Choosing & Using Sources: A Guide to Academic Research

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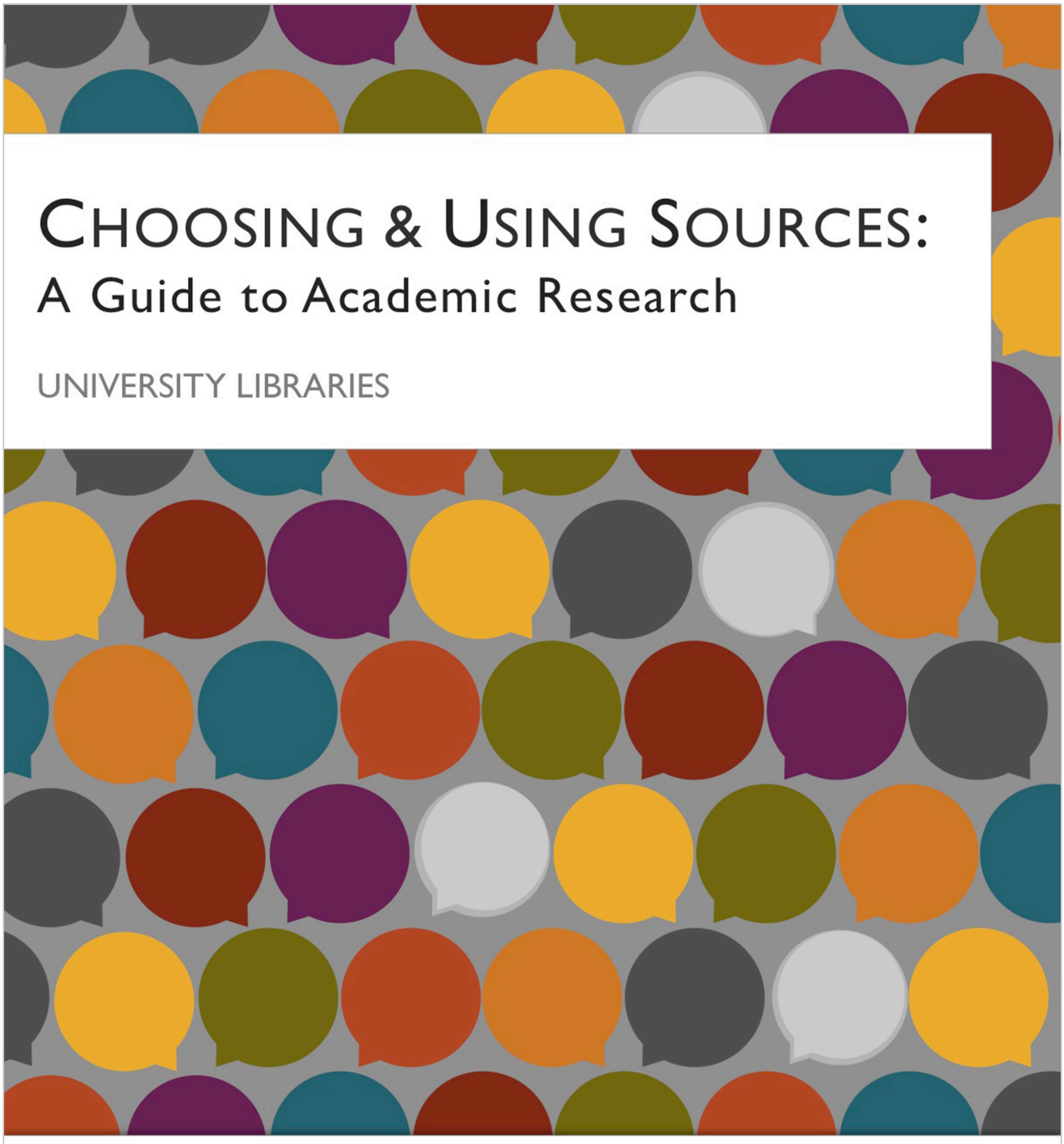

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A Guide to Academic Research

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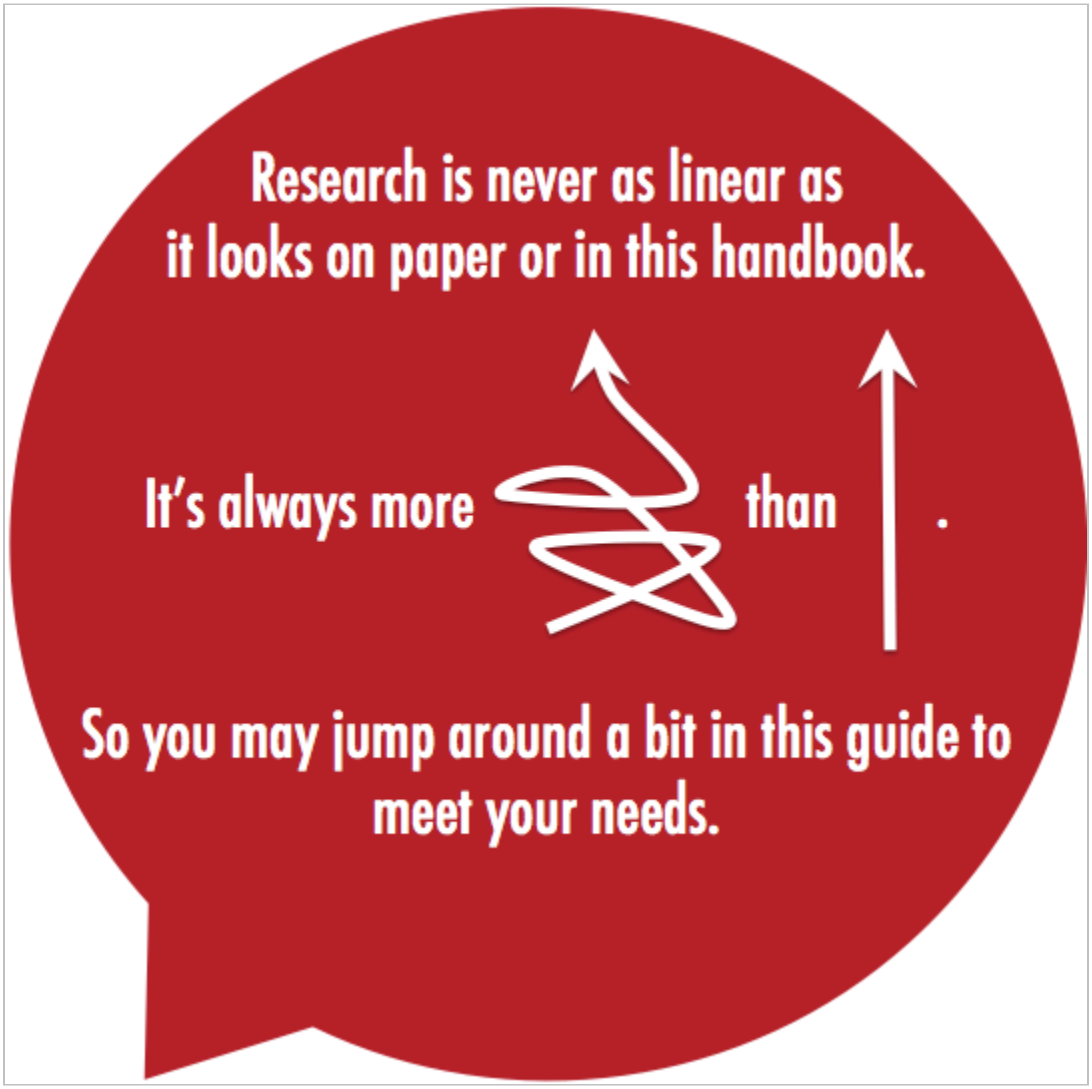
Introduction

Research assignments—resulting in final products such as research papers, essays, posters, multimedia projects, blog posts, 3-D models, etc.—are a common requirement in college courses, but they can also be a source of stress when you aren't sure what to do. This guide is intended to decrease your stress and increase your comfort with such assignments.



Think of research as an exploration, with unexpected twists and turns.

TIP: Decoding Writing Assignments

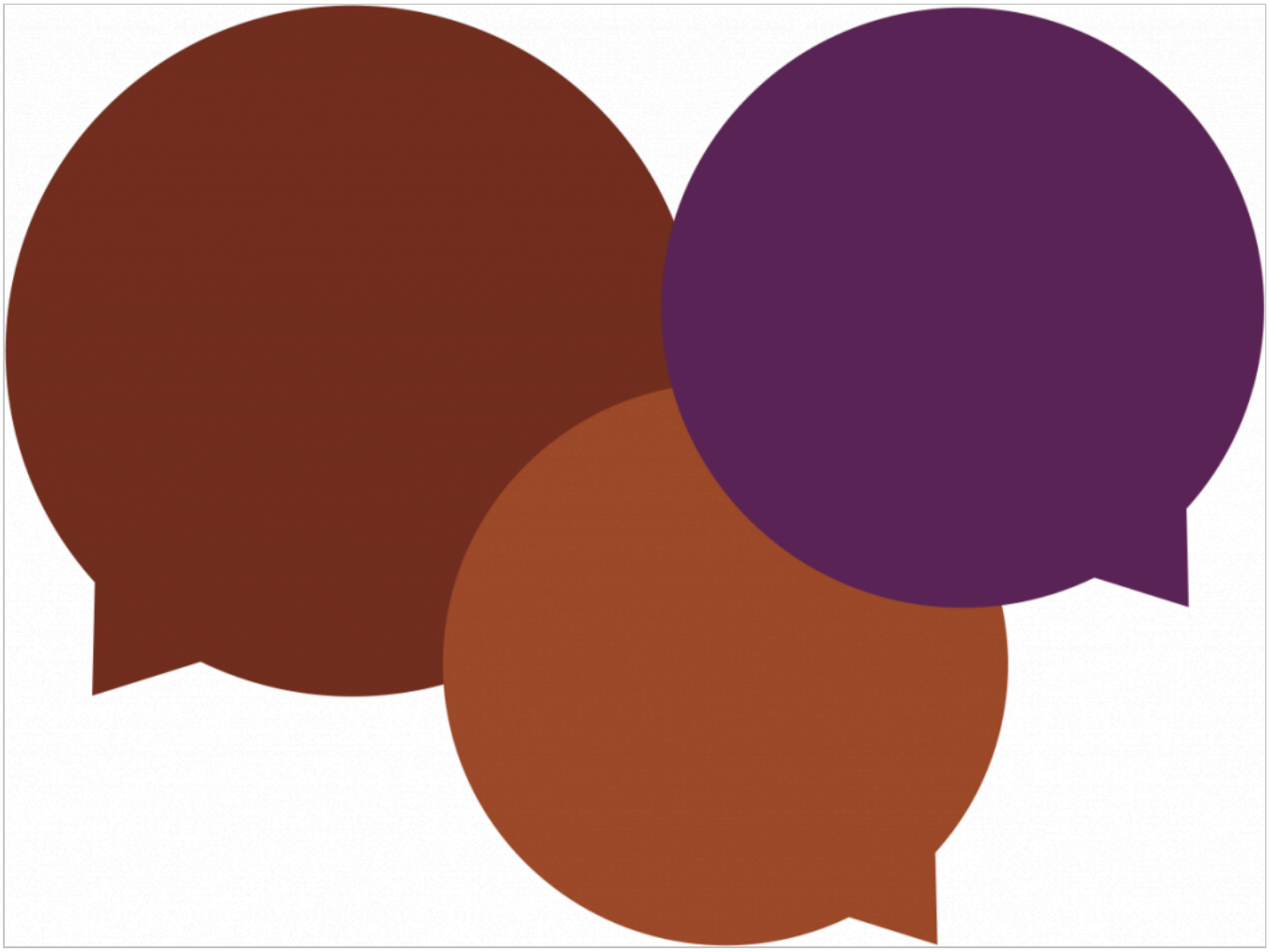
Professors steeped only in the research traditions of their own discipline may be unaware of how different conducting research can be in other disciplines. They may assume you already know what they expect for the research assignment they just gave you. But that may not be true at all: you may only know about how to conduct research in another discipline or, especially if you've been taking courses in multiple disciplines, be utterly confused because the expectations seem to change from course to course. This handout from the Ohio State University Writing Center can help you figure out what you need to do for your assignment.

Throughout this guide, we try to make more explicit some things less often talked about in class in order to "fill in the blanks." The sections are ordered, more or less, as though you are conducting a research project while you're reading them—from developing research questions through using sources in your writing. In between, you will learn how to figure out which sources to look for, how to find them, and how to evaluate them.

You'll also find information you may find helpful to help you navigate other questions—copyright, the fair use exception to copyright, and more.

Conversation Balloons?

The balloon graphics used throughout this guide are a reminder that you are entering the scholarly conversation when you do research and write about it. That conversation has been going on for many centuries. Now it's your turn to join in.



This guide features colorful conversation balloons to emphasize that you are entering the scholarly conversation when you do research and write about it.

1-Research Questions

1. The Purpose of Research Questions

Research questions are very important.

Both professional researchers and successful student researchers develop research questions. That's because research questions are more than handy tools; they are essential to the research process.

By defining exactly what the researcher is trying to find out, these questions influence most of the rest of the steps taken to conduct the research. That's true even if the research is not for academic purposes but for other areas of our lives.

For instance, if you're seeking information about a health problem in order to learn whether you have anything to worry about, research questions will make it possible for you to more effectively decide whether to seek medical help–and how quickly.

