what they observe first hand

are considered a primary source. An editorial commenting on the same war, published in the same newspaper would be considered a secondary source.

When all this information is compiled, studied and reviewed for an encyclopedia entry, that would be considered tertiary. Encyclopedias and biographical dictionaries strive to provide straight forward background information on a topic, idea or event without a pronounced point of view. The purpose of tertiary sources is to summarize or to lead you to other sources by way of their bibliographies.

Let's say that we want information about Benjamin Franklin. There are thousands of information sources about Franklin. How you will search for the information is dependent upon how you will ultimately use it. A primary source would be the title *The Autobiography of Benjamin Franklin* by Benjamin Franklin. Secondary sources would be the titles *Benjamin Franklin, Genius of Kites, Flights and Voting Rights* by Seymour Block and *Stealing God's Thunder: Benjamin Franklin's Lightning Rod and the Invention of America* by Philip Dray.

A tertiary source containing facts about Franklin would be *Dictionary of American History* or *Encyclopedia of World Biography* which distill just the facts from primary and secondary sources and offer this background information to us in encyclopedic form. A selection of examples follows.

Primary Sources	Secondary Sources	Tertiary Sources
Original works of literature, art, music	Critique of original work	Encyclopedias, dictionaries
News reports of events by someone on the scene	News editorial	
Diary, autobiography, letters, oral history	Biography	
Historical documents such as laws / treaties	Historical Commentary	
Televised program, movie	Review	
Statistics and data from surveys	Social Science article based on another's data	
Observation / experiment	Scientific article based on another's experiment	

D. Information in Scholarly and Popular Sources

Scholarly sources

Scholarly sources, including peer reviewed articles, are written by experts in the field to be read by experts and students diving into a topic. As students, you read these to begin on your path to becoming an expert. Popular sources are intended for a general audience that does not necessarily have in-depth knowledge of the field nor necessarily want it. If you are working on an academic project, reread

your assignment or ask your professor if you are only supposed to use peer-reviewed or scholarly information.

“Peer reviewed” and “scholarly” are terms often used interchangeably when talking about information, especially by companies that compile articles into databases such as EBSCO or ProQuest. Let’s unpack that a little to see why. A peer reviewed article is an article that was sent by the authors to a journal’s editors. The editors don’t just say, “Looks good” and publish it. Rather, they send it out to a number of experts in the field. Most often, those experts do not know who wrote it and the authors do not know who is reviewing their work. This is called double blind peer review since the author cannot “see” the reviewers and the reviewers cannot “see” the author. The reviewers scrutinize everything by asking many questions such as:

- Did the authors do a substantial literature review?
- Did the experiment, survey or whatever they used actually result in answering the question they asked?
- Did the authors collect the data correctly and ethically?
- Was their analysis of the data logical?
- Did the conclusions they made follow from the data?

If researchers stated that their goal was to determine if human behavior influenced a monarch butterfly’s migration path and the researchers only measured how many caterpillars were found in a local canyon, the peer reviewers would call foul. Or perhaps, the peer reviewers noticed that the authors/researchers failed to include in their literature review a recent study that investigates the same question. Maybe the writing was confusing and needed clarification. The reviewers would send the article back to the editors who would inform the researchers that a weakness was found in their article and it would need to be corrected. The authors/researchers rewrite, send it to the editors who send it for review by peers and the process is started anew.

That, more or less, is the peer-review process for journal articles and the resulting product would be scholarly information. How many of us have been told by a professor to rewrite? It happens to all of us just as it happens to authors during the peer-review process. Most often works submitted for peer review are research articles. Those articles, no matter the field of study (e.g. medicine, anthropology, biophysics, sociology...) meet the rigors of the scientific method. When reading those articles, look for not only a literature review that could identify other articles and books you could use for your paper/project, but also methodology used in the experiment, data, analysis, conclusions and ideas for further study. Keep in mind that peer-reviewed information is scholarly, but not all scholarly information is peer reviewed.

Scholarly information also includes the writings, lectures and such of acknowledged experts in a field. For example, if Stephen Hawking had written an article for *Scientific American* musing about his thoughts about the development of artificial intelligence or if Henry Louis Gates Jr. wrote a piece about the triangle trade for the journal *American History*, the editors would likely publish

these renowned scholars. Although the articles would not be peer reviewed, they too could be considered scholarly information since Hawking and Gates are acknowledged experts in their fields. Often scholarly journals packed with peer-reviewed articles may have a “thought piece” or essay from someone in the field that is not peer reviewed. When we discuss using databases, we will talk about how to pull out scholarly information, but as just mentioned, most databases will blur that line between peer reviewed and scholarly.

<p>Henry Louis Gates - Source: Peter Simon https://www.neh.gov/events/the-african-americans-many-rivers-cross →</p>	
	<p>← Stephen Hawking - Source: http://aether.lbl.gov/www/personnel/smoot/ST-EVEHAWKINGGEORGESMOOT_M.JPG</p>

Another source of scholarly, but not peer-reviewed information is found in good encyclopedias. A good encyclopedia will have each encyclopedic article signed by the author so the reader (you) can determine if the author is credible. Books too can be scholarly and the same holds true: you know who the authors and/or publishers are and can determine if they are credible.

Popular Sources

Popular information comes to us differently than the journey peer-reviewed information takes. For example, journalists or reporters come up with an idea for an article or are given an assignment to write one. They submit their article to the editors. The editors of the periodical make the call if it is to be published often after it has been fact checked and edited for clarity. That is the traditional explanation of popular information, but we also need to include blogs and many websites which boast no editors at all. Often they are not written by journalists trained in research and who abide by journalistic professional ethics. That leaves the fact checking to us. Remember that one of the questions we ask ourselves when looking for information is how are we going to use it? Perhaps a blog is just dandy for what you need: perhaps not.

E. Current and Contemporary Sources

Current sources

Current sources of information are those that have been written very recently. Examples of current sources are an article about the latest in cataract surgery or a book written recently about Abraham Lincoln. To determine if something is current, look at the date and see if it was written recently. How recent is recent enough to be considered current? Well, that depends on what the information is and how you will be using it. Would you want your health care

professional to be reading a seven year old article about cataract surgery? But, a seven year old article revealing how Lincoln worked with his cabinet to find unity would be current enough to use in an academic paper.

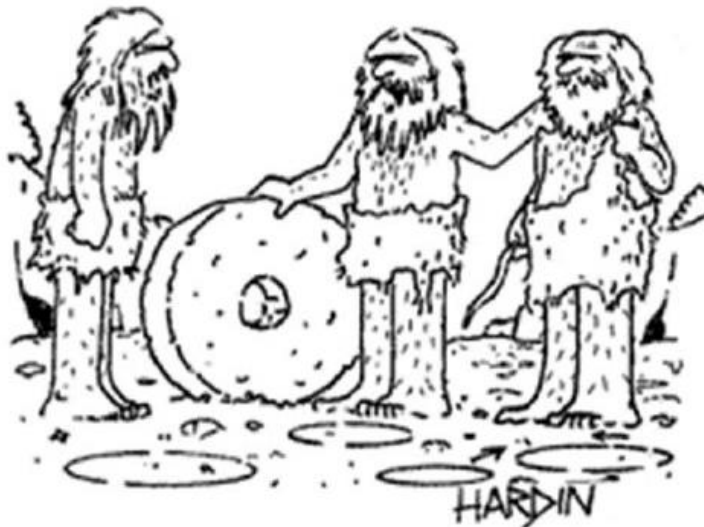
Contemporary sources

Contemporary sources of information were written at the time of the event. To determine if something is contemporary, look to see if it was written at or near the time of the event. Alexander Hamilton (1755-1804) of Broadway musical fame, Eli Whitney who invented the cotton gin, Paul Revere who warned that the British were coming and the creation of the United States Post Office are contemporaries: they all happened/existed at the same time.

So we need to ask ourselves lots of things before we sit down at a computer. What are your questions and what kind of information source will answer them? Do you need a full book, a brief encyclopedia entry and/or several articles? How current do you need the information? Do you need scholarly information or will popular information suffice? Having a clear understanding of what you need means you have a clear idea for what to look. That will save you time.

Section 3: Keeping It Legal

- A. Copyright
- B. Fair use
- C. Plagiarism
- D. Citing and citations



“To be honest, I never would have invented the wheel if not for Urg’s groundbreaking theoretical work with the circle.”

Used with permission of the artist, Patrick Hardin.

We are capable of original thought. But much of what we think about is based on what we have learned from others' contributions. Even Albert Einstein, a very original thinker, learned from others and then worked on problems many in the field had identified (Stachel, 2005).

“He [Einstein] had been probing the edifice erected by his predecessors in this field [theoretical physics] for its strengths and weaknesses...” (Stachel, 2005, p. 215). All our work is based on generations of work that has come before us. Our predecessors read and used the work of their predecessors. With gratitude, it is only right that we acknowledge the work of others on which our thoughts and works are grounded.

Legal protection for the creator of a work (article, book, writings, music, photograph...) is called copyright. We can use copyrighted works if permission is given by the copyright holder or if it falls under fair use. Fair use is a list of four criteria that, when met, allow for the legal use of copyrighted works.

Plagiarism is the use of any work (with or without copyright) without giving credit to the creator, the originator of the work (author of a book or article...). Plagiarism is unethical and is against the code of conduct of universities and colleges. Citing the work of others that we use is how we give credit to the creators, the originators of the works. To do this you will use both in-text citations in written works and full citations at the end of your work, or project. The latter is called *References* (in APA) or *Works Cited* (in MLA).

Let's delve into copyright, fair use, plagiarism and citing more deeply.

A. Copyright

According to Hirtle (2018), works published in the United States or countries with copyright agreements with the U.S., copyright protection extends 70 years after the death of the creator or 95 years after publication if the creator is a corporation. There are, however, numerous nuances. What about, for example, a work published in the U.S. within 30 days after being published abroad between 1923 and 1977? For this and other fun copyright facts, see the Hirtle's (2018) website at Cornell (See References Cited Section).

In *A Brief Introduction and History*, the United States Copyright Office states:

It [copyright] is a principle of American law that an author of a work may reap the fruits of his or her intellectual creativity for a limited period of time. Copyright is a form of protection provided by the laws of the United States for original works of authorship, including literary, dramatic, musical, architectural, cartographic, choreographic,

pantomimic, pictorial, graphic, sculptural, and audiovisual creations. Copyright literally means the right to copy. The term has come to mean that body of exclusive rights granted by law to authors for protection of their work. The owner of copyright has the exclusive right to reproduce, distribute, and, in the case of certain works, publicly perform or display the work; to prepare derivative works; in the case of sound recordings, to perform the work publicly by means of a digital audio transmission; or to license others to engage in the same acts under specific terms and conditions. Copyright protection does not extend to any idea, procedure, process, slogan, principle, or discovery.

In *Copyright in General*, the United States Copyright Office suggests we ask these questions to understand copyright:

What is copyright?

Copyright is a form of protection grounded in the U.S. Constitution and granted by law for original works of authorship fixed in a tangible medium of expression. Copyright covers both published and unpublished works.

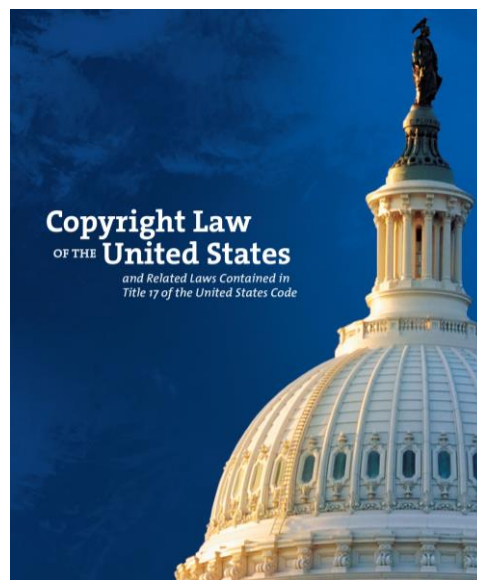
What does copyright protect?

Copyright, a form of intellectual property law, protects original works of authorship including literary, dramatic, musical, and artistic works, such as poetry, novels, movies, songs, computer software, and architecture. Copyright does not protect facts, ideas, systems, or methods of operation, although it may protect the way these things are expressed.

Do I have to register with your office to be protected?

No. In general, registration is voluntary. Copyright exists from the moment the work is created. You will have to register, however, if you wish to bring a lawsuit for infringement of a U.S. work.

Why should I register my work if copyright protection is automatic?



Source: <https://www.copyright.gov/title17/>

Registration is recommended for a number of reasons. Many choose to register their works because they wish to have the facts of their copyright on the public record and have a certificate of registration. Registered works may be eligible for statutory damages and attorney's fees in successful litigation. Finally, if registration occurs within five years of publication, it is considered *prima facie* evidence in a court of law.