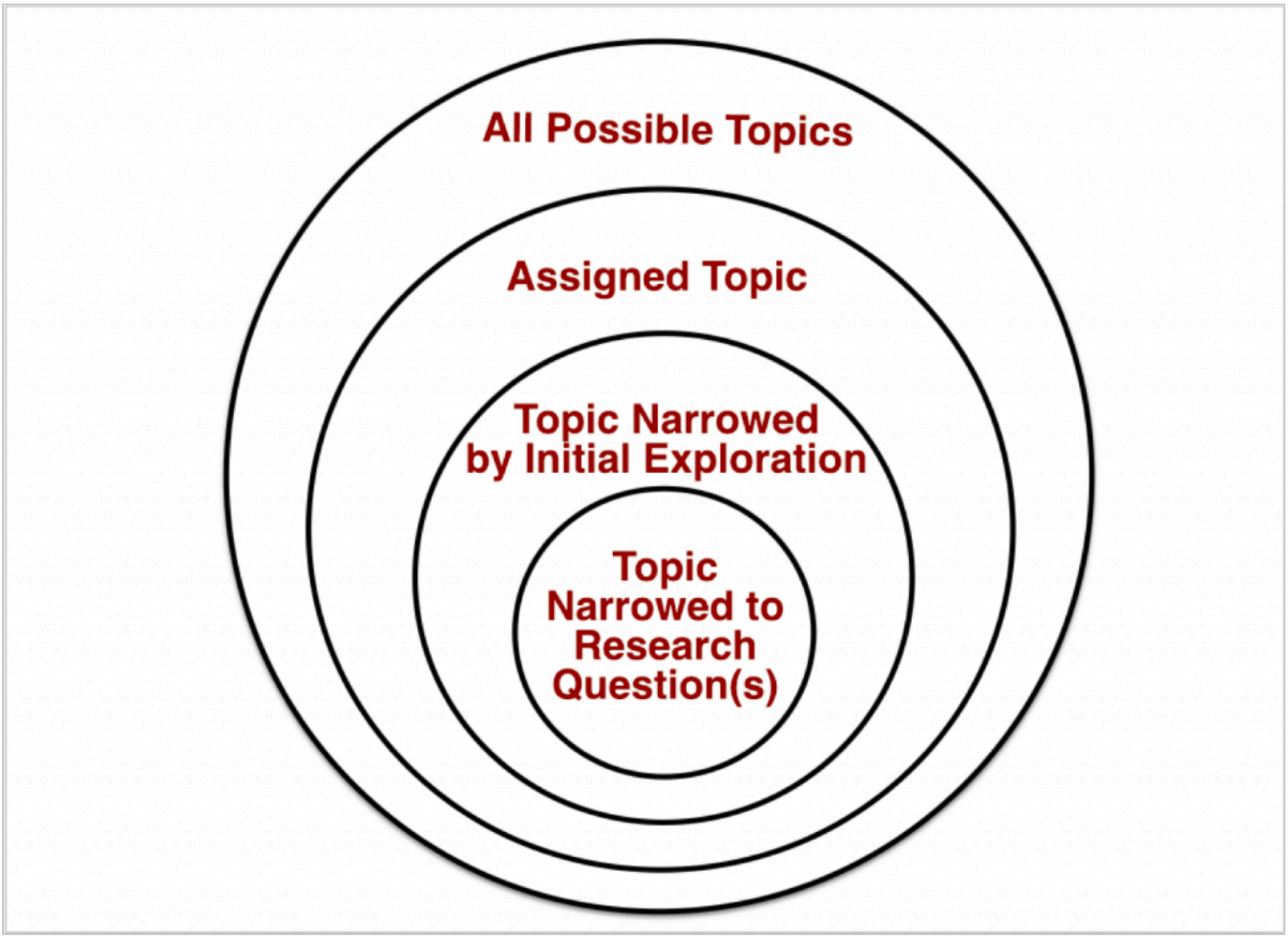
Or, if you're researching a potential employer, having developed and used research questions will mean you're able to more confidently decide whether to apply for an internship or job there.

The confidence you'll have when making such decisions will come from knowing that the information they're based on was gathered by conscious thought rather than serendipity and whim.

2. Narrowing a Topic

For many students, having to start with a research question is the biggest difference between how they did research in high school and how they are required to carry out their college research projects. It's a process of working from the outside in: you start with the world of all possible topics (or your assigned topic) and narrow down until you've focused your interest enough to be able to tell precisely what you want to find out, instead of only what you want to "write about."

Process of Narrowing a Topic



Visualize narrowing a topic as starting with all possible topics and choosing narrower and narrower subsets until you have a specific enough topic to form a research question.

All Possible Topics -You'll need to narrow your topic in order to do research effectively. Without specific areas of focus, it will be hard to even know where to begin.

Assigned Topics – When professors assign a topic you have to narrow, they have already started the narrowing process. Narrowing a topic means making some part of it more specific. Ideas about a narrower topic can come from anywhere. Often, a narrower topic boils down to deciding what's interesting to you. One way to get ideas is to read background information from a source like Wikipedia.

Topic Narrowed by Initial Exploration – It's wise to do some more reading about that narrower topic to a) learn more about it and b) learn specialized terms used by professionals and scholars who study it.

Topic Narrowed to Research Question(s) – A research question defines exactly what you are trying to find out. It will influence most of the steps you take to conduct the research.

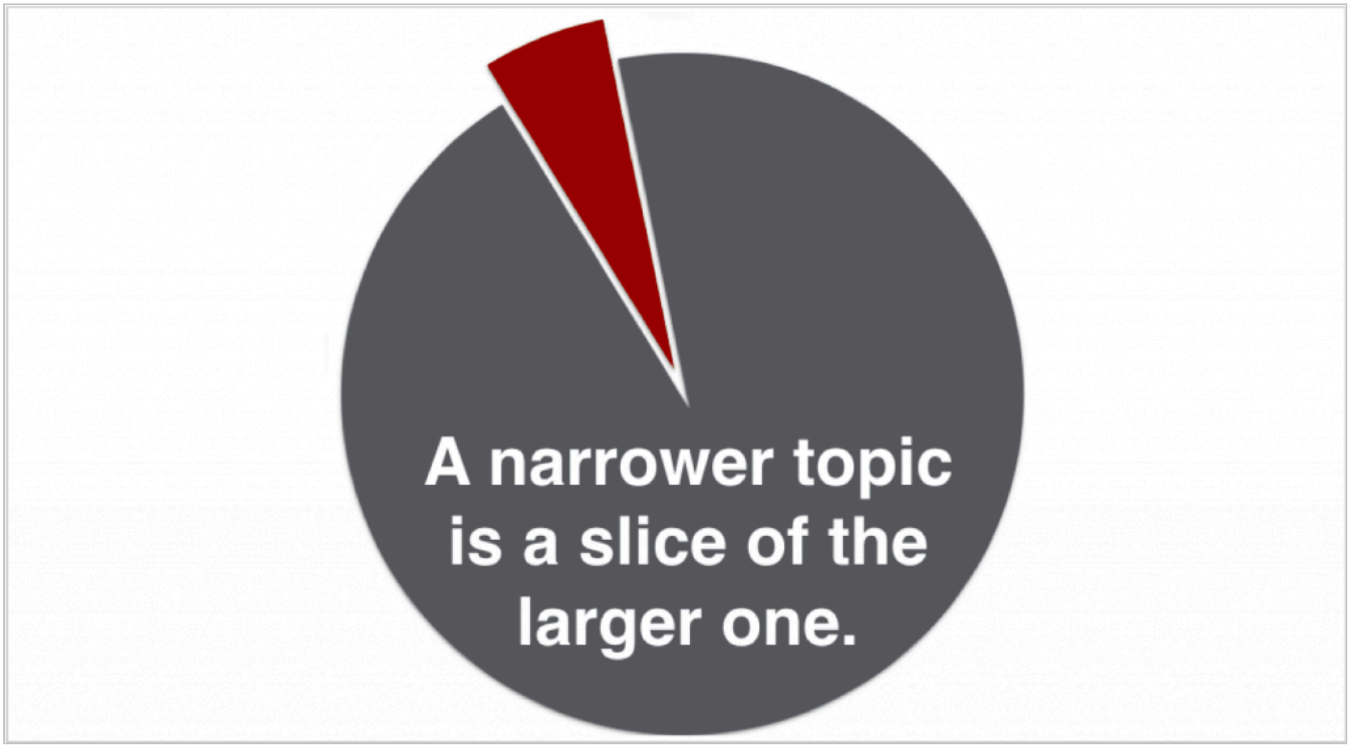
ACTIVITY: Which Topic Is Narrower?

When we talk about narrowing a topic, we're talking about making it more specific. You can make it more specific by singling out at least one part or aspect of the original to decrease the scope of the original. Now here's some practice for you to test your understanding.

Why Narrow a Topic?

Once you have a need for research—say, an assignment—you may need to prowl around a bit online to explore the topic and figure out what you actually want to find out and write about.

For instance, maybe your assignment is to develop a poster about the season "spring" for an introductory horticulture course. The instructor expects you to narrow that topic to something you are interested in and that is related to your class.



Another way to view a narrowed topic is as a sliver of the whole topic.

Ideas about a narrower topic can come from anywhere. In this case, a narrower topic boils down to deciding what's interesting to you about "spring" that is related to what you're learning in your horticulture class and small enough to manage in the time you have.

One way to get ideas would be to read about spring in Wikipedia, looking for things that seem interesting and

relevant to your class, and then letting one thing lead to another as you keep reading and thinking about likely possibilities that are more narrow than the enormous “spring” topic. (Be sure to pay attention to the references at the bottom of most Wikipedia pages and pursue any that look interesting. Your instructor is not likely to let you cite Wikipedia, but those references may be citable scholarly sources that you could eventually decide to use.)

Or, instead, if it is spring at the time you could start by just looking around, admire the blooming trees on campus, and decide you’d like your poster to be about bud development on your favorites, the crabapple trees.

What you’re actually doing to narrow your topic is making at least one aspect of your topic more specific. For instance, assume your topic is the maintenance of the 130 miles of sidewalks on OSU’s Columbus campus. If you made maintenance more specific, your narrower topic might be snow removal on Columbus OSU’s sidewalks. If instead, you made the 130 miles of sidewalks more specific, your narrower topic might be maintenance of the sidewalks on all sides of Mirror Lake.

Anna Narrows Her Topic and Works on a Research Question

The Situation: Anna, an undergraduate, has been assigned a research paper on Antarctica. Her professor expects students to (1) narrow the topic on something more specific about Antarctica because they won’t have time to cover that whole topic. Then they are to (2) come up with a research question that their paper will answer.

The professor explained that the research question should be something they are interested in answering and that it must be more complicated than what they could answer with a quick Google search. He also said that research questions often, but not always, start with either the word “how” or “why.”

What you should do:

1. Read what Anna is thinking below as she tries to do the assignment.
2. After the reading, answer the questions at the end of the monologue in your own mind.
3. Check your answers with ours at the end of Anna’s interior monologue.
4. Keep this demonstration in mind the next time you are in Anna’s spot, and you can mimic her actions and think about your own topic.

Anna’s Interior Monologue

Okay, I am going to have to write something—a research paper—about Antarctica. I don’t know anything about that place—I think it’s a continent. I can’t think of a single thing I’ve ever wanted to know about Antarctica. How will I come up with a research question about that place? Calls for Wikipedia, I guess.

At https://en.wikipedia.org/wiki/Antarctica. Just skimming. Pretty boring stuff. Oh, look– Antarctica's a desert! I guess "desert" doesn't have to do with heat. That's interesting. What else could it have to do with? Maybe lack of precipitation? But there's lots of snow and ice there. Have to think about that—what makes a desert a desert?

A desert?

It says one to five thousand people live there in research stations. Year-round. Definitely, the last thing I'd ever do. "…there is no evidence that it was seen by humans until the 19th century." I never thought about whether anybody lived in Antarctica first, before the scientists and stuff.

Lots of names—explorer, explorer… boring. It says Amundson reached the South Pole first. Who's Amundson? But wait. It says, "One month later, the doomed Scott Expedition reached the pole." Doomed? Doomed is always interesting. Where's more about the Scott Expedition? I'm going to use that Control-F technique and type in Scott to see if I can find more about him on this page. Nothing beyond that one sentence shows up. Why would they have just that one sentence? I'll have to click on the Scott Expedition link.

Terra Nova…

But it gives me a page called Terra Nova Expedition. What does that have to do with Scott? And just who was Scott? And why was his expedition doomed? There he is in a photo before going to Antarctica. Guess he was English. Other photos show him and his team in the snow. Oh, the expedition was named Terra Nova after the ship they sailed this time—in 1911. Scott had been there earlier on another ship.

Lots of stuff about preparing for the trip. Then stuff about expedition journeys once they were in Antarctica. Not very exciting—nothing about being doomed. I don't want to write about this stuff.

Wait. The last paragraph of the first section says "For many years after his death, Scott's status as a tragic hero was unchallenged," but then it says that in the 20th-century people looked closer at the expedition's management and at whether Scott and some of his team could be personally blamed for the catastrophe. That "remains controversial," it says. Catastrophe? Personally blamed? Hmm.

Back to skimming. It all seems horrible to me. They actually *planned* to kill their ponies for meat, so when they actually did it, it was no surprise. Everything was extremely difficult. And then when they arrived at the South Pole, they found that the explorer Amundsen had beaten them. Must have been a big disappointment.

The homeward march was even worse. The weather got worse. The dog sleds that were supposed to meet them periodically with supplies didn't show up. Or maybe the Scott group was lost and didn't go to the right meeting places. Maybe that's what that earlier statement meant about whether the decisions that were made were good ones. Scott's diary said the crystallized snow made it seem like they were pushing and pulling the sledges through *dry sand*.

Rocks?!

It says that before things turned really bad (*really* bad? You've already had to eat your *horses*!), Scott allowed his men to put 30 pounds of rocks with fossils on the sledges they were pushing and dragging. Now was that sensible? The men had to push or pull those sledges themselves. What if it was those rocks that actually doomed those men?

But here it says that those rocks are the proof of continental drift. So how did they know those rocks were so important? Was that knowledge worth their lives? Could they have known?

Wow–there is drama on this page! Scott's diary is quoted about their troubles on the expedition—the relentless cold, frostbite, and the deaths of their dogs. One entry tells of a guy on Scott's team "now with hands as well as feet pretty well useless" voluntarily leaving the tent and walking to his death. The diary says that the team member's last words were "I am just going outside and may be some time." Ha!

They all seem lost and desperate but still have those sledges. Why would you keep pulling and pushing those sledges containing an extra 30 pounds of rock when you are so desperate and every step is life or death?

A diary…

Then there's Scott's last diary entry, on March 29, 1912. "… It seems a pity but I do not think I can write more." Well.

That diary apparently gave lots of locations of where he thought they were but maybe they were lost. It says they ended up only 11 miles from one of their supply stations. I wonder if anybody knows how close they were to where Scott *thought* they were.

I'd love to see that diary. Wouldn't that be cool? Online? I'll Google it.

Yes! At the British museum. Look at that! I can see Scott's last entry IN HIS OWN HANDWRITING!

A digital version?

Actually, if I decide to write about something that requires reading the diary, it would be easier to not have to decipher his handwriting. Wonder whether there is a typed version of it online somewhere?

Maybe I should pay attention to the early paragraph on the Terra Nova Expedition page in Wikipedia—about it being controversial whether Scott and his team made bad decisions so that they brought most of their troubles on themselves. Can I narrow my topic to just the controversy over whether bad decisions of Scott and his crew doomed them? Maybe it's too big a topic if I consider the decisions of all team members. Maybe I should just consider Scott's decisions.

So what research question could come from that? Maybe: how did Scott's decisions contribute to his team's deaths in Antarctica? But am I talking about his decisions before or after they left for Antarctica? Or the whole time they were a team? Probably too many decisions involved. More focused: How did Scott's decisions after reaching the South Pole help or hurt the chances of his team getting back safely? That's not bad—maybe. If people have written about that. There are several of his decisions discussed on the Wikipedia page, and I know there are sources at the bottom of that page.

Really, a desert?

Let me think—what else did I see that was interesting or puzzling about all this? I remember being surprised that Antarctica is a desert. So maybe I could make Antarctica as a desert my topic. My research question could be something like: Why is Antarctica considered a desert? But there has to be a definition of deserts somewhere online, so that doesn't sound complicated enough. Once you know the definition of desert, you'd know the answer to the question. Professor Sanders says research questions are more complicated than regular questions.

What's a topic I could care about? A question I really wonder about? Maybe those rocks with the fossils in them. It's just so hard to imagine desperate explorers continuing to push those sledges with an extra 30 pounds of rocks on them. Did they somehow know how important they would be? Or were they just curious about them? Why didn't they ditch them? Or maybe they just didn't realize how close to death they were. Maybe I could narrow my Antarctica topic to those rocks.

Why rocks?

Maybe my narrowed topic could be something like: The rocks that Scott and his crew found in Antarctica that prove continental drift. Maybe my research question could be: How did Scott's explorers choose the rocks they kept?

Well, now all I have is questions about my questions. Like, is my professor going to think the question about the rocks is still about Antarctica? Or is it all about continental drift or geology or even the psychology of desperate people? And what has been written about the finding of those rocks? Will I be able to find enough sources? I'm also wondering whether my question about Scott's decisions is too big—do I have enough time for it?

I think my professor is the only one who can tell me whether my question about the rocks has enough to do with Antarctica. Since he's the one who will be grading my paper. But a librarian can help me figure out the other things.

So Dr. Sanders and a librarian are next.

I should ask.

Questions

1. Was Anna's choice to start with Wikipedia a good choice? Why or why not?
2. Have you ever used that Control-F technique?
3. At what points does Anna think about where to look for information?
4. At the end of this session, Anna hasn't yet settled on a research question. So what did she accomplish? What good was all this searching and thinking?

Here are our answers below.

Our Answers:

1. **Was Anna's choice to start with Wikipedia a good choice? Why or why not?** Wikipedia is a great place to start a research project. Just make sure you move on from there, because it's a not a good place to end up with your project. One place to move on to is the sources at the bottom of most Wikipedia pages.
2. **Have you ever used that Control-F technique?** If you haven't used the Control-F technique, we hope you will. It can save you a lot of time and effort reading online material.
3. **At what points does Anna think about where to look for information**? When she began; when she wanted to know more about the Scott expedition; when she wonders whether she could read Scott's diary online; when she thinks about what people could answer her questions.
4. **At the end of this session, Anna hasn't yet settled on a research question. So what did she accomplish? What good was all this reading and thinking?** There are probably many answers to this question. Ours includes that Anna learned more about Antarctica, the subject of her research project. She focused her thinking (even if she doesn't end up using the possible research questions she's considering) and practiced critical thinking skills, such as when she thought about what she could be interested in, when she worked to make her potential research questions more specific, and when she figured out what questions still needed answering at the end. She also practiced her skills at making meaning from what she read, investigating a story that she didn't expect to be there and didn't know had the potential of being one that she is interested in. She also now knows what questions she needs answered and whom to ask. These thinking skills are what college is all about. Anna is way beyond where she was when she started.

3. Background Reading

Get a good look at your topic through background reading.

It's wise to do some more reading about that narrower topic once you have it. For one reason, you probably don't know much about it yet. For another, such reading will help you learn the terms used by professionals and scholars who have studied your narrower topic. Those terms are certain to be helpful when you're looking for sources later, so jot them down or otherwise remember them.

For instance, if you were going to do research about the biology of the Covid pandemic virus, this background reading would teach you that professionals and scholars often refer to the virus itself as SARS-CoV-2. If you didn't learn and use that in your eventual search for sources, you would miss the kinds of sources you'll need for your assignment—sources written by people in a position to know about virus biology, unlike the general public.

Most sources other than journal articles are good sources for this initial reading, including the *New York Times* or other mainline American news outlets, Wikipedia, encyclopedias for the discipline your topic is in (horticulture for the crabapple bud development topic, for instance), dictionaries for the discipline, and manuals, handbooks, blogs, and web pages that could be relevant. The reason journal articles are not helpful at this stage of your reading is that they are usually much more specific and difficult to understand than you need.

This initial reading could cause you to narrow your topic further, which is fine because narrower topics lead to greater specificity for what you have to find out. After this upfront work, you're ready to start developing the research question(s) you will try to answer for your assignment.

TIP: Keeping Track of Your Information

While you are in the background reading phase of your research you will come across a lot of sources and won't know yet if they will prove useful in the long run. A handy type of software to help you keep track of all your findings is called citation management software. It will also be extremely valuable when it comes to using the resources you end up needing. Three of these tools are available for free to OSU students, staff and faculty. Learn more about these tools and how to access them.

Common Citations Tools

Fuel Your Inspiration

It's worth remembering that reading, scanning, looking at, and listening to information resources is very useful

during any step of the process to develop research questions. Doing so can jog our memories, give us details that will help us focus, and help us connect disparate information–all of which will help us come up with research questions that we find interesting.

4. Regular vs. Research Questions

Most of us look for information to answer questions every day, and we often act on the answers to those questions. Are research questions any different from most of the questions for which we seek information? Yes.

See how they're different by looking over the examples of both kinds below and answering questions about them in the next activity.

Examples: Regular vs. Research Questions

Regular Question: What time is my movie showing at Lennox on Friday?
Research Question: How do "sleeper" films end up having outstanding attendance figures?

Regular Question: What can I do about my insomnia?
Research Question: How do flights more than 16 hours long affect the reflexes of commercial jet pilots?

Regular Question: How many children in the U.S. have allergies?
Research Question: How does his or her country of birth affect a child's chances of developing asthma?

Regular Question: What year was metformin approved by the U.S. Food and Drug Administration?
Research Question: Why are nanomedicines, such as doxorubicin, worth developing?

Regular Question: Could citizens register to vote at branches of the Columbus Public Library in 2016?
Research Question: How do public libraries in the United States support democracy?

Regular Question: What is the Whorfian Hypothesis?
Research Question: Why have linguists cared about the Whorfian hypothesis?

Regular Question: Where is the Apple, Inc. home office?
Research Question: Why are Apple's marketing efforts so successful?

Regular Question: What is MERS?
Research Question: How could decision-making about whether to declare a pandemic be improved?

Regular Question: Does MLA style recommend the use of generic male pronouns intended to refer to both males and females?
Research Question: How do age, gender, IQ, and socioeconomic status affect whether students interpret generic male pronouns as referring to both males and females?

Activity: Regular or Research Question?

Consider these examples of regular questions and research questions so you can answer the questions below about the differences between them.

Activity: Label the Questions

This table shows examples of the differences between regular or research questions.

Examples of Regular Questions	Examples of Research Questions
Which colors have been designated by *House Beautiful* as trends for this year?	Is it possible to teach good taste?
What is the congruity principle used by designers of multimedia instruction?	How are some young children influenced to commit more violent acts after watching violent television shows and playing violent games?
What causes sepsis?	How is a person's health threatened by working the night shift?
What are OSU's rules against plagiarism?	How does college students' understanding of plagiarism vary, depending on which countries they come from?
What are the most-read peer-reviewed journals in aerospace engineering?	How could journal reading be increased among aerospace engineering majors?
Is there still time to register to vote in Ohio in November this year?	How do U.S. citizens who are registered to vote decide which candidate to support in presidential elections?

5. Influence of a Research Question

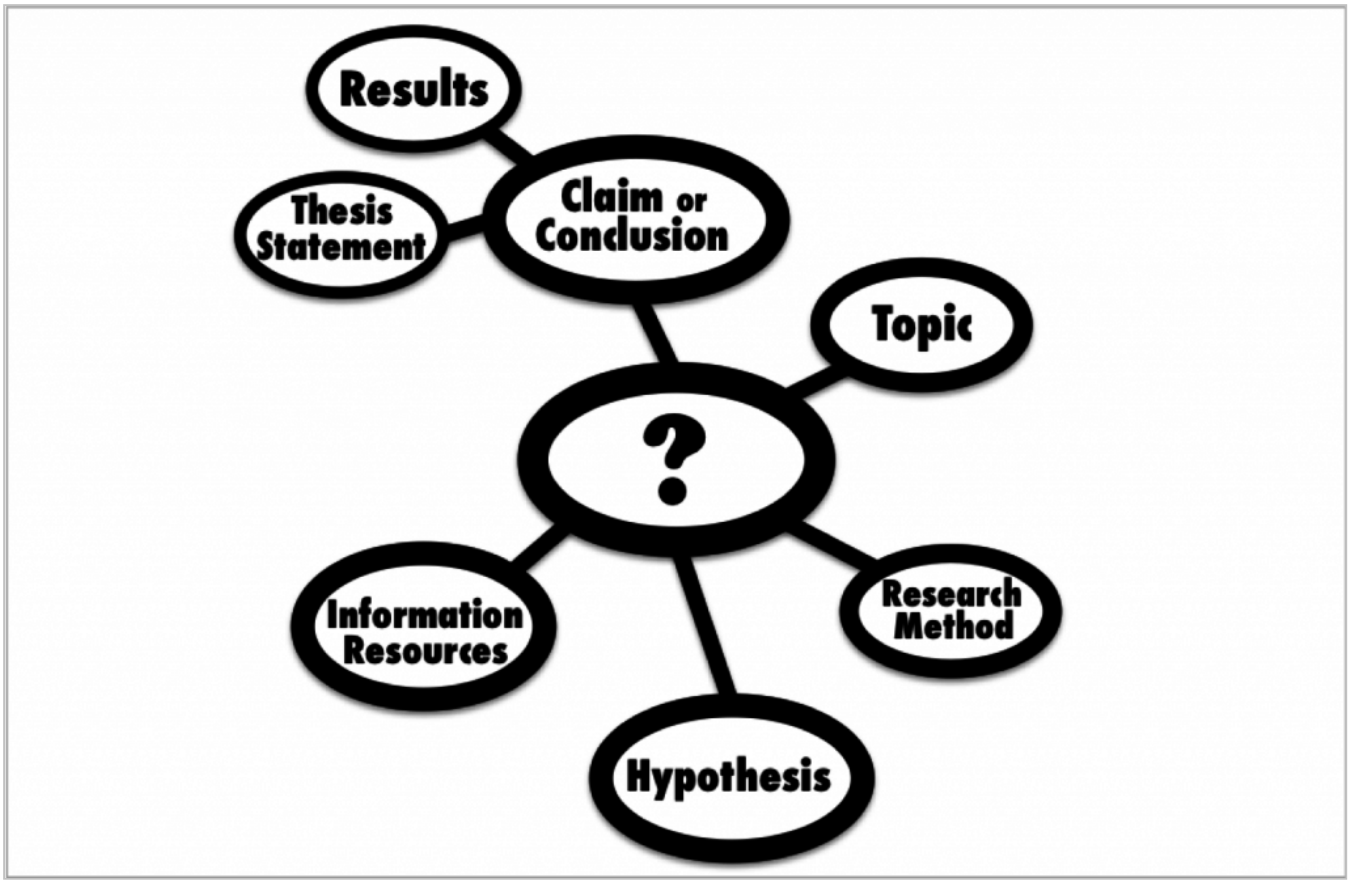
Whether you're developing research questions for your personal life, your work for an employer, or for academic purposes, the process always forces you to figure out exactly:

- What you're interested in finding out.
- What is feasible for you to find out (given your time, money, and access to information sources)?
- How you can find it out, including what research methods will be necessary and what information sources will be relevant.
- What kind of claims you'll be able to make, or conclusions you'll be able to draw about what you found out.