[Note: *Prima facie evidence* is “evidence that will establish a fact or sustain a judgement unless contradictory evidence is produced” (Garner, 1999, p. 579).]

B. Fair Use

In *More Information on Fair Use*, the United States Copyright Office explains:

Fair use is a legal doctrine that promotes freedom of expression by permitting the unlicensed use of copyright-protected works in certain circumstances. Section 107 of the Copyright Act provides the statutory framework for determining whether something is a fair use and identifies **certain types of uses-such as criticism, comment, news reporting, teaching, scholarship, and research**-as examples of activities that may qualify as fair use. Section 107 calls for consideration of the following four factors in evaluating a question of fair use:

1. *Purpose and character of the use, including whether the use is of a commercial nature or is for nonprofit educational purposes:* Courts look at how the party claiming fair use is using the copyrighted work, and are more likely to find that nonprofit educational and noncommercial uses are fair. This does not mean, however, that all nonprofit education and noncommercial uses are fair and all commercial uses are not fair; instead, courts will balance the purpose and character of the use against the other factors below. Additionally, “transformative” uses are more likely to be considered fair. Transformative uses are those that add something new, with a further purpose or different character, and do not substitute for the original use of the work.
2. *Nature of the copyrighted work:* This factor analyzes the degree to which the work that was used relates to copyright’s purpose of encouraging creative expression. Thus, using a more creative or imaginative work (such as a novel, movie, or song) is less likely to support a claim of a fair use than using a factual work (such as a

technical article or news item). In addition, use of an unpublished work is less likely to be considered fair.

3. *Amount and substantiality of the portion used in relation to the copyrighted work as a whole:* Under this factor, courts look at both the quantity and quality of the copyrighted material that was used. If the use includes a large portion of the copyrighted work, fair use is less likely to be found; if the use employs only a small amount of copyrighted material, fair use is more likely. That said, some courts have found use of an entire work to be fair under certain circumstances. And in other contexts, using even a small amount of a copyrighted work was determined not to be fair because the selection was an important part—or the “heart”—of the work
4. *Effect of the use upon the potential market for or value of the copyrighted work:* Here, courts review whether, and to what extent, the unlicensed use harms the existing or future market for the copyright owner’s original work. In assessing this factor, courts consider whether the use is hurting the current market for the original work (for example, by displacing sales of the original) and/or whether the use could cause substantial harm if it were to become widespread.

In addition to the above, other factors may also be considered by a court in weighing a fair use question, depending upon the circumstances. Courts evaluate fair use claims on a case-by-case basis, and the outcome of any given case depends on a fact-specific inquiry. This means that there is no formula to ensure that a predetermined percentage or amount of a work—or specific number of words, lines, pages, copies—may be used without permission.

Note that government documents, including images, are not protected by copyright, so we can use them above at will. There are blurry lines and exceptions to this. For example, if the government pays for a study to be done, does the person/corporation or the government own the articles, books, products that comes from that study no matter when they were created? We must, however, cite them to avoid plagiarism.

C. Plagiarism

All our work is based on generations of work that has come before us. Our predecessors read and used the work of their predecessors. It is only right that we acknowledge the work of others that we use. Plagiarism is failing to do this honest thing and is not acceptable. Plagiarism is passing off other's work as our own or not citing our sources. Here is a bit about what some of the universities have to say about plagiarism.

San Diego State University (n.d.) says, in part,

Plagiarism is defined as the act of incorporating ideas, words, or specific substance of another, whether purchased, borrowed, or otherwise obtained, and submitting same to the university as one's own work to fulfill academic requirements without giving credit to the appropriate source.

University of California, Berkeley Graduate Division (n.d.) says, in part,

Plagiarism is defined as the use of intellectual material produced by another person without acknowledging its source. Some examples:

- Copying passages from works of others into one's homework, essay, term paper, or dissertation, without acknowledgement.
- Use of the views, opinions, or insights of another, without acknowledgement.
- Paraphrasing another person's characteristic or original phraseology, metaphor, or other rhetorical device, without acknowledgement.

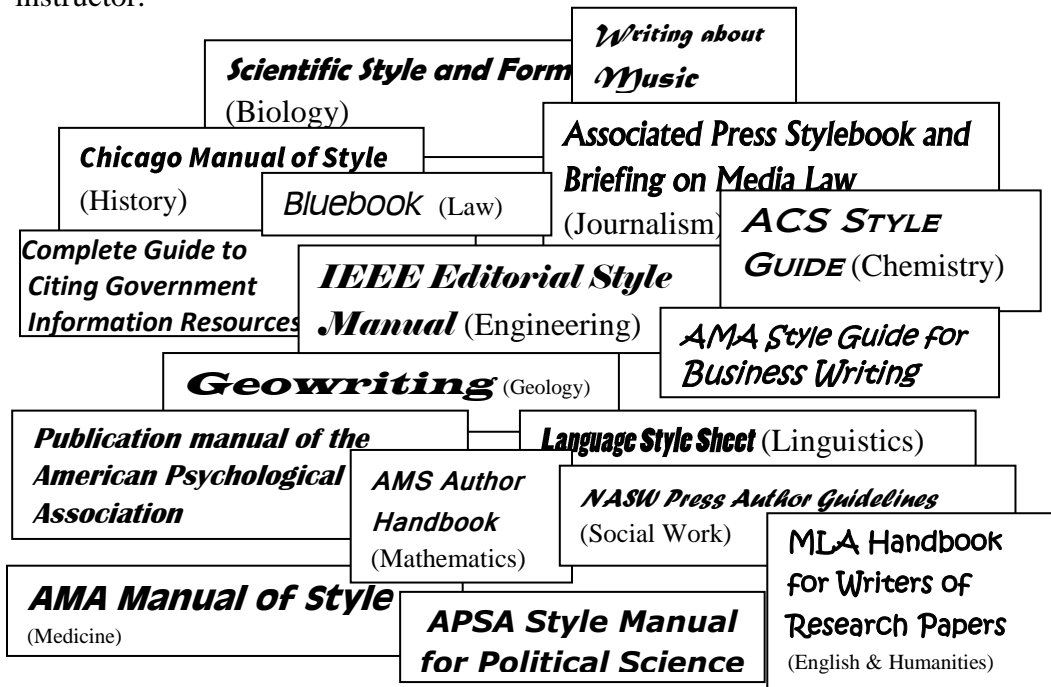
An increasingly common form of plagiarism is copying and pasting papers or articles from the internet, or simply purchasing prewritten papers from on-line paper mills. Hundreds of these sites have been identified. **Fortunately, this sort of plagiarism is also increasingly easy to detect.**

D. Citing and Citations (cite as in citation, not site as in website)

Citing or to cite your sources means to give credit to the authors whose writings you are using. Think of the references cited or the bibliography at the end of a paper you have written. Each one of these entries for a book, article or website is one citation. In addition, you will have "in-text" citations that will appear in your paper itself. For example, you might write in your paper: *According to Key and Peele (2035), the 2030 Olympics will be canceled due to rain.* (I made that up so you will not see it in the reference cited list of this document.) This is an in-text citation. Then at the end of your paper you would write the citation for this that would include the publication, publication date and so on. When you read a peer review journal or scholarly

book, notice the in-text citations and how they are written. Then notice how they correlate to the citations on the references cited page at the end of the book or article.

Always remember to cite your sources. If you are on a college or university campus, there is most likely a writing center or English Center where staff can help you cite your sources. There are also numerous style guides you can consult. Each field (e.g. History, Chemistry, English, Anthropology...) has their favorite style guide. Some have a style guide specific to their fields. These style guides not only show you how to cite, but also how to set up your paper: margins, font size, title pages and so on. The two most commonly used guides are referred to as APA and MLA. Use the one required by your instructor.



APA (American Psychological Association)

APA's guide is called *Publication Manual of the American Psychological Association*. Many libraries will have the physical book you can use. You can also go to their website: <http://www.apastyle.org/>.

MLA (Modern Language Association)

MLA's guide is called *MLA Handbook*. Many libraries will have the physical book you can use. You can also go to their website: <https://www.mla.org/MLA-Style>.

A very good site (website, not cite as in citation) that explains both these styles and gives wonderful help with writing is from Purdue University. See their OWL (Online Writing Lab) at <https://owl.english.purdue.edu/owl/>. There are also software programs to help with writing citations such as



Northern hawk owl by Lisa Hupp, USFWS. Source: <https://www.fws.gov/news/blog/index.cfm?&startRow=326>

Refworks, Criteria, Medeley and Endnote. Do not take this as either an endorsement or a lack of endorsement of the software, but rather as a heads up that such things exist. When sending articles and such from databases to your email, you will notice that many of the databases will ask you in which citation style you would like to receive them. The citations from databases might offer a good starting place, but you always want to check the citations for accuracy and conformation with the style format. It is not uncommon for the database generated citations to have errors or for the database not to have incorporated the latest edition of a style manual. Explaining errors in your citations by saying the database sent it to you that way will probably not put a smile on your professor's face.

Section 4: Creating Your Own Resource List for Your Topic

Through the process of doing your research, no matter if it is for a 5 minute power point, a 5-10 page paper, or a doctoral dissertation, you will want to keep track of the resources that might be of use to you such as books, e-books, articles, data files, websites, professional associations, organizations, institutions and films. Perhaps you will not use every one you come across, but you don't want to lose track of a gem that, **weeks** later, you discover you could use. This list will turn into your references cited or bibliography page.

Yes, **weeks** later. **Research takes time.** Start as soon as you get a project so that you can really delve into a topic of interest to you.

It is not necessary to put your resource list in any particular format such as APA or MLA, but you do want the list to contain enough information about each source so you can find it again and, ideally, so that you will be able to write your bibliography or references cited from the list.

There are several ways to organize your research notes from your sources as you progress through your paper/project. That slides us a bit more into the realm of how to write your paper or creating your final project which this book does not cover. But let's just stick our toes into that for a paragraph or two to give you one concrete example of how you might transition from a resource list to paper/project.

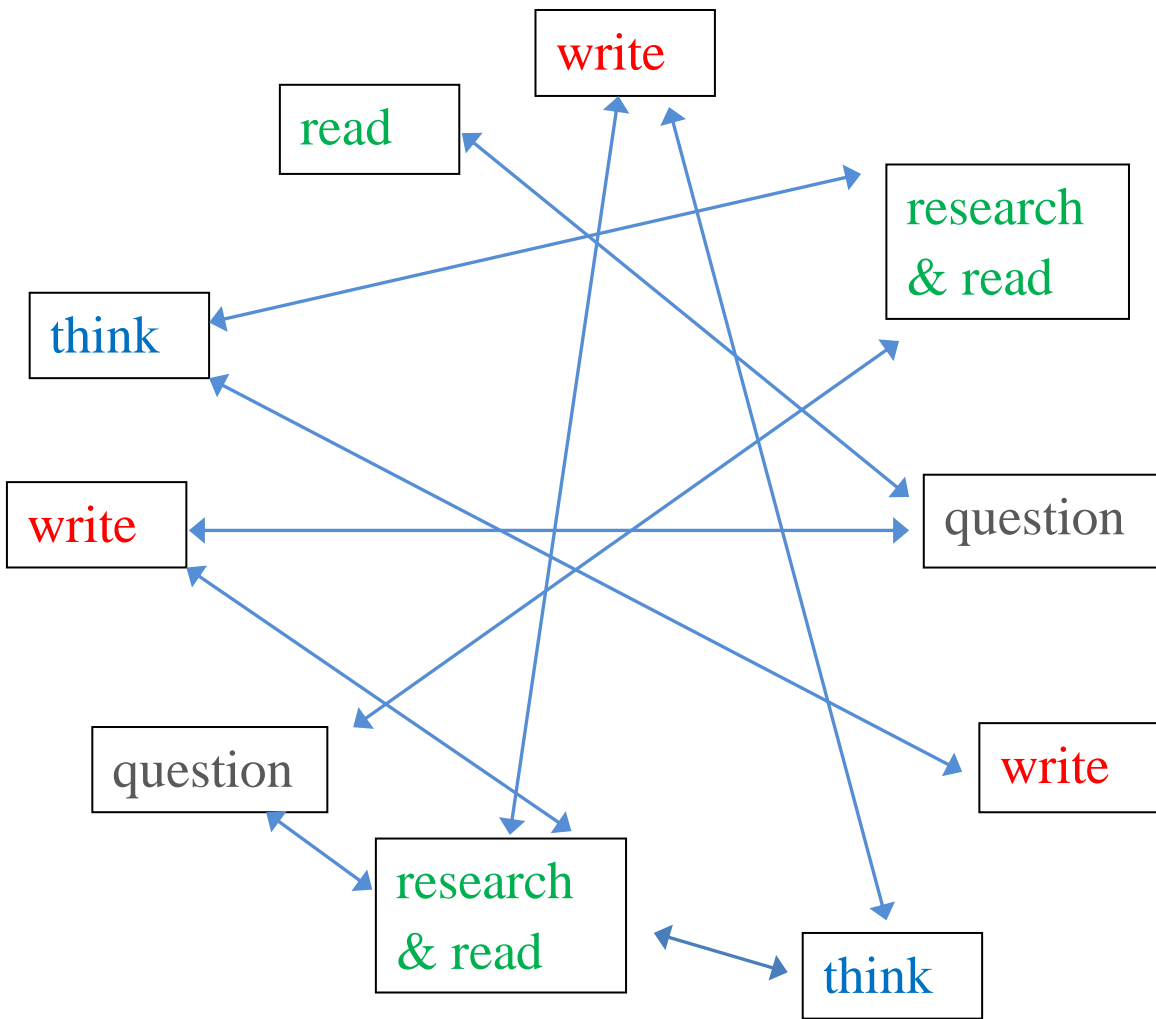
When you discover a source you may use (e.g. book, article), enter all the information for its citation into your resource list. Then as you read that source, enter your notes right there under the source. Be sure and use quotation marks or block quotation for direct quotations and note the page numbers. You may also have a thought about how you might use a particular source in your project, so feel free to write a few sentences or a paragraph for your paper/project right there in your resource list under the appropriate citation.

Now, let's say you have gathered what you believe is enough information for your paper/project. You now have this huge document with all your sources and their associated notes. You can now use the magical *Ctrl F* in Microsoft Word to locate all the materials on the part of the paper on which you are working. *Ctrl F* (Find in Page) will find any word you type in anywhere in your document. (On a Mac, use *Command F*.) If you are writing, for example, on the effects of human behavior on monarch butterfly migration you can type *Ctrl F* and type in logging to pull together all the information from your different sources about how logging has effected migration. If this is the way you want to organize your work, be very aware of this from the start so that you can tag sections within your note to take advantage of the Ctrl F. For example, be sure and use the word logging when you take your notes so you can find the information on logging when you *Ctrl F* logging.

This collection of resources you are creating for your paper/project should also include how you found them. You want to keep track of the different searches you do and in which databases you do them so that, when you need to find more or new information, you already know what you have done and where you have been. This avoids you duplicating previous efforts and saves you time.

In Sections 5 and 6, we will walk through 1) picking a topic 2) developing your topic and creating questions about it 3) creating a grid with your key concepts/terms/words related to your topic and 4) developing a search strategy. All of this should be included in your research notes. You may do a little preliminary web searching to get your juices going, but all this can be done before you touch a computer. Research and writing (or project making) is not a linear process even though it seems so in a text like this. You think before you ever get to a computer. Ask yourself, "What am I interested in enough to keep my attention through the assignment?" You do some searching and may find more terms you want to use in future searches. Or perhaps far along in the project, you come across another term you would like to go back and search in a database you already used. Keeping track of your terms in a grid illustrated in Section 6A can be very useful. What often happens is half way through your research you come across an additional term you want to use in your searches. Add it to your grid (section 6) and go back and use the new word(s) you found to do new searches in databases you have already used. Because you have kept track of searches and databases you've used, you will not duplicate searches and will use your time wisely.

So you think and then write and then read and then question and then think and then read and then write... Creating a paper or project, like life-long learning, is **not linear**. Keep on track, though, so you meet your due dates. Remember that you have professors, writing centers, tutorial centers and, of course, librarians to help you.



Section 5: Picking a Topic and Developing It

- A. Picking a topic
- B. Developing questions about your topic

A. Picking a Topic

You obviously want a topic of interest to you. But more than that, you want a topic that makes you curious (Shelagh Rose and Kathryn McGuire, Pasadena College in talk at CCL Deans and Director's meeting, 2018). You might be interested in scuba diving. Are you curious enough about its history or the development of scuba gear to write a paper or just interested in learning to scuba? Pick something of interest to you that will hold your curiosity from the research stage to your final project. Be creative, but if for an academic paper, check with your professor to be sure you are on the right track.

Use your text books; conversations with friends, family and professors; newspapers; news feeds; blogs and such as sources of ideas for your papers. A Google web search might be a way to get a topic idea, but is not the way to do research for that topic. A Google search on *what effects monarch butterfly migration* would be considered a bad search. The words I typed are bad as you will learn in Section 6 and Google is not the best place to get the information for an academic report. That bad search can, however, do some good since, in less than 5 minutes, it retrieved information about infringement on habitat due to logging and farming as well as the impact of climate change on monarchs. This is useful because now the research can be narrowed and focused on specific issues. In another 5 minutes, Google might offer even more ideas about monarch migration that could turn into a good research question or thesis statement. From there, the topic can be developed and better sources than Google should be used for an academic paper.

Other great places to get topics are subject specific encyclopedias the librarians can show you. Many are online. Your topic should not be too big, too small, too generic or too specific. How do you tell?

First, ask if you can answer your topic question with a 'yes' or a 'no'. For example: Do honey badgers care? Is Disneyland the happiest place on Earth? These are yes or no questions. These and other questions that can be answered with one or two words are not well defined topics. Better questions might be, "What role does aggression play in the animal kingdom?" or "How do different cultures define happiness?"

B. Develop Questions About Your Topic

Ask yourself, "What are some of the attributes or aspects of my topic that interest me and will hold my curiosity?" Take your topic and ask it from the perspective of every kind of class you have ever seen in a school's schedule: Ask a historical question, an economic question, a science (biology or other), a global question, a sociological question, a political question, an environmental question, a literature question, an artistic question and so on.

Let's say you want to do a paper on why the craft beer industry has taken off in San Diego, California.

Type of question	examples
Historical	What is the brewing history in San Diego? What was the drinking culture in San Diego like during prohibition?
Economic	Did the development of so many breweries displace other industries? Did it help other associated industries such as bottle manufacturing or hospitality/restaurants? Does the Chamber of Commerce or Better Business Bureau have statements about craft breweries?
Global	How does the experience in San Diego compare to other cities in the world that have an abundance of micro-breweries?
Anthropological	What cultural aspects grew with the micro-breweries? What are the demographics of people involved in the business and social side of microbreweries?
Governmental	What regulations help or hinder the development and growth of this industry?
Sociological	How has social interaction of San Diegans been effected by microbreweries? Do people go out more?
Technological	What technological advances, if any, aided in the development of the industry?
Chemical	Just how is beer made? What does it mean, "No science, no beer"?
Sustainability/ environmental	What is used in the making of beer? Are the San Diego craft breweries growing their own ingredients? If not, where are they getting the ingredients and what kind of carbon footprint is being created?

That is probably enough examples to give you the idea. Develop questions in the areas that are of interest to you and will hold your curiosity and, of course, will fulfill your paper/project's guidelines. Include them in your research notes. In developing these questions you may discover that one of your questions is actually of more interest to you than your original idea. For example, maybe you change your topic to an environmental question: "Where does the craft beer industry get their ingredients and what kind of carbon footprint is being created?" It is fine to change or fine tune your topic early in the process. Start the research process as soon as you get your assignment so you have time to do just that.

Section 6: Identifying a Variety of Words to Use and Creating Search Strategies

- A. Identifying key concepts and alternative terms to type in
- B. Combining terms effectively: Boolean, phrase searching and proximity searching
- C. Choosing a database
- D. Choosing fields
- E. Topic searching
- F. Limits
- G. Getting too much
- H. Not getting enough
- I. Known item searching
- J. Brief review of creating searches

In this section you will find out about the three ways to control your searches (or to create your searches) that work in every database. Later, when we discuss different kinds of databases, you will see that the library catalog, library article databases and Google are all databases that can be controlled with these steps as well.

The three ways or steps are 1) choosing the words you type in. 2) how you combine those words and 3) where in a database (which field) you should look for those combined words. Notice that in this section we are not dealing with which database to use, rather, once you are in a database, where should you look. Do not skip a step or you won't be able to create a correct strategy.

A. Identifying Key Concepts and Alternative Terms to Type In

Let's say that, after doing the work of choosing a topic as described in section 5 above, you have come up with the topic sentence:

How and to what degree is the drought effecting the redwoods in California?

Type your topic sentence or research question. Identify the key words or concepts in your topic sentence by bolding or underlining them. In the example above, the following words would be underlined: drought, redwoods, California. If you identify words such as *impact*, *compared to*, *related to*, *benefits of*, be sure and come up with good alternative words for them because words like *impact*, *compared...* are rarely good choices to use in a computer search. Identifying alternative terms for such words is discussed later. It is often best just to avoid using such words as your key words altogether. Write alternative words for all your key concepts.

In addition to synonyms, you are looking for related terms: broader terms, narrower terms and antonyms (opposites). Your topic, no matter what it is, is on a

continuum from narrow to broad in a continuum of topics. You want to create a continuum for your topic for two good reasons into which we will delve after this example.

Let's say you are going to do a paper/project on the environment. It seems obvious that is far too broad a topic. So, we narrow it down. How about the environment of animals (still too broad)? Let's whittle this all the way down: the environment of birds, the environment effecting the reproduction of birds, the environment effecting reproduction in birds of the Americas, the environmental pollution effecting reproduction in birds of the eastern Pacific, the environmental pollutions effecting the eggs of birds of the eastern Pacific, the effects of pesticides on the eggs of birds of the eastern Pacific in 1940-70, the effect of DDT on the eggs of birds of the eastern Pacific in 1940-70s, the effect of DDT use in the 1940-70 on the eggs of the pelicans on the Coronado Islands.

Environment → **environment of animals** → **environment of birds** → **effecting bird reproduction** → **reproduction of birds in the Americas** → **environmental pollution effecting reproduction in birds of the eastern Pacific** → **effects of pesticides on the eggs of birds of the eastern Pacific in 1940-70** → **DDT on the eggs of birds of the eastern Pacific in 1940-70s** → **effect of DDT use in the 1940-70 on the eggs of the pelicans on the Coronado Islands**

The example above is most certainly **not** the only way one could narrow down this topic, but you do want to take your topic and create your own continuum from broad to narrow. We started with the huge topic, *environment*. If you started with the topic of *the effect of pesticides on birds*, you would want to create a continuum that got gradually broader all the way up to *environment* and gradually got more detailed all the way to *effect of DDT use in the 1940-70 on the eggs of the pelicans on the Coronado Islands* as an example. Again, there is not just one way to create a continuum. The important thing is to create one. This makes it clear to you what exactly you are interested in learning about. If, for example, the continuum above is what you developed and you found a great article you really found interesting about pesticides and dolphin reproduction in the eastern pacific, you would know you have strayed off your topic and need to refocus on the search results that fall on your continuum and answer your research question.

There are two more important reasons to think through a continuum. Let's suppose you are interested on the *impact of pesticides on birds* as your paper/project topic.

- a. Rarely do you find books or articles exactly on your topic. Most often, the information resources you use will be broader and narrower than your topic. A subject specific encyclopedia on how pesticides harm wild life is an example of a source broader than your topic. In it you may find a chapter on birds. Additionally, you might discover in your reading that pelicans were put at extreme risk because of the heavy use of DDT (a pesticide heavily used in the 1940s and 50s). That is much narrower than your topic, but you certainly could use an article or two about this to make a point.
- b. Because the resources you use will be broader and narrower than your topic, the words you use in your searches to find those resources will also need to be broader and narrower than your topic to find them. To find that encyclopedia on how pesticides harm wildlife, for example, you would use broader terms than you find in your topic sentence. For example, you might use the words *animals* and *pesticides* and not use the word birds to find it. To find a supporting article, you may try some narrower terms than those in your topic sentence. For example, DDT and pelicans.

Now that you have several questions about your topic and you know where your topic falls on a continuum of topics (you have done that, right! Don't skip a step!) You want to make a grid. This grid will consist of key words and concepts for your topic and alternative terms for those. Include broader and narrower terms as well as synonyms and antonyms because the authors will often use different words for your topic than you have used. You will miss good information if you only use words from your topic sentence. This is one of many reasons you will be doing several searches to get the best information. Some words will work well in one database while different words will work well in another. You will find it useful to do multiple searches in the same database using different words. In our example, we might type in *pesticide* and *birds*, words right out of the topic sentence, and get some good results. We would, however, miss articles in which the author used the terms *insecticides* and *birds*. It is important, therefore, to try many combinations of terms to find all the relevant information resources (e.g. books and articles).