For academic purposes, you may have to develop research questions to carry out both large and small assignments. A smaller assignment may be to do research for a class discussion or to, say, write a blog post for a class. Larger assignments may have you conduct research and then report it in a lab report, poster, research paper, essay, or article.

For large projects, the research question (or questions) you develop will define or at least heavily influence:

- Your **topic**, in that research questions effectively narrow the topic you've first chosen or been assigned by your instructor.
- What, if any, **hypotheses** you test.
- Which **information sources** are relevant to your project.
- Which **research methods** are appropriate.
- What claims you can make or **conclusions** you can come to as a result of your research, including what **thesis statement** you should write for a research paper or what **results section** you should write about the data you collected in your own science or social science study.



Your research question drives your hypothesis, research methods, sources, and your claims or conclusions.

Influence on Thesis

Within an essay, poster, or research paper, the thesis is the researcher's answer to the research question(s). So as you develop research questions, you are effectively specifying what any thesis in your project will be about. While perhaps many research questions could have come from your original topic, your question states exactly which one(s) *your* thesis will be answering.

For example, a topic that starts out as "desert symbiosis" could eventually lead to a research question that is "How does the diversity of bacteria in the gut of the Sonoran Desert termite contribute to the termite's survival?" In turn, the researcher's thesis will answer that particular research question instead of the numerous other questions that could have come from the desert symbiosis topic.

Developing research questions is all part of a process that leads to greater and greater specificity for your project.

Tip: Don't Make These Mistakes

Sometimes students inexperienced at working with research questions confuse them with the

search statements they will type into the search box of a search engine or database when looking for sources for their project. Or, they confuse research questions with the thesis statement they will write when they report their research. The next activity will help you sort things out.

Activity: Language from Topic to Thesis Statement

Influence on Hypothesis

If you're doing a study that predicts how variables are related, you'll have to write at least one hypothesis. The research questions you write will contain the variables that will later appear in your hypothesis(es).

Activity: Guess the Question

Despite how strong their influence is on the rest of the researcher's tasks, research questions don't always appear in a report of the research. Nonetheless, you can usually figure out what the researcher's research questions were by reading the title and some of the report. Take a look at this article "Getting to the Center of a Tootsie Roll Pop®" [OSU login required] and determine what the students' research question was.

Influence on Resources

You can't tell whether an information source is relevant to your research until you know exactly what you're trying to find out. Since it's the research questions that define that, it's they that divide all information sources into two groups: those that are relevant to your research and those that are not—all based on whether each source can help you find out what you want to find out and/or report the answer.

Influence on Research Methods

Your research question(s) will help you figure out what research methods you should use because the questions reflect what your research is intended to do. For instance, if your research question relates to describing a group, survey methods may work well. But they can't answer cause-and-effect questions.

Influence on Claims or Conclusions

The research questions you write will reflect whether your research is intended to describe a group or situation, to explain or predict outcomes, or to demonstrate a cause-and-effect relationship(s) among variables. It's those intentions and how well you carry out the study, including whether you used methods appropriate to the intentions, that will determine what claims or conclusions you can make as a result of your research.

Activity: Research Question Quick Check

Answer to Activity: Guess the Question

The answer to the “Guess the Question” Activity above is:

What was the students’ research question? How many licks does it take to get to the center of a Tootsie Roll Pop?

6. Developing Your Research Question

Because of all their influence, you might worry that research questions are very difficult to develop. Sometimes it can seem that way. But we'll help you get the hang of it and, luckily, none of us has to come up with perfect ones right off. It's more like doing a rough draft and then improving it. That's why we talk about developing research questions instead of just writing them.

Steps for Developing a Research Question

The steps for developing a research question, listed below, can help you organize your thoughts.

Step 1: Pick a topic (or consider the one assigned to you).

Step 2: Write a narrower/smaller topic that is related to the first.

Step 3: List some potential questions that could logically be asked in relation to the narrow topic.

Step 4: Pick the question that you are most interested in.

Step 5: Change the question you're interested in so that it is more focused and specific.

MOVIE: Developing Research Questions

As you view this short video on how to develop research questions, think about the steps. Which step do you think is easiest? Which do you think is the hardest?

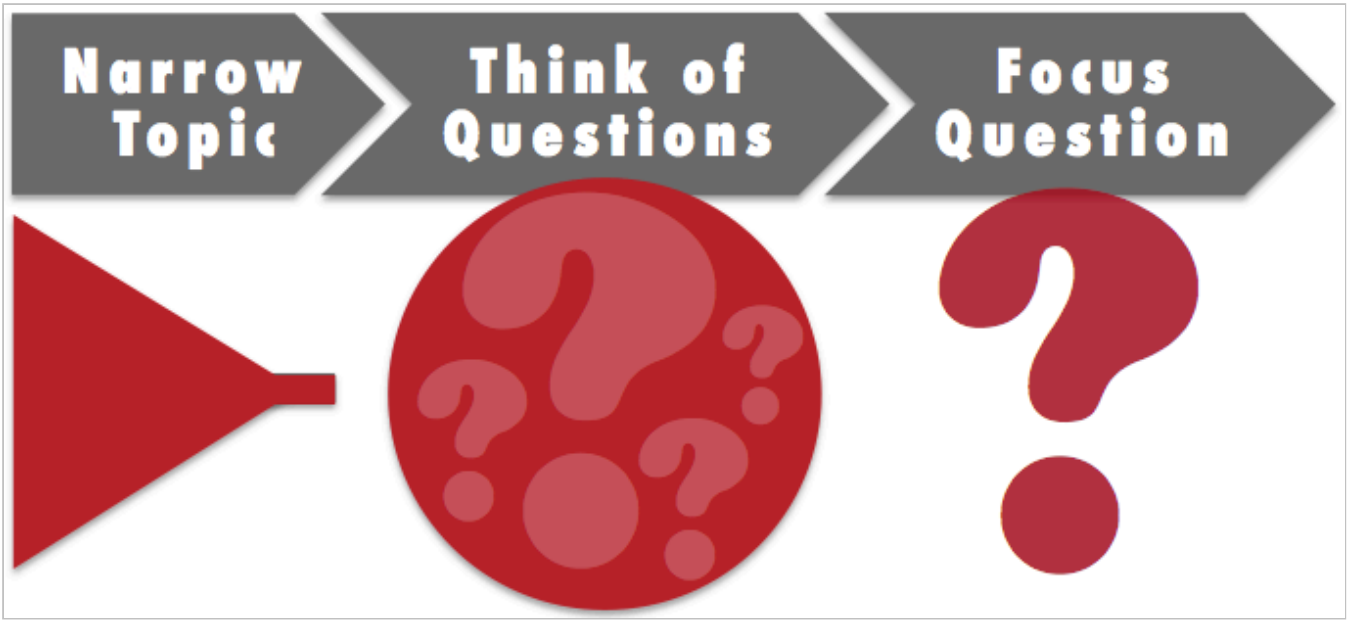
View Transcript

Practice

Once you know the steps and their order, only three skills are involved in developing a research question:

- Imagining narrower topics about a larger one,
- Thinking of questions that stem from a narrow topic, and
- Focusing questions to eliminate their vagueness.

Every time you use these skills, it's important to evaluate what you have produced—that's just part of the process of turning rough drafts into more finished products.



Three steps for developing a research question

ACTIVITY: Developing a Research Question

Maybe you have a topic in mind but aren't sure how to form a research question around it. The trick is to think of a question related to your topic but not answerable with a quick search. Also, try to be specific so that your research question can be fully answered in the final product for your research assignment.

ACTIVITY: Thinking of Questions

For each of the narrow topics below, think of a research question that is logically related to that topic. (Remember that good research questions often, but not always, start with "Why" or "How" because questions that begin that way usually require more analysis.)

Topics:

- U.S. investors' attitudes about sustainability
- College students' use of Snapchat
- The character Scout in *To Kill a Mockingbird*

- Nature-inspired nanotechnologies
- Marital therapy

After you think of each research question, evaluate it by asking whether it is:

- Logically related to the topic
- In question form
- Not answerable with a quick Google search
- Specific, not vague

Sometimes the first draft of a research question is still too broad, which can make your search for sources more challenging. Refining your question to remove vagueness or to target a specific aspect of the topic can help.

ACTIVITY: Focusing Questions

The first draft research questions below are not focused enough. Read them and identify at least one area of vagueness in each. Check your vagueness with what we identified. It's great if you found more than we did because that can lead to research questions of greater specificity. See the bottom of the page for our answers.

First Drafts of Research Questions:

1. Why have most electric car company start-ups failed?
2. How do crabapple trees develop buds?
3. How has NASA helped America?
4. Why do many first-time elections soon after a country overthrows a dictator result in very conservative elected leaders?
5. How is music composed and performed mostly by African-Americans connected to African-American history?

ANSWER TO ACTIVITY: Focusing Questions

Some answers to the "Focusing Questions" Activity above are:

Question 1: Why have most electric car company start-ups failed?
Vagueness: Which companies are we talking about? Worldwide or in a particular country?

Question 2: How do crabapple trees develop buds?
Vagueness: There are several kinds of crabapples. Should we talk only about one kind? Does it matter where the crabapple tree lives?

Question 3: How has NASA helped America?
Vagueness: NASA has had many projects. Should we should focus on one project they completed? Or projects during a particular time period?

Question 4: Why do many first-time elections soon after a country overthrows a dictator result in very conservative elected leaders?
Vagueness: What time period are we talking about? Many dictators have been overthrown and many countries have been involved. Perhaps we should focus on one country or one dictator or one time period.

Question 5: How is music composed and performed mostly by African-Americans connected to African-American history?
Vagueness: What kinds of music? Any particular performers and composers? When?

2-Types of Sources

1. Categorizing Sources

Understanding types of sources helps guide your search.

Once you have your research question, you'll need information sources to answer it and meet the other information needs of your research project.

This section about categorizing sources will increase your sophistication about them and save you time in the long run because you'll understand the "big picture". That big picture will be useful as you plan your own sources for a specific research project, which we'll help you with in the next section Sources and Information Needs.

You'll usually have a lot of sources available to meet the information needs of your projects. In today's complex information landscape, just about anything that contains information can be considered a potential source.

Here are a few examples:

- Books and encyclopedias
- Websites, web pages, and blogs
- Magazine, journal, and newspaper articles
- Research reports and conference papers
- Field notes and diaries
- Photographs, paintings, cartoons, and other artworks
- TV and radio programs, podcasts, movies, and videos
- Illuminated manuscripts and artifacts
- Bones, minerals, and fossils
- Preserved tissues and organs

- Architectural plans and maps
- Pamphlets and government documents
- Music scores and recorded performances
- Dance notation and theater set models

With so many sources available, the question usually is not whether sources exist for your project but which ones will best meet your information needs.

Being able to categorize a source helps you understand the kind of information it contains, which is a big clue to (1) whether might meet one or more of your information needs and (2) where to look for it and similar sources.

A source can be categorized by:

- Whether it contains quantitative or qualitative information or both
- Whether the source is objective (factual) or persuasive (opinion) and may be biased
- Whether the source is a scholarly, professional or popular publication
- Whether the material is a primary, secondary or tertiary source
- What format the source is in

As you may already be able to tell, sources can be in more than one category at the same time because the categories are not mutually exclusive.

2. Quantitative or Qualitative

One of the most obvious ways to categorize data is by whether it is quantitative or qualitative. Some sources contain either quantitative information or qualitative information, but sources often contain both.

Many people first think of data as something like what's in a table or spreadsheet of numbers and words. But data can be conveyed in more ways than textually or numerically.

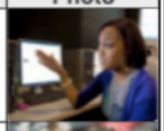
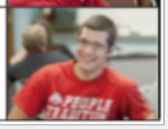
Quantitative Data – Involves a measurable quantity. Often, numbers are used, but sometimes other information is used instead. Some examples are length, mass, temperature, and time.

Qualitative Data – Involves a descriptive judgment using concept words instead of numbers. Gender, country name, animal species, and emotional state are examples of qualitative information.

Take a quick look at the Example table below. Another way we could display the table's numerical information is in a graphic format —listing the students' ages or GPAs on a bar chart, for instance, rather than in a list of numbers. Or, all the information in the table could be displayed instead as a video of each student giving those details about themselves.

Data can be quantitative or qualitative.

EXAMPLE: Data Table with Quantitative and Qualitative Data

Last Name	First Name	Age	Rank	Major	Gender	Current GPA	Photo
Adams	Grace	19	Sophomore	English	Female	3.78	
Bloomfield	Erika	21	Junior	Physics	Female	3.89	
Chow	Kimmie	20	Senior	Political Science	Female	3.77	
Crutchfield	Seth	23	Senior	Psychology	Male	3.58	
Fitch	Fredrick	18	Freshman	Art	Male	4.0	
Grover	Oscar	26	Junior	Biology	Male	3.32	

This table illustrates that information can include a range of formats, including pictures.

Increasingly, other formats (such as images, sound, and video) may be is used as data or used to convey data. Some examples:

- A video of someone watching scenes from horror movies, with information about their heart rate and blood pressure embedded in the video. Instead of getting a description of the person's reactions to the scenes, you can see their reactions.
- A database of information about birds, which includes a sound file for each bird singing. Would you prefer a verbal description of a bird's song or an audio clip?
- A list of colors, which include an image of the actual color. Such a list is extremely helpful, especially when there are A LOT of color names.
- A friend orally tells you that a new pizza place is 3 blocks away, charges $2 a slice, and that the pizza is delicious. This may never be recorded, but it may be very valuable information if you're hungry!
- A map of Ohio with counties shaded different intensities of red according to the median household income of inhabitants.

ACTIVITY: Quantitative vs. Qualitative

What quantitative and qualitative data components might you use to describe yourself? See the bottom of the page for some possible answers.