Pay close attention to making an accurate grid because, when done right, you will be able to use it to create a search strategy. Doing this now will save you time later. You will have far less off-topic resources to sift through. **Make a grid** with the key concepts down the left hand side of your page. They should be the **exact words from your topic**. List to their right the broader terms, narrower terms, synonyms and antonyms.

Be sure that you only use concepts that reflect key concepts. If you have a word you really want to use that is not in your topic, perhaps your topic sentence or research question need to be rewritten to include this word(s) or the concepts it represents. If that word or concept is of interest to you and the due date for your paper/project still allows you time to begin again, a change of topic may be in order.

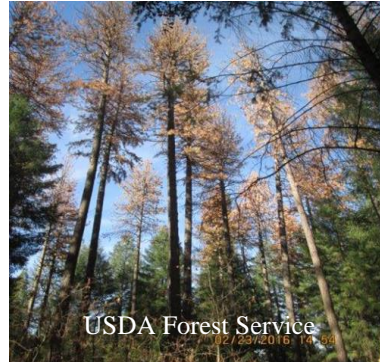
Notice the grid asks **for key concepts** and **not key words**. Sometimes your concepts will be expressed in more than one word, for example, *Sierra Nevada Mountains*. You want to preserve the concept, not the individual words. Another example would be if your paper/project had something to do with storm drains, you would want to keep those two words together since you do not want information on winter storms or the drains in your house. Why this is important will become very clear in a bit. (You will add more and more alternative words to the grid as your research progresses. See 6E for details.)

Here is an example of the grid.

Topic:

How and to what degree is the drought effecting the redwoods in California?

Key Words / Key CONCEPTS	Alternative /Broader/Narrower CONCEPTS
Drought	Water, water supply, water level, water shortage, aquifer, precipitation
Redwoods	Tree, Sequoias, coast redwoods, conifers, forest
California	Southwest, west coast, Sierra Nevada Mountains



Source: <https://www.fs.usda.gov/detail/donorado/home/?cid=FSFPRD519104>

Notice the word *effecting* was not used as a key concept. That is because it is best not to use words *effecting*, *influence*, *impact* and so on in your first searches. Try to use only solid nouns. As with most things in this text, there are exceptions. If you already have a little knowledge about your topic and you have a few *effects*, *influences* or *impacts* you want to explore, add a grid line for the terms. For example:

Key Words / Key Concept *	Alternative/Broader /Narrower Concepts
Effecting	Sap, sap depletion, pests, beetles

Go ahead and use words like *effecting*, *influence* and *impact* if you have exhausted your other terms and other search strategies soon to be explained or if you are getting far too many hits.

* Do not confuse the terms “key words” or “key concepts” in the grid with “keywords” you sometimes see in a database. “Key words/key concepts” here

means the main ideas within your topic. “Keywords” as used in databases will be discussed later (See 6E).

Truncation and wildcards

Truncation and wildcards come in handy when the words you want to search have slight variations. Perhaps just one letter could broaden your search. For example: perhaps you want to find both the singular and the plural of a word: turtle and turtles, woman and women. Or perhaps you want to find both the American English word *color* and the British English word *colour*. This can be done using truncation and wildcards which saves you an additional search and ensures you capture all relevant results.

Some help screens for some databases will call truncation a type of wildcard. Check the database help screens to determine what symbols to use for truncation and wildcards and what happens when you use them. Each database is different. While truncation, as described below is generally standard, wildcard searching varies greatly from database to database. A common usage follows the truncation description below.

Truncation

To truncate means to cut off. In most databases, by adding a symbol to a word that you cut off will garner results that have all the permutations of that word the database knows that begin with the letters you typed in. For example, *pira** will find *pirate*, *pirates*, *piracy*. But this is a bad example, because it will also find the word *piranha* and *piranhas* and so on. So it is very important that you cut off your words where it makes sense or you could end up with piranhas or worse. It is **an easy way to search the singular and plural of a word at the same time**. If all you are interested in is a pirate or two, search the term *pirate**.

The asterisk (* shift 8 on your keyboard *) is the most often used symbol, but you might find the rare database that uses other symbols for truncation such as a dollar sign or a question mark. Even rarer databases allow for left hand truncation meaning you can ask the database to find variant beginnings of words instead of endings.

Wildcards

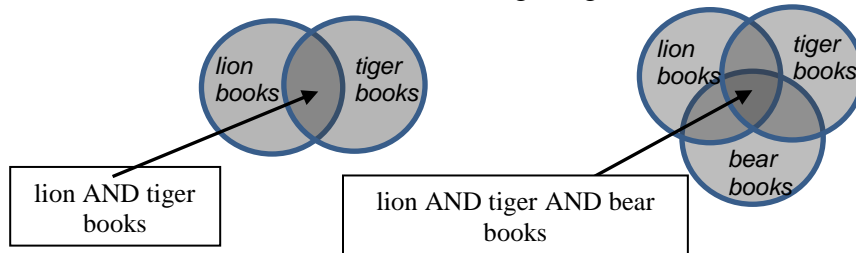
Using wildcards is a way of replacing one letter within a word or at the end of a word. When wanting to get both the singular and the plural of a words such as women and woman, the last vowel can be replaced with a wildcard symbol: *wom?n*. Both words would then be searched. Using a wildcard is also useful when searching for words that are spelled differently in British English. For example, *color* is spelled *colour*. Not all databases allow this and the symbol for this may also vary. The most commonly used symbols are a number sign (#) or a question mark (?). So if you want to include resources that may have been written by our cousins across the pond, you may choose to type *colo#r*. That would retrieve items with both *color* and *colour* in them because the # replaces one letter or is ignored by the search. What would you expect *wom?n* to find?

The bottom line to know about truncation and wildcards is that they exist, that they are defined and used differently from database to database and that they can expand your results. Check the databases' help screens and experiment to see just what results you get.

B. Combining Terms Effectively: Boolean, phrase searching and proximity searching

Boolean: AND / OR / NOT

You walk into a library or book store and ask to see all the books about lions and tigers. You want the books with information about both lions and tigers because you are doing a study about how lions and tigers interact in the wilds of India. Some of the books are only about lions and some are only about tigers. Some, however, are about both lions and tigers. In the illustration below, the whole left circle is filled with books about lions and the whole right circle has books about tigers. The books that fall in the darkest area have information about both lions AND tigers. This is the Boolean AND. Let's say we asked for books about lions AND tigers AND bears (*oh my!*). Notice that when we add another animal to our book needs, the darkest area is smaller meaning we get fewer books.



This process is **not** like addition in that you get more when you say 1 and 1 equals 2 (more than 1). Every time you add another word by combining it with an AND, you will get fewer results: you will find fewer books or articles. The other thing to note is that most databases default to an AND combination. In other words, if you do not tell the database how you want the words combined and you have typed in more than one word, the database will most likely (but not always) combine them for you using AND. A common mistake is to keep adding words to a search in anticipation that the results will grow. Now you know why that does not work. Having said that, most of the time you are going to want to use the AND search because it captures the multiple concepts of your topic.

Relating this to the grid you made, the Boolean AND is used between terms in different rows.

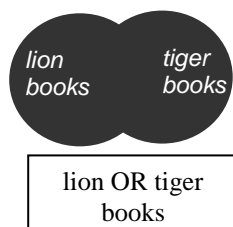
The Boolean OR and Boolean NOT are trickier than they look. The results they give you can include many resources off topic in the case of the OR and miss many in the case of the NOT. When used correctly, they can be powerful tools.

Boolean OR gets you anything and everything that has either and all the words you type in. It is often used with synonyms:

teens OR youth OR adolescents.

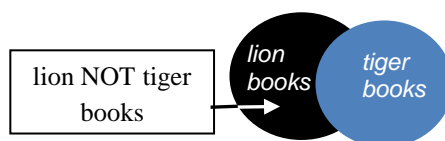
If, for example, your topic was the big cats of India, you would want books about lions, books about tigers and books that are about both lions and tigers. This is when you would use the Boolean OR.

Relating this to the grid you made, the Boolean OR is used between terms in the same row.



The Boolean NOT omits terms from your search. An example of a good use of the Boolean NOT would be if you are interested in the Dolphin habitat off the coast of Miami and you were retrieving a lot of information about the Miami Dolphins football team. Since it is completely off topic, you could try NOT football.

Caution is necessary, however, because the Boolean NOT can end up omitting resources you might want unless you are careful how you use it. Let's say you are only interested in information about lions, but your results keep coming up with a bunch of tiger books as well. To eliminate the books about tigers, you use a Boolean NOT and type in NOT tigers. What you have eliminated are any books with the word tiger even if it has some very good information about lions and that would be bad.



We have covered the Boolean AND, OR and NOT. You will find that most database help screens call them operators and require that you type them with capital letters if typing them is required. The suggestion here is that you depend on multiple AND searches and do not make using OR and NOT your "go-to" operators. If you choose to try more than one operator in a search (an AND and an OR, for example) check with your librarians. It is a bit more complex than it looks and requires a bit more finesse than we will cover in this text.

We will talk more about searching the web later, but let's take a detour for just a moment to discuss what *Google's* advanced search calls the Boolean operators.

AND: All of these words (that you have typed in)

OR: Any of these words (that you have typed in)

NOT: None of the words (that you have typed in)

Searching Google is merely searching another database so most, if not all, of the database tips apply.

Another important and often used way to combine words in a search is called phrase searching.

Phrase searching

If you have two or more words and you want to find them right next to each other and in the order that you have typed them in, put them in quotation marks. Think of a multiword phrase that captures one concept. For example *Sierra Nevada Mountains*, *storm drains*, *ice cream*, *Miami Dolphins*, *post office*, *jump rope* and so on. If we combine the words *Sierra Nevada Mountains* with an AND, we could get resources (e.g. books or articles) that discuss the *Sierra Trading Company's* new boots they call *Nevada* that are great in the *mountains*. If we combine *ice cream* with an AND we would get resources that talk about an *ice* hockey team that says they will *cream* their opponent on the *ice* next week. If we combine *post office* with an AND, we would get search results with both words in it such as an article about a medical *office* set up in a research *post* in Antarctica. If we want those words found together so that they capture one concept in our search, we combine them by putting them in quotation marks e.g. "*Sierra Nevada Mountains*", "*ice cream*", "*post office*". What might we get if we did not use quotes around *jump rope*.

Proximity searching

It can come in handy although not all databases are set up to handle this kind of search. Check the database help screens for specifics on how to use this kind of search if you want to try it. Proximity searches will return results with two words or phrases that appear in the resource within so many words of each other. Some databases allow searching for the words within the same paragraph.

This is how it works in some databases: Perhaps an author speaks of the "mountains of the Sierra Nevada" and does not use the phrase "Sierra Nevada Mountains". To catch information using that turn of phrase, you might type "*Sierra Nevada*" n/3 *mountains*. Between the terms or phrases use n/# for terms to be found within # of each other and w/# to find the first word # or less words before the second word or phrase. If you want football and Denver to appear within say, 3 words of each other, you would type *football* n/3 *Denver*. If you want them to be within 5 words of each other **and in the same order** that you type them, you would type *football* w/5 *Denver*. You can change the number to suit your search. (Where ever there is a # in this paragraph, substitute a number.) This is tricky especially since this too varies from database to database.

To recap, the three ways we discussed to combine your terms are 1) the Boolean operators, AND, OR and NOT 2) phrase searching by using quotation marks around more than one word or 3) proximity searching. To combine words to make a good search, we go back to the grid of alternative terms above: the grid about the drought in California and how it affects redwoods. You can combine any word on one line with a word on a different line with a Boolean AND. If you

want to try using the Boolean OR you will combine words on the same line with an OR. Words that you want to find together you will type in quotation marks such as “Sierra Nevada Mountains” and “water shortage.” This is how the way you choose to combine your words relates to the grid above: the grid about the drought in California. It is why you need to be very careful on making an accurate grid as you add alternative words to it. Here are two examples of what you could type into a database. Truncation is added for a more complete search.

“water shortage*” AND redwood*

Or something like this

drought AND Sequoia*

C. Choosing a Database

Now you can go to a computer and start the research you will use for your paper/project. You have thought through your topic, identified questions to explore, terms to use and how best they will be combined. Now it is time to pick a database (or two or three or...). For good research, you will find that you will often use multiple databases.

Most of the information you will use for your academic papers and projects will come from books and articles that you will find via library databases. When first using a database, be sure and move the scroll bar all the way up and down to see what searching and limiting options you have. Click on the advanced search and scroll up and down again. In some databases you will see the options change a bit once you have done a search or when you are further along in the process. Read the pages that appear so you can take advantage of all your search options.