ACTIVITY: Multiple Data Displays

Take a look at the Wikipedia article about UN Secretaries-General. Scroll down and view the table of people who served as Secretary-General. In what ways is information conveyed in ways other than text or numbers? See the bottom of the page for answers.

ANSWER TO ACTIVITY: Quantitative vs. Qualitative

The answer to the “Quantitative vs. Qualitative” Activity above is:

Quantitative: age, weight, GPA, income
Qualitative: race, gender, class (freshman, sophomore, etc.), major

Are there others?

ANSWER TO ACTIVITY: Multiple Data Displays

The answer to the “Multiple Data Displays” Activity above is:

- A photo of each secretary general
- The flag of their country of origin
- A world map with their country of origin shaded

Are there others?

3. Fact or Opinion

Thinking about the reason an author created a source can be helpful to you because that reason was what dictated the kind of information he/she chose to include. Depending on that purpose, the author may have chosen to include factual, analytical, and objective information. Or, instead, it may have suited his/her purpose to include information that was subjective and therefore less factual and analytical. The author's reason for producing the source also determined whether he or she included more than one perspective or just his/her own.

An author's purpose can influence the kind of information he or she chooses to include.

Authors typically want to do at least one of the following:

- Inform and educate
- Persuade
- Sell services or products
- Entertain

Combined Purposes

Sometimes authors have a combination of purposes, as when a marketer decides he can sell more smartphones with an informative sales video that also entertains us. The same is true when a singer writes and performs a song that entertains us but that she intends to make available for sale. Other examples of authors having multiple purposes occur in most scholarly writing.

In those cases, authors certainly want to inform and educate their audiences. But they also want to persuade their audiences that what they are reporting and/or postulating is a true description of a situation, event, or phenomenon or a valid argument that their audience must take a particular action. In this blend of scholarly authors' purposes, the intent to educate and inform is considered to trump the intent to persuade

Why Intent Matters

Authors' intent usually matters in how useful their information can be to your research project, depending on which information need you are trying to meet. For instance, when you're looking for sources that will help you actually decide your answer to your research question or evidence for your answer that you will share with your audience, you will want the author's main purpose to have been to inform or educate his/her audience. That's because, with that intent, he/she is likely to have used:

- Facts where possible.
- Multiple perspectives instead of just his/her own.
- Little subjective information.
- Seemingly unbiased, objective language that cites where he/she got the information.

The reason you want that kind of source when trying to answer your research question or explaining that answer is that all of those characteristics will lend credibility to the argument you are making with your project. Both you and your audience will simply find it easier to believe—will have more confidence in the argument being made—when you include those types of sources.

Sources whose authors intend only to persuade others won't meet your information need for an answer to your

research question or evidence with which to convince your audience. That's because they don't always confine themselves to facts. Instead, they tell us their opinions without backing them up with evidence. If you used those sources, your readers would notice and would be less likely to believe your argument.

Fact vs. Opinion vs. Objective vs. Subjective

Need to brush up on the differences between fact, objective information, subjective information, and opinion?

Fact – Facts are useful to inform or make an argument.

Examples:

- The United States was established in 1776.
- The pH levels in acids are lower than the pH levels in alkalines.
- Beethoven had a reputation as a virtuoso pianist.

Opinion – Opinions are useful to persuade, but careful readers and listeners will notice and demand evidence to back them up.

Examples:

- That was a good movie.
- Strawberries taste better than blueberries.
- Timothee Chalamet is the sexiest actor alive.
- The death penalty is wrong.
- Beethoven's reputation as a virtuoso pianist is overrated.

Objective – Objective information reflects a research finding or multiple perspectives that are not biased.

Examples:

- "Several studies show that an active lifestyle reduces the risk of heart disease and diabetes."
- "Studies from the Brown University Medical School show that twenty-somethings eat 25 percent more fast-food meals at this age than they did as teenagers."

Subjective – Subjective information presents one person or organization's perspective or interpretation. Subjective information can be meant to distort, or it can reflect educated and informed thinking. All opinions are subjective, but some are backed up with facts more than others.

Examples:

- "The simple truth is this: As human beings, we were meant to move."
- "In their thirties, women should stock up on calcium to ensure strong, dense bones and to ward off osteoporosis later in life." *

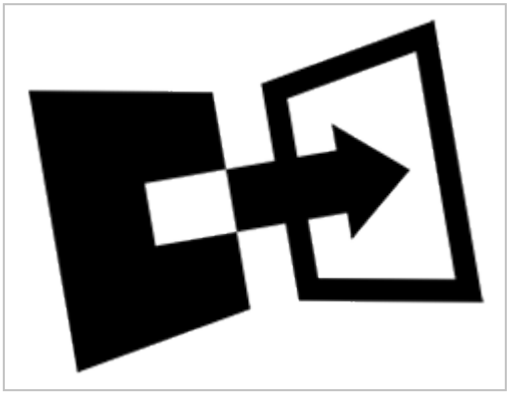
*In this quote, it's mostly the "should" that makes it subjective. The objective version of that quote would read something like: "Studies have shown that women who begin taking calcium in their 30s show stronger bone density and fewer repercussions of osteoporosis than women who did not take calcium at all." But perhaps there are other data showing complications from taking calcium. That's why drawing the conclusion that requires a "should" makes the statement subjective.

4. Primary, Secondary & Tertiary Sources

Another way to categorize information is by whether the information is in its original format or has been reinterpreted.

This information category is called publication mode and has to do with whether the information is

- Firsthand information—primary sources (information in its original form, not interpreted, translated, or published in another form).
- Secondhand information—secondary sources (a restatement, analysis, or interpretation of original information).
- Third-hand information—tertiary sources (a summary or repackaging of original information, often based on secondary information that has been published).



Another way to categorize information is by whether the information is in its original format or has been reinterpreted.

Here are examples to illustrate the first-handedness, second-handedness, and third-handedness of information:

Examples of Primary, Secondary, and Tertiary Sources

Primary Source	Secondary Source	Tertiary Source
Original, firsthand information	Secondhand information	Third-hand information
Example: J.D. Salinger's novel *Catcher in the Rye*.	A book review of *Catcher in the Rye*, even if the reviewer has a different opinion than anyone else has ever published about the book. They are still just reviewing the original work and not the information about the book here is secondary.	Wikipedia page about J.D. Salinger.

When you make distinctions between primary, secondary, and tertiary sources, you are relating the information itself to the context in which it was created. Understanding that relationship is an important skill that you'll need in college, as well as in the workplace. Noting the relationship between creation and context helps us understand the "big picture" in which information operates and helps us figure out which information we can depend on. That's a big part of thinking critically, a major benefit of actually becoming an educated person.

Primary Sources – Because it is in its original form, the information in primary sources has reached us from its creators without going through any filter. We get it firsthand. Here are some examples that are often used as primary sources, at least in disciplines other than the sciences:

- Any literary work, including novels, plays, and poems.
- Breaking news.
- Diaries.
- Advertisements.
- Music and dance performances.
- Eyewitness accounts, including photographs and recorded interviews.
- Artworks.
- Data.
- Blog entries that are autobiographical.
- Scholarly blogs that provide data or are highly theoretical, even though they contain no autobiography.
- Artifacts such as tools, clothing, or other objects.
- Original documents such as tax returns, marriage licenses, and transcripts of trials.
- Websites, although many are secondary.
- Buildings.
- Correspondence, including email.
- Records of organizations and government agencies.
- Journal articles that report research for the first time (at least the parts about the new research, plus their

data).

(The term primary source doesn't come up much in the sciences. Scientists often call a journal article that was the most helpful to their work their primary source.)

Secondary Source – These sources are translated, repackaged, restated, analyzed, or interpreted information from a primary source. Thus, the information comes to us secondhand, or through at least one filter. Here are some examples that are often used as secondary sources:

- All nonfiction books and magazine articles except autobiography.
- An article or website that critiques a novel, play, painting, or piece of music.
- An article or website that synthesizes expert opinion and several eyewitness accounts for a new understanding of an event.
- The literature review portion of a journal article.

Tertiary Source – These sources *further* repackage the original information used in secondary sources as they index, condense, or summarize the original.

Typically, by the time tertiary sources are developed, there have been many secondary sources prepared on their subjects, and you can think of tertiary sources as information that comes to us "thirdhand." Tertiary sources are usually publications that you are not intended to read from cover to cover but to dip in and out of for the information you need. You can think of them as a good place for background information to start your research but a bad place to end up. Here are some examples that are often used as tertiary sources:

- Almanacs
- Dictionaries
- Guide books, including the one you are now reading
- Survey articles
- Timelines
- Bibliographies
- Encyclopedias, including Wikipedia
- Most textbooks

Tertiary sources are usually not acceptable as cited sources in college research projects because they are so far from firsthand information. That's why most professors don't want you to use Wikipedia as a citable source: the information in Wikipedia is far from original information. Other people have considered it, decided what they think about it, rearranged it, and summarized it–all of which is actually what your professors want *students*, not another author, to do with the information in your research projects.

ACTIVITY: Primary, Secondary, or Tertiary?

The Details Are Tricky— A few things about labeling primary or secondary sources might surprise you:

- Sources **become** primary rather than always exist as primary sources.

It's easy to think that it is the *format* of primary sources that makes them primary. But that's not all that matters. So when you see lists like the one above of sources that are often used as primary sources, it's wise to remember that the ones listed are not *automatically already* primary sources. Firsthand sources get that designation only when researchers actually find their information relevant and use it.

For instance: Records that could be relevant to those studying government are created every day by federal, state, county, and city governments as they operate. But until those raw data are actually used by a researcher, they cannot be considered primary sources.

Another example: A diary about flying missions kept by an American helicopter pilot in the Vietnam War is not a primary source until, say, a researcher uses it in her study of how the war was carried out. But it will never be a primary source for a researcher studying the U.S. public's reaction to the war because it does not contain information relevant to that study. But if a researcher were to study, say, pilots' long-term opinions about serving in the war and used that diary as a source, then it would become a primary source.

- **Primary sources**, even eyewitness accounts, **are not necessarily accurate**. Their relevance and credibility have to be evaluated, just like that of all sources.
- Something that is usually considered a secondary source can be considered a primary source, depending on the research project.

For instance, movie reviews are usually considered secondary sources. But if your research project is about the effect movie reviews have on ticket sales, the movie reviews you study would become primary sources.

- Deciding whether to consider a journal article a primary or a secondary source can be complicated for at least two reasons.

First, journal articles that report new research for the first time are usually based on data collected by the author or others. So some disciplines consider the *data* to be the primary source and consider the journal article that describes and analyzes them a secondary source.

However, particularly in the sciences, the original researcher might find it difficult or impossible (he or she might not be allowed) to share the data. So sometimes you have nothing more firsthand than the journal article, which argues for calling it the relevant primary source because it's the closest thing that exists to the data.

Second, even journal articles that announce new research for the first time usually contain more than data. They also typically contain secondary source elements, such as a literature review, bibliography, and sections on data analysis and interpretation. So they can actually be a *mix* of primary and secondary elements. Even so, in some disciplines such as the sciences, a journal article that announces new research findings for the first time is considered to be, as a whole, a primary source for the researchers using it, particularly if it is where they got most of the information on which to base their own journal article.

ACTIVITY: Under What Circumstances?

Instructions: Look at each of the sources listed below and think of circumstances under which each could become a primary source. (There are probably many potential circumstances for each.) So just imagine you are a researcher with projects that would make each item firsthand information that is relevant to your work. What could a project be about that would make each source relevant firsthand information? Our answers are at the bottom of the page, but remember that there are many more–including the ones you think of that we didn't!

1. Fallingwater, a Pennsylvania home, designed and constructed by Frank Lloyd Wright in the 1930s.
2. Poet W.H. Auden's elegy for Y.S. Yeats.
3. An arrowhead made by (Florida) Seminole Native Americans but found at Flint Ridge outside Columbus, Ohio.
4. E-mail between the U.S. ambassador to the United Nations, Nikki Haley, and her staff about North Korea.
5. A marriage license.

Despite their trickiness, what primary sources usually offer is too good not to consider using because:

- They are original. This unfiltered, firsthand information is not available anywhere else.
- Their creator was a type of person unlike others in your research project, and you want to include that perspective.
- Their creator was present at an event and shares an eyewitness account.
- They are objects that existed at the particular time your project is studying.

Particularly in humanities courses, your professor may require you to use a certain number of primary sources for your project. In other courses, particularly in the sciences, you may be required to use *only* primary sources, which usually means journal articles in the sciences. If they are called primary sources in the sciences, it's usually because the researchers got their information *primarily* from those sources.

What is considered primary and secondary sources can vary from discipline to discipline. If you are required to use primary sources for your research project, before getting too deep into your project check with your professor to make sure he or she agrees with your choices. After all, it's your professor who will be grading your project. A librarian, too, can verify your choices. Just remember to take a copy of your assignment with you when you ask, because the librarian will want to see the original assignment. After all, that's a primary source!

POSSIBLE ANSWERS TO ACTIVITY: Under What Circumstances?

a. You are doing a study of the entrances Wright designed for homes, which were smaller than other architects of the time typically designed entrances.
b. Your research project is about the Auden-Yeats relationship.
c. Your research project is about trade among 19th-century Native Americans east of the Mississippi River.
d. Your research project is on how Ambassador Haley conveyed a decision about North Korea to her staff.
e. You are writing about the life of a person who claimed to have married several times, and you need more than her statements about when those marriages took place and to whom.

5. Popular, Professional, & Scholarly

One of the handiest and thus most-often-used categorizations of sources is by the expertise of their intended audiences. In this categorization, sources are either meant for everybody (**popular sources**), for only a college-educated or otherwise well-prepared audience (**substantive popular sources**), for professionals in an occupation (**professional sources**), or for scholars, students, and other people who want a deep understanding of a subject (**scholarly sources**).

Considering the intended audience—how expert one has to be to understand the information—can help you figure out whether the source has sufficient thoroughness/complexity and credibility to meet your needs. **It can also help you figure out where to look for these kinds of sources because sources in each category tend to hang out together. (See our Source Locator.)**

When categorizing this way, it's probably better to consider the source itself (say, a specific article in *The New York Times* or a specific PBS documentary) rather than only its publisher (The *New York Times* or PBS). However, as you will learn in Chapter 6, Evaluating Sources, some publishers have strong processes in place to help ensure the credibility of all their products.

There are varying degrees of expertise required to understand the sources explained below. For college writing, substantive popular, professional, and scholarly sources are usually your best bets because of their combination of thoroughness/complexity and the credibility of their publishers. (See Chapter 3, What Sources to Use When.)

Popular Sources – These sources, such as books, TV shows, newspaper and magazine articles, podcasts, social media, and most websites, are meant for a large general audience and are generally easy to purchase or available for free. Their subjects include news, politics, government, health, music, art, hobbies, what to buy, entertainment, and opinions about the news—anything, really, that we could be interested in.

These types of sources are more attractive than scholarly journals because they have catchy titles, attractive artwork, and many advertisements. Some might quote named sources, identify how they got their experience and expertise, and provide links to other sources. But you'll not likely see a formal list of footnotes or references at the end.

These sources are published by both commercial and nonprofit publishers. They are written by staff writers, journalists, and sometimes just by people enthusiastic about the subject matter. News and magazine articles are published after review and approval from editors or producers. But with other examples of popular sources, such as the many forms of social media, they are published without any review at all.

The online and print magazine Men's Health is an example of a popular source and there are millions of others.

Understanding the content of popular sources is usually not difficult, although **a subset of popular sources called substantive popular sources requires more effort. You will need to use your critical thinking skills to determine whether a source is a popular or substantive popular source.**

Substantive Popular Sources – This category is a subset of popular sources. Unlike the rest of popular sources, they are aimed at a college-educated audience or those otherwise well-informed in the subject matter, even though they are available to people in general. They may be more difficult for a complete novice to understand.

Their creators are serious about their intent to inform and want to be thorough. These sources are frequently about the news, health, science, societal problems, politics, and government–but they can be about any topic. Even when they are about entertainers or entertainment, they are intended to inform more than to entertain.

Both credibility of the author and publisher, as well as the complexity of the content, are important when identifying this category of sources. To be considered a substantive popular source, a source must be both published by a credible author or publisher and provide an in-depth, well-researched investigation and analysis of a topic or issue.

For all but the most well-staffed news publishers, news sources are more likely to be considered substantive popular if they are created later in the information life cycle than early with breaking news because it is difficult to provide their thoroughness and detail earlier for all but the most well-staffed new publishers. (See the information lifecycle later in this chapter.)

Examples of the difference between popular and substantive popular sources:

- Opera, classical music, R&B, jazz, and hip-hop available on TV, radio, or a digital source are popular sources. But a PBS documentary about any of those same kinds of music is more likely to be a popular substantive source because rather than offering the experience of the music, its purpose is to inform and its publisher has processes in place to ensure accuracy.
- A TV news or print or online newspaper story reporting that a local group has taken up the issue of the need for more affordable housing in your town is likely to be a popular source. But a detailed story in the *Washington Post* about how zoning codes across the country make it difficult or impossible to build affordable housing is more likely to be a popular substantive source. That's not only because of the Post's processes for accuracy but because of the complexity of the story.
- A news story in the Columbus, Ohio newspaper, the *Columbus Dispatch*, reporting that 56 exotic animals escaped from a farm in Ohio the previous day is likely to be a popular source. But a *Dispatch* story a year later about the animals escaping and reactions of neighbors since that day has more chance of being a substantive popular story. That's not only because of the *Dispatch's* processes for accuracy but because the later story has a better chance of being more thorough and complex. And a New *Yorker* magazine article about the fight against international wildlife trafficking is also likely to be a substantive popular source for the same reasons, including the length of time *New Yorker* authors usually have to create most articles.

For information on using news articles as sources (from newspapers in print and online, broadcast news outlets, news aggregators, news databases, news feeds, social media, blogs, and citizen journalism), see News as a Source.

Professional Sources – Professional magazine articles (in such publications as *Music Teacher)* and *Plastic Surgical Nursing* (OSU only) are meant for people in a particular profession and are often accessible through a professional organization. Staff writers or other professionals in the targeted field write these articles at a level and with the language to be understood by everyone in the profession.

Additionally, they are:

- About trends and news from the targeted field, book reviews, and case studies.
- Often less than 10 pages, some of which may contain footnotes and references.

- Usually published by professional associations and commercial publishers.
- Published after approval from an editor.

Scholarly Sources – Scholarly journal articles (such as those published in the *Journal of Plant Science and Education and Child Psychology)* are meant for scholars and students in a particular field of study. While they can also be read by members of the general public who have an interest in the topic, since they are written by experts, they often assume that the reader will already have a significant amount of existing knowledge on the topic. The authors may use discipline-specific terminology or reference developments or events that may be unfamiliar to those who do not have experience in the field. As a result, they can sometimes be challenging to understand for those who do not have a background in the field. Researchers and scholars write these articles to present new knowledge and further understanding of their field of study.

Additionally, they are:

- Where findings of research projects, data and analytics, and case studies usually appear first.
- Often long (usually over 10 pages) and always include footnotes and references.
- Usually published by universities, professional associations, and commercial publishers.
- Published after approval by peer review or from the journal's editor.

See Scholarly Articles as Sources for more detail.

This graphic shows examples of sources on the same topic categorized by intended audience:

Examples

POPULAR

A BBC news story about a bridge collapse.

SUBSTANTIVE POPULAR

A one-hour BBC documentary about the same bridge collapse.

PROFESSIONAL

A blog on the American Society of Civil Engineers' website about implications for engineers because of the bridge collapse.

SCHOLARLY

A peer-reviewed journal article that analyses the reasons for the bridge collapse and compares similar bridge collapses.

ACTIVITY: Popular, Substantive Popular, Professional, or Scholarly?

Open activity in a web browser.

6. Publication Formats and the Information Lifecycle

We can also categorize sources by publication format. That's because of the difference in time and effort sources in each format require for their production.

Sources can come in many different formats.

Sources in particular formats simply cannot exist until there has been enough time for people to create them. The result is that the sources that are created toward the end of the information lifecycle may come to very different conclusions about an event than did those sources created early on.

Sometimes the information presented in the later formats is more valid and reliable than what is in those produced earlier.

A very good example is that conclusions about the Columbine High School shooting in 1999 and the causes of that tragedy reached by books—which took years to complete after the event—were likely to be very different than the conclusions reached by news coverage created early on. For instance, many early reports concluded that the two teens responsible for the shooting had been shunned by their classmates and that it was the

pain of their exclusion that had moved them to take revenge. Consequently, many K-12 schools nationwide took steps to try to ensure that all students felt included in their student bodies. But more time-consuming reportage concluded that the boys were not shunned (one had had a date for prom activities just days before) and that it was mental illness that made them kill their classmates. (See *Columbine*, by Dave Cullen, New York: Twelve, 2009.)

MOVIE: Information Cycle

This video explains what kinds of information sources about an event can exist at any point in time during and after that event.

View Text Version

ACTIVITY: The Information Lifecycle

A Closer Look at Common Formats

Books – Usually a substantial amount of information, published at one time and requiring great effort on the part of the author and a publisher.

Magazines/Journals – Published frequently, containing lots of articles related to some general or specific professional research interest; edited. Research journals are part of the scholarly conversation and many, but not all, require peer review.

Newspapers – Each is usually a daily publication of events of social, political, and lifestyle interest.

Web sites – Digital items, each consisting of multiple pages produced by someone with technical skills or the ability to pay someone with technical skills.

Articles – Distinct, short, written pieces that might contain photos and are generally timely. Timeliness can mean that it's something that is of interest to readers at the point of publication or that is something the writer is thinking about or researching at a given point of time.

Tip: Evaluating Articles

Evaluating whether articles are **credible** enough for your information need is similar to evaluating any other source. There's more information on evaluating in Chapter 6, Evaluating Sources.

Conference Papers – Written form of papers delivered at a professional or research-related conference. Authors are generally practicing professionals or scholars in the field. Conference papers are part of the scholarly conversation.

Blogs – Frequently updated websites that do not necessarily require extensive technical skills and can be published by virtually anyone for no cost to themselves other than the time they devote to content creation. Usually marked by postings that indicate the date when each was written.

Documentaries – Works, such as a film or television program, presenting political, social, or historical subject matter in a factual and informative manner and often consisting of actual news films or interviews accompanied by narration.

Online Videos – Short videos produced by anybody, with a lot of money or a little money, about anything for the world to see. Common sites for these are YouTube and Vimeo.

Podcasts – Digital audio files, produced by anyone and about anything, that is available for download, often by subscription.

ACTIVITY: Best Format for Your Need

7. Scholarly Articles as Sources

Articles in scholarly journals are valued for several reasons. First, they are usually trustworthy because their publication process includes a peer review that helps ensure their accuracy and contribution to their disciplines. In addition, they often contain the first reports of new research, which makes their sections on methodology, data, analysis, and interpretation primary sources. Sometimes they instead consist of literature reviews and summaries of multiple research studies done in the past on particular subjects of current interest. That makes those articles very helpful secondary sources.

Peer-Reviewed Sources

The most-respected scholarly journals are peer-reviewed, which means that experts in their field other than the author and editor check out each article before it can be published. It's their responsibility to help guarantee that new material is presented in the context of what is already known, that the methods the researcher used are the right ones, and that the article contributes to the field.

For those reasons, peer-reviewed articles are more likely to be credible. Peer-reviewed journal articles are the official scholarly record, which means that if it's an important development in research, it will probably turn up in a journal article eventually.

Here's a longer explanation of the peer review process, which concludes that it is good but not perfect.

Parts of a Scholarly Article

The articles you use for your assignments must also be **relevant** to your research question—not just credible. Reading specific parts of an article can help save you time as you decide whether an article is relevant.

Movie: *Guided Tour of Scholarly Articles*

Reading a scholarly article usually takes some effort. Here's how to do it.

ACTIVITY: Parts of a Scholarly Article

Finding Scholarly Articles

Most scholarly articles are housed in specialized databases. Libraries (public, school, or company) often provide access to scholarly databases by paying a subscription fee for patrons. For instance, OSU Libraries provide access to hundreds of databases via its Research Databases List that are made available free to people affiliated with the University. You can search for a journal title in these databases or view a list of databases by subject. For more information, including how to search databases, see Specialized Databases.

Databases that aren't subject-specific are called general databases. Google Scholar is a free general scholarly database available to all who have access to the Internet and it provides some scholarly articles. For more information, see our section on using Google Scholar.

Tip: *Known Article Searching*

What if you have a citation for an article you need and now have to find the actual text of the article? Follow these instructions to Access to a Known Journal Article.

8. News as a Source

News sources can provide insights that scholarly sources may not or that will take a long time to get into scholarly sources. For instance, news sources are excellent for finding out people's actions, reactions, opinions, and prevailing attitudes around the time of an event—as well as to find reports of what happened at the event itself.

Whether news sources are good for your assignment depends on what your research question is. (You'll find other relevant information in Chapter 3, What Sources to Use When.)

News is a strange term, because even when the information is old, it's still news. Some sources are great for breaking news, some are great for aggregated (or compiled) news, and others are great for historical news.

While news was transmitted for centuries only in newspapers, news is now transmitted in all formats: via radio, television, and the Internet, in addition to print. Even most newspapers have Internet sites today. At the time of this writing, the Student Government Association at Ohio State University provides an online subscription to *The New Yok Times* for all students, faculty, and staff at the university.

Newspaper by Amethyst Studio from Noun Project (CC BY 3.0)

News must be brief because much of it gets reported only moments after an event happens. News reports occur early in the Information Lifecycle. See the Information Lifecycle video earlier in this chapter for more information.

When Are News Sources Helpful?

- You want to keep up with what is going on in the world today.
- You need breaking news or historical perspectives on a topic (what people were saying at the time).
- You need to learn more about a culture, place, or time period from its own sources.

When Are News Sources of Limited Use?

- You need very detailed analysis by experts.
- You need sources that must be scholarly or modern views on a historical topic.

ACTIVITY: Using News Effectively

Mainline and Non-Mainline News Sources

Mainline American news outlets stick with the tradition of trying to report the news as objectively as possibly. That doesn't mean their reports are perfectly objective, but they are more objective than non-mainline news sources. As a result, mainline news sources are more credible than non-mainline sources. Some examples of mainline American news outlets: The *New York Times*, *The Washington Post*, *The Boston Globe*, *The Chicago Tribune*, *The Los Angeles Times*; ABC News, CBS News, NBC News, PBS News, NPR News.

News from non-mainline American news outlets is often mixed with opinions. One way they frequently exhibit bias is that they leave out pertinent facts. Some examples of non-mainline American news outlets: MSNBC, Fox News, and reddit.

Types of News Sources

Press Services—News outlets (print, broadcast, and online) get a lot of their news from these services, such as Reuters, Bloomberg, or the Associated Press (AP), which make it unnecessary for individual outlets to send their own reporters everywhere. These services are so broadly used that you may have to look at several news outlets to get a different take on an event or situation.

News aggregators—Aggregators don't have reporters of their own but simply collect and transmit the news reported by others. Some sources pull news from a variety of places and provide a single place to search for and view multiple stories. You can browse stories or search for a topic. Aggregators tend to have current, but not archival news. Google news and Yahoo News are examples.