Every database is different

Some have books, others have articles and some have both or other kinds of information. Some specialize in one subject field and have information only on nursing or psychology, or botany and so on. Some have information on just about everything. Some have scholarly information, some have popular information and some have both. Some allow you to limit your search to scholarly information. Some allow you to limit your search to only items that are available in full-text. Some give you access to information on the internet, others only provide information they have purchased. Be aware of these possibilities and look for them.

Every database is the same

Every database is searchable. Every database uses Boolean logic. Every database has fields so always check the advanced search to see what fields you can search. (This is a different kind of field from a field of study to which we referred when we talked about experts in a field. (See details in section 5D below.) For now, just know that all databases have fields.) Most databases will allow you to print and/or email what you find. Some will put your citations in a particular style such as APA or MLA as an option when you send via email. (Always check these

automated citations for errors and see 3D for more on citation styles such as MLA or APA.) Most allow truncation and phrase searching. Be aware of these possibilities and look for them.

Databases offer books, article, media and more

Choose a database that will have the kind of information you will need by reading the database descriptions provided or by asking a librarian. A review of Section 2A would help determine what kind of information you want. Library databases may contain lists of articles, full text articles, a list of books, periodicals, DVDs owned by the library, the full text of books or streaming video. A library's catalog (which is a database) will list what the library owns: e-books, print books, periodicals (magazines, newspapers and journals) and DVDs. Notice, that this list does not include articles. Library catalogs lists the periodicals the articles are in but not the authors, titles or full text of articles. A community college might have 50 databases while a large research institution will have hundreds. Talk with the librarian about which to use for your topic so you can use your time efficiently.

Free databases and access from home

Most vendors of scholarly databases charge for articles, but your institution and the public library pay for the ones they provide and offer them to you free of charge. It is important to go through your institution's website to reach the database so you can get to them freely. If you are enrolled in a college, chances are you can access many of the databases from home or any off campus spot with web access. If you go directly to the database provider's website, such as EBSCO or ProQuest, you will not have access, unless you pay. Most often your library will have a page of databases from which you may choose. Choose the one that offers both the topic and type of resource (books, articles, etc.) you need.

Article databases

Article databases work like an index found in the back of many books. In a book's index, you do not find the information, but rather the page number on which you will find the information. In article databases, you will find lists of articles on your topic and the volume and issue of the periodical (magazine, newspaper, journal) in which you will find each article. Many databases will have the full text of the article right there. (See Finding Articles in Section 7 for details.)

Searching more than one library database at a time

Some institutions offer multiple-database searches that allow you to search most if not all of their databases at once. That means your results will include articles, books, encyclopedia entries, films and more in the same list. These resources may be electronic or in print. These are *federated* searches and are often called by other names such as a *discovery search*, *search all*, *search works* or *onesearch*.

It is common for books and articles to be labeled as such in federated searches. If not, it is up to you to determine the kind of information retrieved by your search. Books will have only a year in their citation, while article citations will have the

year, as well as season, month, issue number and so forth. (See section 6I for examples.) If in doubt, ask a librarian what you have in your results. It is important to know what you have found so you can decide if it is the type of source you want to use, so you can cite it correctly and so you know how to evaluate it properly.

Some libraries will show the results of these federated searches in categories such as books and articles. After you search your topic, you can then choose if you want books or articles. The advanced search options sometimes appear **after** your initial search in the federated searches. Remember to look for the search options so you can optimize your research.

It is important to notice that the fields available to search in the federated searches are different and often more limited than the fields available via a search in an individual database. Field searching is a powerful way to control searching and is discussed in the next section.

Notice also the date of the information you want **in the citation** for that information. Occasionally, the date that is most prominent is not the date of the information, but rather the date the database was created.

Libraries that offer multiple-database searching (federated searching) most often also allow searching individual databases. If you want to take advantage of searching specific fields (See 6D) or a subject specific database that fits your topic, it might be best to choose an individual database. Another reason to use an individual database rather than the multiple database search offered by a federated search is for known-item searching (i.e. if you know the title of a book or article) or if you know what you want is a book. For the latter, you can just look in the library's catalog and avoid looking through articles and films for the book you want. (See section 7A for more about finding books in and beyond a library's catalog.)

Google is a database

Most of us have used the search engine Google. **Google is another database** so the same searching tips we have discussed also apply. Used in conjunction with library databases and applying solid evaluation criteria, Google can be a very useful tool to access information but does not replace the high quality information found in most academic library databases. Before using Google, ask yourself the evaluation questions in 2B above and other such things as, "How am I going to use the information?" and "What kind of information do I need?" Is Google the best place to look for the information you need? As with other databases, look for Google's advanced search which will provide more search options. Google can link us to a wealth of information on the web. Like any information, information found through Google needs to be evaluated. Google is great at finding organizations and associations that might have information on your topic. (See Section 8 for more on searching Google.)

Wise fool

Nasrudin Sufi stories have been used to learn about both the sacred and profane since the 13th century. Here is how Shah (1964) tells one of the most well-known stories about Nasrudin:

On one occasion a neighbor found him down on his knees looking for something.

“What have you lost, Mullah?”

“My key,” said Nasrudin.

After a few minutes of searching, the other man said, “Where did you drop it?”

“At home.”

“Then why, for heaven’s sake, are you looking here?”

“There is more light here.”



Los Angeles County Museum of Art Source: <https://cdn.loc.gov/service/pnp/highsm/21800/21894v.jpg>

For our purposes, we can learn from the wise old fool that we should not look for the answers to our questions in the place that seems easiest, but rather where the information we need will be found. The goal is to answer your questions, not simply take the first few things that pop up on your screen and use only them. Choose a database that has the kind of information you want (book, articles...), covers the topics you need (general or subject specific information) and has information meeting any other criteria you need (peer reviewed, primary source...).

D. Choosing Fields

What is a field? A database is made up of records and the records are made up of fields. To visualize a database, think of a blank form, for example, a form for an academic record. It has blank lines for the student’s name, school ID number, the classes taken, the semesters in which they were taken and grades. Those are

fields. Your institution's student database is made up of thousands of these records: one for each student. Each of those records has all of the fields. When your institutions knows your name and wants your record, they will ask the database to look at every single record, but only at the names of the students until it finds your name in the name field. Then your whole record can be pulled up from just your name. If, on the other hand, they only have your ID number, they will ask the database to look at every record of every student, but only look at the ID numbers. They do this by typing your ID number into the search field called ID number. Then your whole record can be pulled up from just typing in your number.

Think of contacts in a cell phone. Every time you add a new person to your contact list, you create a record for that person. To create the record, you fill in the fields: name, phone number, address and so on. You create a record for each of your contacts in your phone by filling out the fields. So Mom has a record, best friend has a record and your boss has a record in the database you created on your phone. And fields hold the information that we are after. When you get an incoming call, the phone searches the number field and tells you your friend is calling. When you place a call by typing in your friend's name, the database searches all of the names for your friend's and then moves to the number field and dials it for you. Also notice that the database **does not have** Mom, best friend and your boss in it. Rather, the database **has records for/about**, Mom, friend and boss. This distinction will come in handy later.

The same principle applies to library databases. Notice in databases there is often a way to search *author, title, keyword* and other options. These (author, title, keyword ...) are called fields and you are doing *field* searching when you choose one of them. Most of the time, this is not part of the basic search, but is available in the advanced search. You can see now how databases are made up of records. Records are made up of fields. And fields hold the information we search and are seeking. (See the search screen examples at the end of 6E.)

The field(s) you choose to use is dependent upon what information you have. If you know the author and title, you would choose the author and title fields (See 6I for known item searching). If you are looking for information on a topic, you use a variety of fields as discussed in 6E below.

E. Topic Searching (as opposed to known item searching in 6I)

So far we have covered two of the three parts to creating a search: the words you want to use (See 6A) and how to combine them (See 6B). The third step or third way to create a search is to decide on what field to search. These three components of a search apply to both known item searches and topic searches.

When you are searching for information on a topic, (when you don't have a title, author, or complete citation), the best initial strategy is to search in many fields at the same time, such as the title, subject, contents, abstract and other fields. That is called multi-field searching. Each database searches different fields in their

multi-field searches. The help screens often will tell you which fields are being searched. Additionally, each database may label this broad multi-field search differently. It may be called *keyword*, *keyword anywhere*, *any field* or *all fields*. As of the writing of this, in EBSCO's *Academic Search Complete*, for example, the multi-field search occurs when you use the default search which is labeled *select a field*. Remember that these broad searches rarely search every field, but do search several fields at once.

When you are searching for a topic **do not start** by using subject field searching. The words in your topic are not necessarily the subject terms used in a database. Subject words are unique to each database. For example one database may use the subject *capital punishment* for all resources on that topic, while another database might use *death penalty*. While you might get a few results if you choose the wrong one, you will miss the bulk of the information on your topic. Instead, start with broad searches that search multiple fields.

In the cropped screen shots at the end of section 6E are examples from two databases: San Diego City College Library's catalog and EBSCO's *Academic Search Complete*. There are thousands of databases out there so these two are as good as any for our discussion. Notice the different ways these databases present the capability of choosing which fields to search. The catalog presents you with boxes to type in, while EBSCO offers a drop down menu so you can change the names of the boxes.

Don't assume by the name of the field what a specific field search searches. In EBSCO's *Academic Search Complete*, for example, there is a field in the drop down menu labeled *people*. If you choose that field and put in the word *adult**, you may get some hits, but not a lot. This may make you think that there is not much on your topic regarding adult(s). If you type in *British* or *Canadian*, you do get some results, but, again, not everything about the British on your topic. A *people* field search seems to work best if you put in the name of a well-known person. Try *Gates*. Notice that you will get both Bill and Henry Louis Gates so you would need to further narrow your search to get the Gates in which you are interested. If your results do not make sense (e.g. there are only a few articles about adults), there is probably something off in your search. The point is that these databases are not perfect pieces of technology, therefore, you want to try several different searches to be sure you are getting the best information.

When there are too many results by using a multi-field search, change the fields you are searching and try your terms in the title or abstract field if the database allows you to search those fields. ("Abstract" is an academic word for summary.) On the other hand, if there are not enough results, put one of your terms in the full text field which searches the full text of the resources. Think it through. If a word shows up in the title, there is a very good chance the article will be primarily on that word. Alternatively, if you are having a difficult time finding information (and you have already checked your spelling and tried truncation), try your word in the full-text field to see what you find. Mix them up. Experiment. Persist until you find the answers to your questions.

Once you retrieve some good books, articles or whatever from broad searches, read the titles, abstracts (summaries) and “controlled vocabulary” looking for more terms to use in your searches. Enter them into your grid.

Controlled vocabulary (subjects, descriptors, subject headings...) is a librarian term to describe the words a database uses as the **topics** of articles and books on the same topic: not unlike tagging in social media. Using controlled vocabulary terms to search in the controlled vocabulary field will produce fewer results than broad searches in other fields, but they will usually be more relevant.

Remember that you will use more than one database to do research. **Controlled vocabulary fields are called different things** in different databases such as descriptors, subjects, subject headings or controlled vocabulary. **Controlled vocabulary terms can be different in different databases.** For example, articles on the same topic in one database might be “tagged” with the term pesticide and in another database tagged with the term insecticide. These terms would be found in their respective controlled vocabulary fields which could be called subjects, subject headings, descriptors and so on. Controlled vocabulary terms are good sources for more terms to use to create more searches.

Read through the record to determine the database’s controlled vocabulary terms for your topic. Once you have identified them, a controlled vocabulary search can be very useful. Add these new terms to your grid. Use them initially in broad searches in new databases since they may not be the terms used in the controlled vocabulary of that newly searched database.

Remember what you are learning here will transfer to most any database in most any institution. What you want to take from this is that most databases will allow you to choose the fields to search so look for that capability in the database. Use the terms you find in records to create more searches.

You're searching: San Diego Community College District Libraries

Advanced Search

Combine keyword searching with limiting and sorting options.

Any keyword(s): Search

Title-keyword(s):

Author-keyword(s):

LC subject-keyword(s):

Series title-keyword(s):

Publisher-keyword(s):

Periodical title keyword(s):

Refine your search (optional)

You can refine your search by selecting a limit or sort option.

Limits

CAMPUS LIBRARY:	CITY COLLECTION:	FORMAT OF MATERIAL:
<input type="text" value="City College Library"/> <input type="text" value="Miramar College Library"/> <input type="text" value="Mesa College Library"/>	<input type="text" value="Circulating Collection"/> <input type="text" value="Course Reserves"/> <input type="text" value="High Interest-Low Vocabulary Books"/> <input type="text" value="Juvenile Collection"/> <input type="text" value="Media Collection"/>	<input type="text" value="AV kits"/> <input type="text" value="Online resources (e.g., e-books)"/> <input type="text" value="Sound recordings"/> <input type="text" value="Videotapes"/> <input type="text" value="Visual materials (all formats)"/>

LANGUAGE:

EBSCOhost Searching: Academic Search Complete [Choose Databases](#)

Select a Field (o... Search Clear ?