Newspaper sites – Many print newspapers also have their own websites. They vary as to how much news they provide for free. Take a look at these examples.

- The *Lantern*, Ohio State University's student newspaper
- The *Columbus Dispatch*
- *USA Today*
- *The Boston Globe*
- *The Times* of London
- *China Daily*, USA edition
- The New York Times

News Databases – Search current, recent, and historical newspaper content in databases provided free by libraries. OSU Libraries offers 69 news databases to students, staff, and faculty. They include:

- LexisNexis Academic – contains news back to 1980 from newspapers, broadcast transcripts, wire services, blogs, and more.
- Proquest Historical Newspapers – contains older content from several major U.S. newspapers.
- allAfrica – contains more than a million articles from 100 African news sources, 1996-present.
- Lantern Online – contains the archive of all of OSU's student newspaper issues, 1881-1997.

See the complete list of OSU Libraries' newspaper databases.

ACTIVITY: Choosing a Newspaper Database

Look at the list of OSU Libraries' newspaper databases available to OSU users. Which one would be a good place to find an article with an international left perspective on a topic? Our answer is at the end of this section.

Broadcast News Sites – Although broadcast news (from radio and television) is generally consumed in real time, such organizations also offer archives of news stories on their websites. However, not all of their articles are provided by their own reporters: some originate from the press services, Reuters and the Associated Press (AP). Here are some examples of broadcast new sites:

- ABC News
- BBC
- CNN
- NPR News

ACTIVITY: Quick World News Scan

Visit the BBC's News page and scan the headlines for a quick update on the world's major news stories.

Social Media – Most of the news outlets listed above contribute to Twitter and Facebook. It's customary for highly condensed announcements in this venue to lead you back to the news outlet's website for more information. However, how credible tech companies such as Facebook, Twitter, and Google are with news is in serious doubt now that their lawyers have testified to the U.S. Congress that more than 100 million users may have seen content actually created by Russian operatives on the tech companies' platforms leading up to the 2016 U.S. presidential election. Read more about their testimony at NPR and The New York Times.

Blogs – Sometimes these are good sources for breaking news, as well as commentary on current events and scholarship. Authors who write more objectively elsewhere can share more insights and opinions, more initial questions and findings about a study before they are ready to release definitive data and conclusions about their research.

Citizen Journalism – A growing number of sites cater to those members of the general public who want to

report breaking news and submit their own photos and videos on a wide range of topics. The people who do this are often referred to as citizen journalists.

Examples of such sources include CNN iReport, and reddit. For more details on the history and development of citizen journalism, including addressing some of the pros and cons, read Your Guide to Citizen Journalism.

News Feeds – You can get updates on specific topics or a list of major headlines, regularly sent to you so you don't have to visit sites or hunt for new content on a topic. Look for links that contain headings such as these to sign up for news feeds:

- RSS feeds
- News Feeds
- News Alerts
- Table of Contents Alerts

Learn More

What's an RSS feed? How can it help you stay informed about what you are interested in?

ANSWER TO ACTIVITY: Choosing a Newspaper Database

If you look at the database descriptions, you will notice that the one for Alternative Press Index matches the need expressed in the question.

9. Data as Sources

Using data as sources can help with all of your research project's information needs:

- Learn more background information.
- Answer your research question. (The evidence that data provide can help you decide on the best answer for your question.)
- Convince your audience that your answer is correct. (Data often give you evidence that your answer is correct.)
- Describe the situation surrounding your research question.
- Report what others have said about your research question.

ACTIVITY: Example of Data

Check out this very detailed data about frozen lasagna. Did you ever think this much data was available? Are there elements new to you? How might you use such data?

MOVIE: Reinterpreting Little Red Riding Hood

View Text Version

What is data?

The word means many things to many people. (Consider "data" as it relates to your phone contract, for instance!) **For our purposes, a definition we like is "units of information observed, collected, or created in the course of research."**
Erway, Ricky. 2013. Starting the Conversation: University-wide Research Data Management Policy. Dublin, Ohio: OCLC Research.
http://www.oclc.org/content/dam/research/publications/library/2013/2013-08.pdf

TIP: From Latin
Data is the plural of datum. (It's similar to how media is the plural of medium.)

Data observed, collected, or created for research purposes can be numbers, text, images, audio clips, and video clips. But in this section on using data as sources, we're going to concentrate on *numerical* data.

Sometimes data are actually necessary to answer research questions, particularly in the social sciences, life, and physical sciences. For instance, data would be necessary to support or rule out these hypotheses:

- More women than men voted in the last presidential election in a majority of states.
- A certain drug shows promising results in the treatment of pancreatic cancer.
- Listening to certain genres of music lowers blood pressure.
- People of certain religious denominations are more likely to find a specific television program objectionable.
- The average weight of house cats in the United States has increased over the past 30 years.
- The average square footage of supermarkets in the United States has increased in the past 20 years.
- More tomatoes were consumed per person in the United Kingdom in 2022 than in 1962.
- Exploding volcanoes can help cool the planet by spewing sulfur dioxide, which combines with water vapor to make reflective aerosols.

So using numeric data in those portions of your final product that require evidence can often strengthen your argument that your answer to your research question is correct or the most reasonable answer. At other times, even if data are not actually necessary, numeric data can be particularly persuasive and sharpen the points you want to make in other portions of your final product devoted to, say, describing the situation surrounding your research question. (See Chapter 9, Making an Argument)

For example, for a research paper about the research question "Why are there many more people who qualify for food from U.S. foodbanks than the number of people who actually use foodbanks?," you could find data on the website of Feeding America, the nation's largest network of foodbanks.

Similarly, for a project with the research question "How do some birds in Australia use "smart" hunting techniques to flush out prey, including starting fires?," you might find a journal article with data about how many people have observed these techniques and estimates of how frequently the techniques are used and by how many bird species.

Obtaining Data

There are two ways of obtaining data:

- Obtain data that already have been collected and analyzed. That's what this section will cover.
- Collect data yourself. This can include activities such as making observations about your environment, conducting surveys or interviews, directly recording measurements in a lab or in the field, or even receiving electronic data recorded by computers/machines that gather the data. You will explore these

activities in courses you take.

Finding Data in Articles, Books, Web Pages, and More

Numeric search data can be found all over the place. A lot of it can be found as part of other sources such as books, journals, newspapers, magazine articles, and web pages. In these cases, the data do not stand alone as a distinct element but instead are part of the larger work.

When searching for data in books and articles and on web pages, terms such as statistics or data may or may not be useful search terms. That's because many writers don't use those terms in their scholarly writing. They tend to use the words findings or results when talking about the data that could be useful to you. In addition, statistics is a separate discipline, and using that term will turn up lots of journals in that area, which won't be helpful to you. So use the search terms data and statistics with caution, especially when searching library catalogs. (See information on the Library Catalog. More information on searching is in Chapter 4 Precision Searching.)

Even without using those search terms, many scholarly sources you turn up are likely to contain data. Once you find potential sources, skim them for tables, graphs, or charts. These items are displays or illustrations of data gathered by researchers. However, sometimes data and interpretations are solely in the body of the narrative text and may be included in sections called "Results" or "Findings." (That shouldn't keep you from displaying the data in charts, graphs, or tables as you like in your own work, though.)

If the data you find in a book, article, or web page are particularly helpful and you want more, you could contact the author to request additional numeric research data. Researchers will often discuss their data and its analysis – and sometimes provide some of it (or occasionally, all). Some may link to a larger numeric research data set. However, if a researcher shares his or her data with you, it may be in what's called a "raw" form. This means that you might have to do additional analysis to make it useful in answering your question.

Depending on your research question, you may need to gather data from multiple sources to get everything you need to answer your research question and make your argument for it. (See Chapter 9, Making an Argument.)

For instance, in our example related to foodbanks above, we suggested where you could find statistics about the number of people who get food from American food banks. But with that research question ("Why are there many more people who qualify for food from U.S. foodbanks than the number of people who actually use foodbanks?"), you would also need to find out from another source how many people qualify for foodbanks based on their income and compare that number with how many people actually use foodbanks.

Finding Data, Data Depositories, and Directories

Sometimes the numeric research data you need may not be in the articles, books, and websites that you've found. But that doesn't mean that they haven't been collected and packaged in a usable format. Governments and research institutions often publish data they have collected in discipline-specific data depositories that make data available online. Here are some examples:

- United States Census Bureau
- Budget of the United States Government
- U.S. Bureau of Justice Statistics
- National Center for Education Statistics

- Daily Weather Maps NOAA)
- GeoData.gov
- The World Factbook (CIA)
- OSU Knowledge Bank

The United Nations and just about every country provide information as numeric data available online. Free and accessible data like this is called open data. The U.S. federal government, all states, and many local governments provide "open" data. You can find them (among other places) at site: .gov.

Other data are available through vendors who publish the data collected by researchers. Here are some examples:

- Hoover's Online (OSU Only)
- International Monetary Fund Statistical Databases
- World Health Organization Statistical Information System
- Envirofacts
- Census of Agriculture (OSU only)
- OECD Education at a Glance
- Corruption Perceptions Index

Don't know of a depository that could contain data in your discipline? Check out a data directory such as re3data.org where data can be registered.

Evaluating Data as Sources

Evaluating data for relevance and credibility is just as important as evaluating any other source. See Chapter 6, Evaluating Sources for help with that.

10. People as Sources

People don't just create the sources we use. They are actually sources themselves. Most of us use people as sources all the time in our private lives, such as when we ask a friend for a restaurant recommendation or ask whether a movie is worth watching. But you probably aren't using people as sources very often in your assignments–unless you are a journalism major, of course.

In fact, research indicates that employers such as Battelle, Nationwide Insurance, Microsoft, the FBI, the Smithsonian, the Port of Los Angeles, SS&G Financial Services, and Marriott International have been dissatisfied with their new hires' inability to gather information by talking with real people. They've found new hires unwilling or unprepared to ask the experienced employee down the hall or the expert across town for information to solve a problem. For instance, the study linked above quotes one employer as saying about new hires:

Here's something we're targeting in interviews now—the big thing is they believe the computer is their workspace, so basic interactions between people are lost. They won't get up and walk over and ask someone a question. They are less comfortable and have some lack of willingness to use people as sources and also have a lack of awareness that people are a valid sources of information...

So getting some experience using people as sources is likely to help you not just with a current research assignment but with your work in the future.

Important: Who's an "Expert"?

Experts aren't only researchers with PhDs doing academic work. The question when trying to decide who can be a source is really always, who can speak with authority about any part of the subject? And the answer to that question is always contextual, a kind of "it depends."

People can speak with authority for different reasons. According to the Framework for Information Literacy in Higher Education, they can have subject expertise (say, having done scholarship in the field), societal position (maybe a public office or other relevant work title), or special experience (say, living or working in a particular situation of interest or having participated in a historical event).

For instance, people who have had firsthand experience living or working with a situation (say, a survivor of a school shooting if your topic is on that subject) you are studying can have a unique perspective unavailable elsewhere. And it's that up-close, firsthand view of the situation that gives them the authority that you and your audience respond to.

Of course, such sources have to be evaluated just like any other. Could they be biased? Like any source, yes. We just have to keep that possible bias in mind as we use the information from such a source. That's part of exercising the critical thinking that research assignments are famous for producing.

Potentially biased or not, sometimes a source's firsthand experience can't be beaten. And recognizing what they offer can help us open up to diverse ideas and worldviews that we would otherwise miss. Don't be surprised if this kind of source takes you off in completely new directions with your assignment, ones that turn out to be much more interesting than those you were following before. For many researchers, finding sources that really open up a topic like that is one of the most rewarding—and fun—things about doing research.

Some Examples of People as Sources

Examples of Using People as Sources to Answer Research Questions		
Research Question	**Potential Person as Source**	**Potential Person as Source**
How are tools originally developed for medicine, geology, and manufacturing used to explore paintings and sculptures?	An art conservator who uses those tools that you read about in the newspaper or other source	The person who invented one of the tools on the floor of the factory where he works
Why do most people who qualify for food at food banks not ask for food?	A local food bank director	A person (perhaps a fellow student) who qualifies but does not ask for food at a food bank
How and why do city and county governments brand themselves?	An official in such a city or county who has been involved in branding decisions	The director of a company that designs branding for cities and counties

You can interview a person as a source by phone, email, video chat, or face-to-face. You'll need to:

- Pay attention when reading other sources so you can identify whom to contact and know what they could have to offer.
- Prepare by learning enough about your topic so you can ask appropriate questions, know what your expert has done in relation to that topic so you don't seem ignorant of their contribution, and know how to contact them. You might also want to do a practice interview with a friend.
- Contact your source to see if they are willing to talk with you and when that would be convenient. Then follow through.
- Use good interview techniques, such as trying to put them at ease, using active listening techniques to encourage them to talk, asking follow-up questions, and thanking them at the end of the interview.

TIP: How to identify researchers at OSU to interview.

1. Search the database Scopus for your topic. Once you have some results, use the Affiliation option among Define Results options on the left to limit your search to Ohio State University. You may also want to limit by the Year option.
2. Pull up relevant articles' records in Scopus (you can sort by times cited) and then identify which of the authors were at the time at OSU. (Articles may have multiple authors–sometimes over a dozen or more if they are in science).
3. Go to Find People (on the OSU navigation bar on all OSU pages) and search for the OSU person's name to see if they're still at OSU and get their contact information. In many cases, they will still be at OSU, especially for fairly recent articles, because OSU updates author profiles regularly. Note that researchers may or may not be faculty–some may be staff or even students.

Citing People as Sources

Like other sources, people should be cited in your research final product, depending on the citation style you're using. See Purdue Online Writing Lab (OWL) for information on how to handle interviews and other communication with people in various styles.

ACTIVITY: People as Sources

Instructions: Assume you are writing a research paper and your research question is: How do people who are disabled as adults cope with what has happened to them?