AND

AND

[Basic Search](#) [Advanced Search](#) [Search](#)

Select a Field (optional)

- TX All Text
- AU Author
- TI Title
- SU Subject Terms
- AB Abstract or Author-Supplied Abstract
- KW Author-Supplied Keywords
- GE Geographic Terms
- PE People
- PS Reviews & Products
- CO Company Entity
- IC NAICS Code or Description
- DN DUNS Number
- TK Ticker Symbol
- SO Journal Name
- IS ISSN (No Dashes)
- IB ISBN
- AN Accession Number

Search Options

Search Modes and Expanders

Search modes ?

Boolean (AND, OR, NOT)

Apply equivalent subjects

Limit your results

Full Text

Scholarly (Peer Reviewed) Journals

Publication

Apply related word

Also search within

References Availab

Published Date

Publication Type

F. Limits

Always look for an advanced search option so you can see other ways the database allows you to search. Look for limits such as peer reviewed, scholarly (See 2D), date ranges, format and so forth. Most often, date ranges are the date of publication, not the date of your topic. This is not always true though. Notice that the limits are more controlled than the field searching. Field searching lets you type in anything, while the limits present more controlled options.

G. Getting too much

- ✗ Reconsider your truncations.
- ✗ Do you need to narrow your topic?
- ✗ Try selecting *title* or *abstract* instead of multi-fields or *full-text* field.
- ✗ Can you narrow your topic by adding a word from another of your grid?
- ✗ Don't use the Boolean *OR*.
- ✗ Look for and try controlled vocabulary field searches
- ✗ Try a subject specific database.

H. Not getting enough

- ✗ Get rid of some of your Boolean *AND* combinations.
- ✗ Try synonyms.
- ✗ Find more terms from encyclopedias and text-books to use in Boolean *AND* searches.
- ✗ Use a Boolean *OR* search. Refer to your grid or check with a librarian to be sure you are using it correctly.
- ✗ Try selecting a different field such as *full text* instead of the default.
- ✗ Are there words you can truncate?
- ✗ Check the spelling. Are there alternative spellings?
- ✗ Try a different database.

I. Known Item Searching (as opposed to topic searching in 6E)

Often a professor, friend or colleague will recommend a book or article to read or you may find a citation in a textbook or at the end of an article that peaks your interest. Finding that book or article is referred to as a “known item search” (as opposed to a topic searching described in 6E). If you know the author and, therefore, have selected the *author* field, the search will look at all the authors of everything in the database for a match to what you typed. If you type in the box next to where it says title it will look at everything in the database, but only at the title fields.

If you are looking for a book and are, therefore, in a book database (e.g. a library's catalog), this is straight forward. You search for the author or the title and read the online copy or note the call number and location (explained below) and find it on the shelf, take it home put on your slippers and settle in for a read.

If you are looking for a specific article and have the title of the article, title of the periodical it is in, in other words, the citation, finding the article is a bit more involved. Basically, you will look in the catalog for the title of the **periodical**, then, if the library has the periodical title, you will check to see if the library also has the issue or date that you need. And then go from there. (See 7B for more details on finding articles.)

In known item searching it is necessary to determine if you are looking for a book or an article because the process of finding them is a bit different. This is one reason to learn how to read a citation. Below are examples of a book citation and a periodical (article) citation. Note the differences. Books will have only a year for a date, while articles will sometimes have a month or season as well as the year. Articles can also have a series of numbers designating the volume (often correlated to a year), issue (the number within the volume) and often the page numbers. The first citation below is a book and the second is an article citation.

Book citation

Brake, M. (2013). *Alien life imagined: Communicating the science and culture of astrobiology*. New York: Cambridge University Press.

Article citation

DA SILVA, L. L. (2013). Unidentified Aerial Phenomena: The VASP-169 Flight Brazilian Episode Revisited. *Journal of Scientific Exploration*, 27(4), 637-654.

J. Brief Review of Creating Searches

A basic practical search strategy will include **all three parts** for both topic and known item searching:

1. The words you type in (and truncation when appropriate)
2. How you combine the words (Boolean operators and phrase searching)
3. In what field(s) (title, abstract, author, full text and so on) you tell the database to look for the words

Use your results to find new words on your topic to search.

These are generic database strategies that work in most every database. Give choosing your database some attention since each one varies in formats (books, articles...) and topics that they offer.

Section 7: Finding Books and Articles in Library Databases

- A. Finding Books
- B. Finding Articles: a two-step process

A. Finding Books

A library's catalog is often called an online catalog, OPAC, or something else. UCSD, for example, calls their catalog Roger in honor of Roger Revelle, one of the founding faculty and UC Berkeley calls theirs Oskicat after their mascot: a bear named Oski. A library's catalog will list what the library owns such as books, periodicals (magazines, journals and newspapers) DVDs, Microform, archival materials and so on. It may have links to free quality information on the web. It will not list articles, but rather the periodicals that are accessible through the library. Use the search strategies we discussed in 4, 5 and 6 above to find electronic-books and printed books on your topic. In addition to those books found via the catalog, some libraries will have additional databases with some books or book chapters in them. You will probably find those on a database page. Remember though, you generally are not looking for a book or an article: you are looking for the answers to your questions. (See 6C for information about finding books in libraries using a multi-database (federated) search.)

Some of the books you find will be e-books. You access them using whatever password your library shares with you. In higher education institutions, you will most likely use your student ID as your username or password. Check with your library for details.

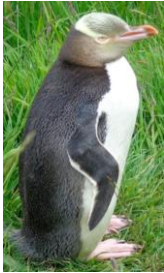
Print books on the shelves are accessed by using the call numbers you have retrieved from the catalog. Academic libraries in the U.S. most often use Library of Congress call numbers which is an alpha numeric (letters and numbers) system. You will find books by knowing how to read a call number. The books shown below are in call number order.

Look at the first line of the call number. Once you find a book with that on the shelf, move to the next line of the call number you want. They begin with letters or double letters. The first set of numbers are read and used as they are written. The tricky part is that, after the second set of letter(s), there is a decimal point before the number.



Since the first two lines are the same, move to the third line to determine where this book belongs. The decimal point before the letter applies to the number following the letter. Therefore, these books are in correct order since .427 is smaller than .44.






Noting the call number is only the first step on getting your hands on a paper book. Titles on penguins, such as Wilson, for example, may be in reference (encyclopedias about birds and such), in special collections, in the circulating collection or in another area in your library. On large university campuses or multi-campus community colleges, you will need to note which library the title is in as well. The call numbers for these books may be very similar in all the different areas (e.g. QL 696 .S473). Check to see if the book may be checked out or if it needs to be used in the library. The last thing to notice is if it is available for checkout or if someone else has checked it out (taken it home). All this information will most likely be on the page near the call number.



Wilson, the Yellow-eyed Penguin. Penguin Place Conservation Reserve, New Zealand. Photo courtesy of Barbara Ring

Review

To get a print book:

-  Get the call number
-  Note which library it is in (if applicable)
-  Note the location in the library (circulation, reference, reserves...)
-  Note if it may be checked out (if you can take it home)
-  Note if it is checked in (in the library so you can check it out)

Here is how this information for the book *Waiting to fly: my escapades with the penguins of Antarctica* looks in the San Diego City College library catalog. Notice that our sister campus (Mesa) has this title as well.

Copy/Holding Information			
Campus	Location	Call number	Status
San Diego City College	Circulating Collection	QL696 .S473 N38 1999	Checked in
San Diego Mesa College	Floor 3, Main Book Stacks	QL696.S473 N38 1999	Checked in

Here is how CSU Northridge shows the same information for the same book.

Oviatt Main Floor4 QL696.S473 N38 1999				
BARCODE	TYPE	POLICY	DESCRIPTION	STATUS
30700107959222	Book	Loanable		Item in

The needed information will just be organized differently in different library catalogs. The idea is to know the information you need to get from the catalog so you can get your hands on the book you want: library, location, call number, floor etc. If you are looking for a book in a library after searching the catalog and cannot find it, **ask a librarian.**

B. Finding Articles: a two-step process

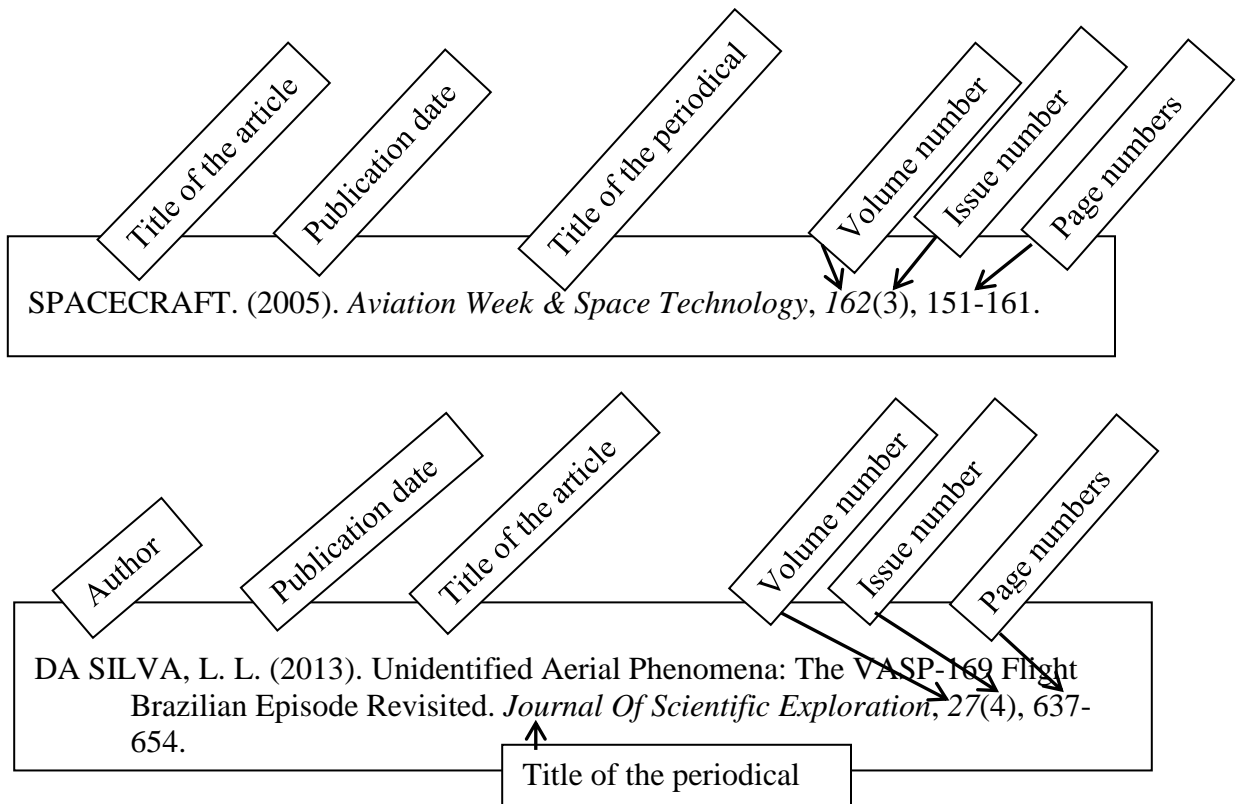
- 1) Find a list of articles on your topic using an index. Today we most often use databases as indexes to articles.
- 2) Get your hands on the actual article.

You know the **first step** already. You find an article database that will work (check with librarians if you are unsure about which database to use). Then work your magic by typing in one of the search strategies you developed in sections 4, 5 and 6 above.

Here is the **second step**: getting your hands on the article. There are four places the article could be.

- 1) It could be in full-text right there in the database you are using. You're done.
- 2) It could be in a print periodical (magazine, newspaper or journal) on your library's shelf.
- 3) It could be in another database owned by the library that you are using.
- 4) If it is in the index or database, it exists somewhere. If it is not in 1-3, then you request your library to get it for you via Interlibrary Loan (ILL). Not all libraries offer this service, but there is probably one in the area that does. Alternatively, a librarian may be able to find it for you at another institution and even if your library can't do ILL, you could have a little road trip to another institution for access. No library has everything. Even the great libraries at institutions such as Stanford, Berkeley, Harvard and Oxford have very active Interlibrary Loan departments because their researchers know that research is finding the answers to their questions, not simply using the information easily found.

How do you find an article if it is in paper on the shelf or in another database owned by your library (numbers 2 and 3 above)? Wake up for this part because there is a little twist in here that stumps some people. Remember that the library catalog lists what the library owns. This would include periodicals (magazines, newspapers and journals). Remember that the library catalog does not have articles listed in it. To find out if your library owns an article, type the title of the periodical into the catalog's periodical holdings section and, if the periodical appears, check it to see if the library includes the dates of the periodical you need.



Another way of saying it is, if you have a citation for an article from any source (a known item search discussed in 6I), be it from your database search, your professor or a bibliography 1) Get to your library's home page. 2) Look for something that says, "journal locator," "journals," "periodicals" (NOT articles) and click on that 3) type in the title of the periodical and, if it appears, check to be sure the date for the article you want is included. Often, the journal locator function will not be on the front page of your library website but rather in the library catalog as a tab. If the periodical title shows up, there will be information telling you if it is in one of the library's databases or if it is on the shelf in print. If you cannot find it, ask a librarian.

If you have determined that the library owns the periodical containing the article you want in a database, go to the library's database page, find that database and search for it. Because you have the citation to the article, you have plenty of information to find it. In an article database, you can now search by author(s), **article title** or just some unique words in the article title. (Remember, in the catalog you were searching by periodical title.) You can even use a date limit since you probably have the dates for the article as well.

If the library owns the periodical that contains the article you want in paper on the shelf, take the periodical titles and dates with you to the periodical section. If there is a call number in the catalog for the periodical, be sure and take that with you as well. Some libraries put their print periodicals in call number order, while others put them in alphabetical order by title.

These strategies will probably be sufficient to get you through the first years of college. Believe it or not, research has been going on long before databases were created. Not all good research will be found in databases. Not all of the information has been digitized or scanned. Back in the day, paper indexes, paper periodicals and microform were used for most everything. Larger institutions will embrace these for a long time yet. Depending on your field of study, you may find yourself in the paper or microform (fiche and film) as well. They work the same way as a database really in that you use a printed volume that holds a long list of articles organized by alphabetized topics. You then create a list of articles you want and go to the catalog to see if the library owns the periodicals they are in. Larger institutions will have bound several issues of a periodical together into "bound periodicals". Some may be on microfiche or microfilm. If you are finding you need these older material, it would be time saving to check with a librarian until you get the hang of it.

We will find in the next section that searching the web is not what we do when we use a search engine like Google. Rather, we search a database of lists (Google has created) of links to websites. It is rather like searching a library's catalog: you are not searching the books, but a database of a list of the books available via that library. Google is just another database with certain kinds of information in it: an extremely large database of information of varying quality.

Section 8: Searching the Web

Databases, electronic resources, web, World Wide Web, the internet, online are all terms people sometimes use interchangeably. If your instructors have told you not to use online sources or that you must use scholarly databases, what are they talking about? The best thing to do is ask since the definition of these terms blur in conversation and might be used interchangeably. Let's go through these terms.

Databases

A database is an organized grouping of records. This could be a database at your school that holds all your school records, at your healthcare provider that holds thousands of people's medical records, or a list of what your library owns (library catalog), a huge collection of articles (a database offered by your library) or a massive collection of links to pages on the World Wide Web (such as that offered by Google).

Electronic resources

Electronic resources include information that takes electricity to access. This could be a CD, DVD, database, or what you find on the internet. Electronic resources include e-books and library databases.

Online resources

Online resources are anything that is accessed via the internet. Online resources include e-books, articles in databases and other information sources in library databases.

The Web

The Web or the World-Wide Web is made up of the pages to which search engines, such as Google and Bing, link. The web is a part of the internet and is accessed via internet connections. It is the web that we care about in this book and is discussed in this section. The web includes e-books and library databases and more.

The internet

The internet includes the Web, but also includes all of the communication capabilities such as twitter, email and so on. The internet also includes information that can only be accessed if you know its address or how to get to it such as pages found through file transfer protocols (FTP) and other mechanisms. The internet is huge and contains much more than the World Wide Web. Since the Web includes e-books and library databases, and the Web is part of the internet, the internet includes e-books and library databases.

Since many people use these terms interchangeably, if your professor asks you not to use internet sources, ask specifically if you can use library databases and e-books. Chances are the answer will be "Yes".

Google

Most of us will say we have used **Google**. What does that mean? It means we have used a database, created by Google, of links to websites. We do not search all the computers attached to the internet when you use Google. Currently, and this might change from time to time, there are two ways to get to the advanced search screen in Google: 1) click settings in the bottom right or 2) after you do a search, the *settings* tab will appear. When you click on that, you will have an option for *Advanced Search* as well.

The first section on **Google's advanced search page** offers phrase searching and the Boolean AND, OR and Not. Read the field labels and it will become apparent what Google calls the different Boolean operators. Google translates the Boolean operators as follows (repeated above)

AND: All of these words (that you have typed in)

OR: Any of these words (that you have typed in)

NOT: None of the words (that you have typed in)

Examine the page for other ways to search the Google database.

A very powerful search you can do is to limit to a specific domain. In lay-persons language, domains are what we call .edu .gov, .mil, .com, .net, .org, and so on.

Domain	Meaning	Domain	Meaning
.edu	Education	.com	Commercial *
.gov	Government	.net	Sites about the internet *
mil	Military	.org	Organization *

* .com, .net and .org were originally intended for these specific kinds of websites but now designate just about any kind of website.

It can be very useful to limit to either a government or an educational website to help retrieve good sources. .edu while most often retrieves valuable results could also retrieve less than valuable results. For example, if you want to retrieve solid information from experts in academia on your topic (e.g. moons of Jupiter), and you therefore limit a Google search to .edu sites, you might retrieve, Ms. Edelson's 3rd grade class (Spielberg, 1997) reports on humanoid life on the moons of Jupiter, which might be entertaining if they existed, but not particularly good for an academic paper. Perhaps a medical school student has a website about her dreams of going to the moons of Jupiter. A medical doctor would not be an expert on the moons of Jupiter so you would want to be wary about using that information for an academic paper/project as well.

If you indeed wanted to find education or government website on the moons of Jupiter you would type this into a Google search.

Jupiter moon* site:.edu

Jupiter moon* site:.gov

Both of those searches retrieve way too many results. But you know what to do when you get too many results. Review your search strategy! Remember, the database has to combine your terms in some way. How do you think Google combines the terms *Jupiter moons*?

Google searches don't reach deeply into the web. Rather Google skims the surface. Beneath the surface are many free and useful databases. To find a database on the web that you can use, search for "searchable database*" and your topic. For example, type the following into Google.

butterflies "searchable database*"
or
butterflies "searchable database*" site:.gov



Sometimes you have to hunt around on the website to find the database or perhaps they are simply talking about a database and not giving you access. This kind of search, however, can return great results.

Google Scholar

Searching Google Scholar is not the same as using the regular Google web search. Google Scholar returns results **that Google has identified** as scholarly but they may not be peer reviewed or in full text. They may be from a variety of sources such as freely accessible journals, items in the public domain, items for purchase or databases at your local college or university library. The latter will probably require a username and password to access the databases remotely (from home). If you create an account with Google, you might be able to change the options so that you will be able to directly access your library via Google Scholar. Some libraries have a Google Scholar link on their website which uses the Google Scholar interface to search some or all that institutions databases at one time. This is much like the federated searches described in 5C above. While Google Scholar can be useful, just like a Google web search can be, it is not a replacement for college or university library databases.

Google is just one of many search engines. A few others are *Bing* by Microsoft, *Yahoo's* engine, *Dogpile* (which is apparently enjoying a comeback) and *Duck Duck Go*. The latter is simple and clean and, unlike most others like Google, does **not** retain your search history so each time you search it is as if it is your first time.

Don't confuse search engines with browsers. Browsers read computer talk and turn it into pages we can read. A few examples of browsers are Internet Explorer (IE), Firefox, Chrome and Edge.

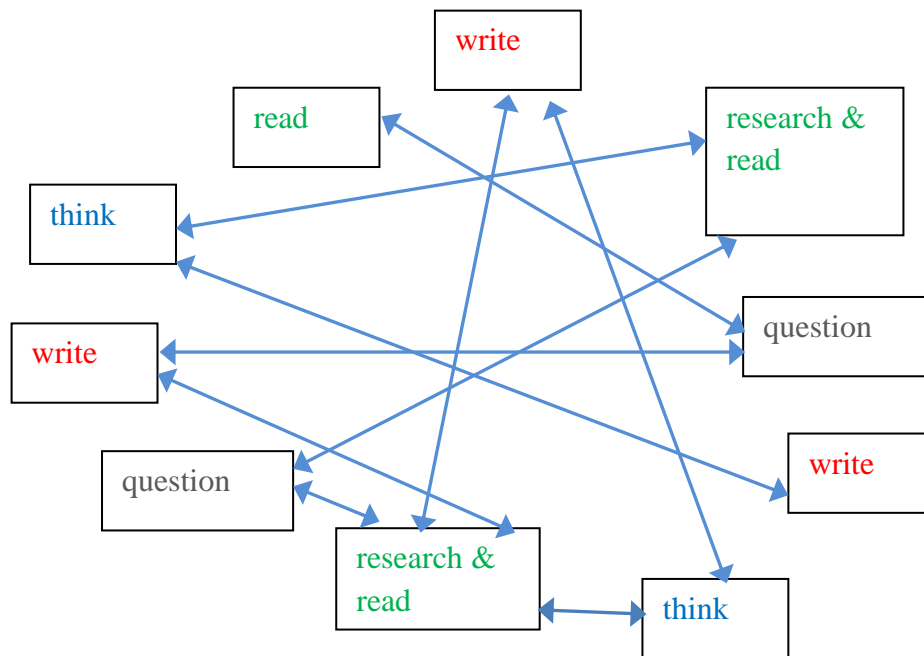
Always use your evaluation skills for website just as you would use them for articles and books. In addition to applying all previously discussed evaluation tools to web pages, consider these strategies. Back up the uniform resource locator (URL). Erase everything after the domain (.com, .edu, .net, .mil...) of the URL to move to or closer to the main home page. In the first example below, erase everything after the .gov. In the second example, everything after the .edu. Erase the parts of the URLs that are in italics.

1. <https://www.nasa.gov/vision/earth/everydaylife/burningman.html> .
2. <https://americanart.si.edu/exhibitions/burning-man>

If you did not know what nasa or si was and their webpages did not clearly define who they were, backing up the URL by erasing after the domain can be useful. It usually works.

Another way to investigate a web page is to see who links to it. This can give you a little insight into how the site is perceived by others. To do that, in Google, type the URL after *link*:. For example, type `link:https://americanart.si.edu/exhibitions/burning-man`. Your results will be a list of website that link to `https://americanart.si.edu/exhibitions/burning-man`.

Remember



Section 9: Wrapping It Up

This little book has given you an overview of doing library research. It does not cover every eventuality and there are exceptions to most of the ideas presented. Basically, you start by choosing a topic, thinking about it, determining questions about it and words that truly capture your topic.

When you are ready to start searching, you now know a variety of ways to control your search: choose words capturing your topic, combine your words (Boolean, phrases and proximity) and choose which fields in the records to search (title, abstract, full text and so on). We also discussed that limits, such as publication dates, can help define a search. Remember to do multiple searches. Rarely does one search in one database satisfy.

We discussed the different types of information and how information morphs from one type to another: the immediacy of daily news, to a book, to articles and so on. We also covered which databases to choose based on both the type of information you want (books, articles, films) and your topic since some databases are highly specialized covering specific fields in depth (nursing, business, psychology...).

It is also clear that this is not a linear process. You do not do research then write a paper and you are done. Rather, you think, research, read, write and repeat all these in any order as needed.

Though we kept what is offered in this book simple, research is not always easy. What you have read here will take you all the way through graduate studies, if that be your goal. When you feel you have the hang of basic searching, try using multiple strategies in one search. Here are a couple of examples:

Using truncation, put a phrase search and proximity search together in the abstract field:

*“Sierra Nevada Mountains” w/5 drought** in the abstract field

Try a Boolean OR with phrase searching in the title field and limit publication date to after 2001:

“United States of America” OR “United States” OR “U. S. A.” in the title field and limit publication date to after 2001

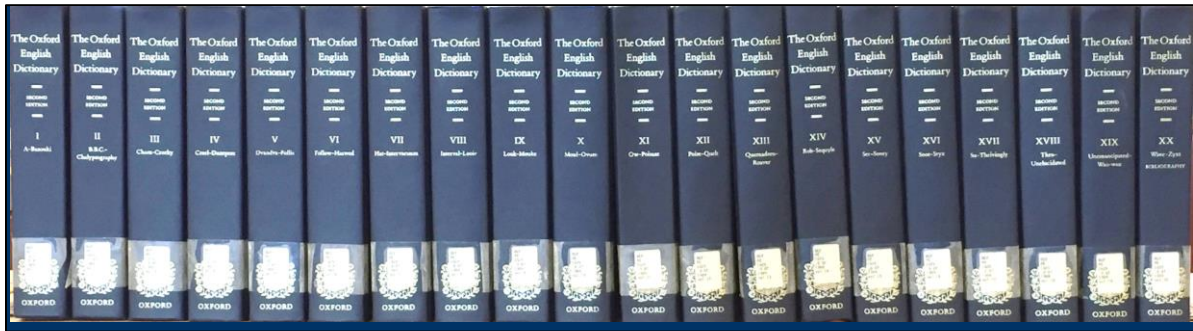
This book did not cover all ways to search such as left-hand truncation or nesting which is a way of combining searching with all the Boolean operators (AND, OR, NOT) in one search. It is more complicated than it seems at first glance.

Librarians spend a couple semesters in graduate school learning about databases and how to use them, so there is no expectation that, after mastering the skills in this book, you will never need help again. Ask librarians for help. It will save you time.

Remember, if you don't find anything or the search results seem just not right, use a different strategy. Change the words you use, how you combine them, the field you chose and/or choice of database. Always remember that there is professional librarian help available. There are many possible ways to contact your librarians. Check your library's website for phone numbers, email address, 24/7 chat and location. Yes, in most libraries you can walk in and speak to a librarian about your research project from developing your topic to finding the information you need. In some institutions, you are welcome to make an appointment.

Empower yourself by discovering how to find good information about what sparks your curiosity. If you have not yet figured out what your profession will be, pay attention to what makes you curious: It could be a really good clue on how to spend your life. Stretch yourself out of your comfort zone and into the realm of dissolving assumptions. In such a case, learning can be a little shocking or at least, surprising. The best kinds of surprises are those that reverberate in our lives.





Section 10: Glossary

Abstract	An academic word for summary.
Advanced Search	A set of options in a search engine or database that give the user more control. Usually found via a link labeled “advanced search”, these options usually allow the user to refine or narrow the search in order to find results more suited to the user’s information needs. Specific options will be different depending on the search engine or database.
Autobiography	A story of a person’s life written by that person.
Bias	Judgment unfairly influenced by subjective opinion when the situation calls for reliance on objective fact. ^
Bibliography	A list containing citations to the resources used in writing a research paper or other document. *
Biography	An account of a person’s life written by another person.
Blog (Weblog)	A Web page that provides frequent continuing publication of Web links and/or comments on a specific topic or subject (broad or narrow in scope), often in the form of short entries arranged in reverse chronological order, the most recently added piece of information appearing first... ..Synonymous with <i>blog</i> . The process of maintaining a Weblog is known as <i>blogging</i> . ^ (No expertise is required).
Boolean operator	The words <i>AND</i> , <i>OR</i> , or <i>NOT</i> that command a search engine (or search interface of a database) to combine search terms in specific ways. <i>AND</i> and <i>NOT</i> help to narrow and <i>OR</i> helps to broaden searches.

Call number	A group of letters and/or numbers that identifies a specific item in a library and provides a way for organizing library holdings . Three major types of call numbers are Dewey Decimal, Library of Congress and Superintendent of Documents. *
Circulating collection	Term used in some libraries to identify materials that can be checked out and taken out of the library for a period of time. Usually refers to a section of books also known as the stacks. Often times this collection makes up the majority of a library's collection of books.
Citation	A reference to a book, magazine or journal article, or other work containing all the information necessary to identify and locate that work. A citation to a book, for example; includes its author's name; title; publisher and place of publication; and date of publication. *
Citing	The act of providing in-text citations and a reference page, bibliography, works cited page, etc. with full citations at the end of an academic paper. In general, giving credit where credit is due as in crediting a quote during a speech.
Computer literate	The ability to operate and perform basic functions on a computer. Being computer literate does not mean one is information literate.
Confirmation bias	Accepting as true information only because it supports our beliefs. This occurs when we put a high value on information that confirms our beliefs by accepting unsupportive evidence that reinforces our belief and ignoring or rejecting supported evidence that puts our beliefs in jeopardy.
Continuum	A series of related things that progress in time, quality or other criteria such as bodies of water from small to large (pond, lake, sea, ocean) or colors from warm to cool (red, orange, yellow, green, blue, purple).
Copyright	The exclusive legal rights granted by a government to an author, editor, compiler, composer, playwright, publisher, or distributor to publish, produce, sell, or distribute copies of a literary, musical, dramatic, artistic, or other work, within certain limitations (fair use and first sale). ^
Course reserves	Select books, articles, videotapes, or other materials that instructors want students to read or view for a particular course. These materials are usually kept in one area of the library and circulate for only a short period of time.*

Credibility	The state or quality of being worthy of trust or belief. The reliability of information content usually depends on the motives and credentials of the author or provider. ^
Currency (As it relates to current and contemporary sources)	The quality of being in progress, recent, or up-to-date. In information retrieval, the extent to which the content of a document or source reflects the existing state of knowledge about the subject. In research, the importance of currency varies, depending on the discipline. Medical and scientific information can become outdated in less than five years, but in the arts and humanities, materials decades old may be just as useful as recent information. ^
Data	Recorded qualitative or quantitative empirical observations. +
Database	A collection of information stored in an electronic format that can be searched by a computer. *
Default	A value, option, or setting automatically selected in a hardware or software system in the absence of specific instructions from the user. The default setting may be displayed on the data entry screen to allow the user to see what action will be taken if no input is provided. *
Discovery search	<i>See</i> Federated Search, Discovery Search, Search All.
Dissertation	An extended written treatment of a subject (like a book) submitted by a graduate student as a requirement for a doctorate. *
Domain	.com, .edu, .gov, .int, .mil, .net and .org are “top level” domains are the last part of the URL. They generally disclose the kind of organization that runs a website. For example, if the URL ends in .gov, it is a government website.
E-book, E-book	A digital version of a book which may or may not have a print version.
EBSCO, ProQuest, Gale	Three popular database vendors as opposed to the databases to which they provide access. For example, both EBSCO and ProQuest provide access to the ERIC (education) database and the CINAHL (nursing) database as well as to some databases unique to their companies.
Fair use	Conditions under which copying a work, or a portion of it, does <i>not</i> constitute infringement of copyright, including copying for purposes of criticism, comment, news reporting, teaching, scholarship, and research. ^

Federated Search, Discovery search, Search all	A search tool designed to query multiple databases in a single search. This type of search is becoming more and more common in the academic library. With a single search a user can find results that may include articles, video, websites and books from several databases.
Fiction	Literary works in prose, portraying characters and events created in the imagination of the writer. The traditional forms of fiction include the novel, novelette, and short story. Compare with NON-FICTION.^
Field (area of academia)	A subject area or discipline in academia.
Field (database)	Parts of a record in a database such as title, author subject. Database searches can be specific to one or more fields. Generally, a few fields will be available in a basic search with many additional options becoming available in an advanced search.
Find on a page	This allows the user to identify every place a specific word is on a word document or web page. To do this on a PC, press <i>ctrl F</i> . To do this on a Mac, press <i>Command F</i> .
Format	Used to describe the physical nature of a resource: electronic, print, web based, DVD, streaming, accessed via a database.
Full text	Usually used when referring to articles. Simply, describes whether you can see the entire text. There is an option in most article databases that allows the user to limit results to only full-text articles. This limiter, when selected, would eliminate any results that only include a citation or a citation and abstract.
Gale	<i>See</i> EBSCO, ProQuest, Gale.
Genealogy	Study of ancestry and family history.
Google	A popular search engine. A type of database that, when searched, provides links to websites. Provides results to almost any search inquiry but does not provide any information to the user on the quality or credibility of sources. A tool that can be incredibly powerful yet undeniably unreliable when conducting research.
Identity Protecting Reasoning (IPR)	According to Dr. Bruce Hull, IPR occurs when people doubt science and experts rather than question their identity. Related to Confirmation Bias.

Information literate	The ability to find and evaluate information to answer a question or fill a need as well as the knowledge of how to use the information legally and ethically.
Interlibrary Loan (ILL)	The sharing of materials between libraries. Sometimes restricted to books. Often this is a free service but there can also be fees associated with this type of borrowing, which might be taken on by the library or institution, or the library patron / student.
Internet	Connected computers that may or may not be accessible to the public. The World Wide Web is the part of the internet that is searchable by engines such as google.
Jargon	Words and phrases unique to a field or industry or commonly used words that have a different meaning in a specific field.
Journal	A publication, issued on a regular basis, which contains scholarly research published as articles, papers, research reports, or technical reports. *
Key words, keywords	The terms that best describe a topic. The term <i>keywords</i> is also used in some databases to describe searching terms in multiple fields.
Library catalog, online catalog	A type of database that indicates what print and electronic holdings are available at a certain library or library system.
Library research	Finding and reading books, articles and other information sources on a topic often to support a thesis or answer a question. For a college student, The end result would often be a research paper or class presentation.
Literature review, lit review	An overview or summary of research and writings a specific topic collected together and presented as such as a result of library research. Often appears at the beginning of scholarly/peer reviewed journal articles before the researchers present their findings.
Microform	A reduced sized photographic reproduction of printed information on reel to reel film (microfilm) or film cards (microfiche) or opaque pages that can be read with a microform reader/printer. *
Non-fiction	Literary works in prose describing events that actually occurred and characters or phenomena that actually exist or existed in the past. Any piece of prose writing in which the content is not imagined by the author. Compare with FICTION.^

Open Educational Resource (OER)	Free educational materials with various licensing obligations for usage.
Original research	Type of research in which a researcher conducts surveys, tests, experiments, or other methods to determine new findings or confirm finding from previous research. Generally published in journals or conference proceedings. The best way to search for full-text original research is to use a library database.
Peer review	Peer review is a process by which editors have experts in a field review books or articles submitted for publication by the authors' peers. Peer review helps to ensure the quality of an information source. A peer-reviewed journal is also called a refereed journal or scholarly journal. *
Periodical	An information source published in multiple parts at regular intervals (daily, weekly, monthly, biannually). Journals, magazines, and newspapers are all periodicals. *
Phrase	A small group of two or more words.
Plagiarism	Using the words or ideas of others without acknowledging the original source. *
Popular information	Information that is not academic and not peer reviewed. Can be found in sources where the author is a reporter, journalist, blogger, etc. but not necessarily an expert in the field. These may or may not have been edited and fact checked depending on if the source is a newspaper, magazine, blog, or webpage. Can include many other popular sources not listed here.
Primary source	An original record of events, such as a diary, a contemporary newspaper article, a public record, or scientific documentation. *
ProQuest	<i>See</i> EBSCO, ProQuest, Gale.
Publisher	An entity or company that produces and issues books, journals, newspapers, or other publications * (print or electronic).
Records	A database is made up of records and the records are made up of fields. For example, in an online catalog each book has a record. The fields in that record include the title, author, publisher, publishing date, subject and so on.
Reference collection	Collection of books that may be in print or electronic format that include items such as encyclopedias, dictionaries, handbooks, atlas, almanacs, etc. Print books in library reference collections are usually for in-library use only.

References cited	<i>See Bibliography</i>
Reserves	<i>See Course reserves</i>
Scholarly journal	A scholarly journal article is written by an expert in the field and may or may not be peer reviewed. See also peer-review *.
Search All	<i>See Federated Search, Discovery Search, Search All.</i>
Search engine	The software that allows us to search a database. (e.g. Google's search engine allows us to search Google's database. EBSCO's search engine allows us to search Academic Search Complete and other databases.)
Secondary source	Materials such as books and journal articles that analyze primary sources. Secondary sources usually provide evaluation or interpretation of data or evidence found in original research or documents such as historical manuscripts or memoirs. *
Style manual, style guide	An information source providing guidelines for people who are writing research papers. A style manual outlines specific formats for arranging research papers and citing the sources that are used in writing the paper. *
Tertiary source	A source of information that summarizes and/or digests information in primary or secondary sources without a pronounced point of view, for example, a subject specific encyclopedia.
Transferable skills	Skills that can be used in various and different environments. For example, information literacy skills, once learned, can be valuable in any library in the world or in any instance information seeking may take place.
Truncation	To cut off. When used in searching, a symbol such as an asterisk (*), is added to the truncated word allowing the database to replace one or multiple letters and find variations of the root word with different endings (and sometimes beginning). See 6A.
URL (Uniform Resource Locator)	Web address such as <i>http://www.si.edu</i> . <i>See also Domain.</i>
Web, World Wide Web, WWW	A global network of servers providing access to websites that allows content to be linked. Searchable via databases such as Google.
Wildcard	Similar to truncation, but replaces only one letter, most often within a word. (See 6A)

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