One source you have identified and evaluated is a Frank Bruni column called "Am I Going Blind?" published in the *New York Times*, February 23, 2018. Read the column and then answer the questions about people you could contact as sources and why.

3-Sources and Information Needs

1. What Sources to Use When

It's easier to find appropriate sources when you start with a plan.

Sometimes students hate assignments that require sources to meet their research projects' information needs. But if you didn't use sources to meet those needs, you would have to make everything up yourself. Just think of the work! And then, would your audience believe you? So don't lament that you need sources. They are a huge help, not an unnecessary bother, and you can learn to handle them.

A big way we can help is to let you know when to use which important categories of sources covered in Chapter 2 to meet your project's information needs. And some of those needs are pretty choosey.

Along with sometimes collecting your own data, meeting information needs is how you complete your project. Here are those needs:

- To learn more background information about your topic and research question.
- To develop your research question(s).
- To describe the situation surrounding your research question for your audience and explain why it's important.
- To report what others have said about your question, including any different answers to your research question.
- To answer your research question(s).
- To convince your audience that your answer is correct or, at least, the most reasonable answer.

The verbs in the list of information needs above tell you exactly how you'll use sources to carry out your research and create your final product: to learn, develop, describe, report, answer, and convince. But you won't be doing any of that alone.

Your sources will be giving you information to do all that. They'll also give you direct quotes and information to summarize and paraphrase as you create your final product. In other words, your sources will support you every step of the way during your research project.

That's true even when you find sources that disagree. Don't ignore this—it happens often. Instead, address their differences within your report of what sources have said about your research question. That's a good way to show your professor that you considered your research question from multiple perspectives. As you'll see in Chapter 10, Writing Tips, showing different perspectives will actually strengthen your argument that your answer is correct or at least the most reasonable answer.

Tip:

For another way to think about the work your sources do, see Roles of Research Sources.

Needs and Final Products

Background information seldom appears directly in any final product. But meeting each of the other information needs will usually result in written sections of a research paper or essay.

For final products other than research papers and essays, you'll have to meet the same needs and will use sources to meet them. But not all needs will necessarily be included in sections of your final product.

Example: Posters and Information Needs

On a poster about your own original research, you aren't likely to have room to describe the situation surrounding your research question and why the question is important. That same lack of space may also mean you do not report what others have said about your research question. (Maybe you'll just add footnotes with no further explanation.) But that doesn't mean you didn't meet those information needs and others as your carried out your research. Unlike a research paper, essay, or journal article, the poster format in which you reported it just had less space.

For instance, to justify doing the research to yourself and your professor, you probably started by meeting the information need to describe the situation around your research question and why it is important. Your instructor may have had you turn in that justification. And to do research based on what has already been found out, you will have studied what others have already reported about your research question. You may also have had to do that in order to make your answer to your research question more correct and believable. All that is without having room on your poster to report that you met those needs. But all your decisions about the information that *is* on your poster will have been informed by meeting those information needs.

Here's a helpful ebook about developing a research poster in the sciences.

ACTIVITY: Sources and Information Needs

2. Which Kinds of Sources Meet Which Needs?

Understanding the categories of sources explained in Chapter 2, Types of Sources, can give you a better sense of command over your sources. But because there are several categories, the options you have to meet your project's information needs can still seem complex.

Tip:

The upcoming section refers to courses in the arts, the sciences and social sciences, and the humanities. We make source recommendations accordingly. Deciding whether your particular course is in the arts or the sciences or social sciences may be pretty obvious to you.

But what kinds of courses are in the humanities? Different universities organize knowledge differently, and you can always ask you professor. In general, though, the recommendations in the next section for **humanities** courses apply to these kinds of courses:

- Literature, religion, history, classics, languages, linguistics, museum studies, area or ethnic studies, and philosophy.

Our recommendations for the **sciences** also apply to these courses:

- Engineering, architecture, computer science, physical anthropology, agriculture, physical geography, and math/statistics.

The recommendations for **social sciences** courses, such as education, sociology, social work, psychology, economics, and criminology, also apply to:

- Business, political science, cultural anthropology, law, labor/management, and human geography.

Our best advice is to ask yourself these two questions when considering which sources you must use to meet an information need in a project for a specific course:

1. **Must I use only sources created for professional and scholarly audiences?**If your course is in the sciences, social sciences, and engineering, the answer is **most likely yes** for all information needs except learning background information. Except when meeting that information need, those students' sources will need to be professional and scholarly sources such as research journal articles, books by researchers and other scientists or academics, conference papers, tech reports, and theses and dissertations.While they may not be so limited, students in other kinds of courses (say, in the humanities) also may find that using professional and scholarly sources is often the best way for them to make their argument, too. That's because such sources are often the most persuasive sources across disciplines. So just because you aren't limited to those sources in a particular course doesn't mean you can't make good use of them.If your course is in the arts, the answer is **usually no**. Students in the arts, for instance, often use popular sources because that may be where their art first appears.In all cases, pay attention to what's suggested in the instructions for your assignment and, if necessary, ask your professor.

2. **Must I pay attention to how close my sources are to the original information?** In other words, are primary and secondary sources acceptable, while tertiary sources are not? I**f your course is in the**

humanities the answer is usually yes. For instance, your instructions for your history research project might tell you to "Use 5 sources, at least 2 of which are primary sources." But even while students avoid tertiary sources, their primary and secondary sources still must be evaluated for relevance and accuracy just like their other sources. (See Chapter 6, Evaluating Sources.) Because of the information lifecycle, the latest secondary sources are often the best because their creators have had time for better analysis and more information to incorporate.The answer is **likely to be no** in science and social science courses, where the primary, secondary, and tertiary designations seldom come up. When they do, the term primary source usually does not mean original or contemporary with what is being studied. Instead, it is usually applied to the source that was most important to the researcher's work.Many other courses outside the sciences and social sciences also tend not to place extra value on information that is closest to the original. To tell whether it matters in your course, pay attention to whether your professor uses the terms primary, secondary, and tertiary when discussing sources, and read your project instructions carefully. Don't forget that you can ask your professor which kinds of sources matter in his or her discipline.

The material below should give you further details about how to meet particular information needs with sources.

To learn background information about your topic and research question:

- No matter which kind of course you're taking, when you first get a research assignment and perhaps for a considerable time afterward, you will almost always have to learn some background information before you can develop your research question and explore how to answer it.
- Although you shouldn't cite it as a source, Wikipedia is often a great source for background information. You may even want to check out the sources at the bottom of most pages because those sources can often be cited.
- One important reason for finding background information is to learn the language that professionals and scholars have used when writing about your research question. The language you learn may be helpful to use as search terms later, particularly when you're searching for sources to answer your research question. To identify that language, you can always type the word glossary and then the discipline for which you're doing your assignment in the search engine search box.

Here are two examples to try searching: Glossary neuroscience and Glossary "social media marketing"

> **Tip:** (Putting a phrase in quotation marks tells Google to search it as all words together rather than searching the individual words.)

- You probably won't be citing these background sources in your final product. They are usually only to build your understanding and help you develop a research question.
- Because of that, use whatever kind of source you can understand. The intended audience and how close the source is to original information is not important at this stage. You are not limited to primary sources. Secondary sources that synthesize an event or work of art and even tertiary sources such as guidebooks and timelines can be a big help. Don't forget your textbook for the course.
- For most undergraduates, research journal articles are usually sources least likely to be helpful for background information because they are usually too technical and specific to be easily understood. Only after you have more understanding and are trying to meet other information needs will journal articles be

more useful to you.

To describe the situation surrounding your research question for your audience and explain why it's important:

- Sources for this information need are among those you can cite in your final product.
- In the sciences and social sciences, you are most likely limited to professional and scholarly sources.
- In most other courses, you have more freedom to include whatever kinds of sources provide a clear and compelling reason why getting your research question answered is important and to whom.
- Helen Sword, the author of *Stylish Academic Prose*, suggests using a literary quotation, a historical quotation, a personal or historical anecdote or one drawn from your research, a description of a scene or artwork, a surprising fact, or a challenging question.
- Some examples of acceptable sources to meet this need outside the sciences and social sciences are substantive popular sources such as major newspaper or magazine articles and documentaries, books, poems, plays and movies, lyrics from songs, and examples and descriptions of artwork. Also acceptable, of course, are blogs, websites, and publications from professional associations, articles from scholarly research journals, conference papers, tech reports, and theses and dissertations. Those professional and scholarly sources listed are appropriate for science and social science courses, too.

To answer your research question, convince your audience that your answer is right or at least reasonable, and to report what others have reported about your research question:

- These are among the sources you will cite in your final product.
- For these information needs, the credibility of your sources is of paramount importance. You want your reader to believe your argument.
- What is most credible varies by discipline.
- Just ask yourself Questions 1 and 2 that appeared at the beginning of this chapter and choose your sources accordingly. And remember: you can always ask your professor about whether a particular source is useful.

You already may have realized that you can use the same source to meet more than one information need in your research project. For instance, let's say you're working on a presentation for an economics class. You could use a scholarly article or book to help you develop your research question, to report what others have said about the question, and to help you formulate your own answer. Of course, your professor also will want you to have investigated the perspective of more than one source, so you will be needing others. Still, it's nice to know that a single source can meet more than one information need.

Here are some profiles of students choosing sources for their courses.

If you need more examples of sources that are primary, secondary, or tertiary and popular, professional, or scholarly, our Source Locator which you'll find later in this chapter, is a good list of categorized sources. Chapter 2, Types of Sources, also has more detail about sources in each category.

ACTIVITY: Meeting Your Information Needs

3. Planning Your Sources

Okay, you should be able to tell from the information above which sources will be most useful to you for specific kinds of courses. When you are about to start a research project in such a course, actually making a plan for the kinds you need will save you time as you search for sources.

Instead of just seeing what sources you can find "out there," having a plan can help you conscientiously choose sources that will meet all your information needs. It will save you time in the long run and will lead to more successful research projects, with fewer last-minute panics over not having the best sources. It's very comforting to have a plan all in one place so that you can just follow the plan and aren't having to re-think everything each time you look for sources. Perhaps most important, it can also help you answer the question "Have I have found enough sources?" which really depends on whether you have sources to meet all your information needs.

Here's a form for such a plan, called Plan for Sources, plus an example of it filled out for a hypothetical research project. You can download a copy of the form to fill out for your own research project in Word at http://go.osu.edu/planforsources. (On our example form, the √ indicates the student thinks she has found all the sources she needs to meet that need.)

PLAN FOR SOURCES				
Course:		Due Date:	Type of Final Product:	
Research Question:				
Information Needs		Kinds of Sources (Popular, Professional, or Scholarly) That Should Meet Each Need	Publication Formats Likely to be Helpful in Meeting Each Need	Where to Look
To learn more background information				
To answer your research question and convince your audience				
To report what others have said				
To describe the situation and why it's important				

Thinking through the types of sources you need to meet your information needs helps you target your search. You can download the Plan for Sources table at http://go.osu.edu/planforsources.

EXAMPLE: Sample "Plan for Sources" Table

PLAN FOR SOURCES				
Course: ARTS & SCIENCES 3200		Due Date: 2/15/16	Type of Final Product: term paper	
Research Question: In what ways has the checklist movement affected surgery patient outcomes in U.S. hospitals?				
Information Needs		Kinds of Sources (Popular, Professional, or Scholarly) That Should Meet Each Need	Publication Formats Likely to be Helpful in Meeting Each Need	Where to Look
To learn more background information	✔	Popular Professional	Any, including magazine articles, professional blogs, and association websites and publications	Google and Bing
To answer your research question and convince your audience	✔	Professional Scholarly	Books Research journal articles Conference papers	Library catalog Library databases Google Scholar
To report what others have said	✔	Professional Scholarly	Any, including professional blogs and association websites and publications Research journal articles Conference papers	Google and Bing Library databases Google Scholar
To describe the situation and why it's important	✔	Popular Professional	Any, including magazine articles, professional blogs, and association websites and publications	Google and Bing

Completing the table puts all your planning in one place.

Knowing what you need is a huge clue to knowing where to look for them. Here's another aid to make it easier to plan for what you need and then find your sources.

Our Source Locator can help by suggesting where to find particular kinds of sources in various formats. Once more, thinking of categories can help because where sources are located is generally organized by audience expertise level—by whether they are popular, professional, or scholarly sources. Popular and professional are often grouped together. But scholarly sources tend to hang out by themselves. That's why searching Google Scholar locates more of them than plain old Google, and academic libraries have more scholarly sources than public libraries. However, disciplines can still influence where you should and should not look for those sources. For example, if you are majoring in the life sciences, ask your professor whether Google Scholar is okay to use. They may tell you to use the library database called PubMed instead.

4-Precision Searching

1. Why Precision Searching?

Precise searches turn up more appropriate sources.

Effective searching takes precision. This section shows you how to perform several steps to make your searching more precise—you'll turn up more sources that are useful to you and perhaps, sources that may be even crucial to your research question.

You've probably been searching in a more casual way for years and may wonder: Is going to the trouble of precision searching actually worth it?

Yes, definitely, for searches that are important to you! You're in competition with many people who are working to be as skilled as they can be. So you should use of these steps for course assignments and for information tasks you do on the job. With other tasks and searches, precision searching may be less important.

Search Strategy

This information on precision searching is based on how search tools such as Google and specialized databases operate. If you've been more casual in your searching practices, some of these steps may be new to you.

Starting with a research question helps you figure out precisely what you're looking for. Next, you'll need the most effective set of search terms – starting from main concepts and then identifying and alternate between related and terms. Those search terms need to be arranged in the most effective way as search statements, which you actually type into a search box.

An important thing to remember is that searching is an iterative process: we try search statements, take a look at what we found and, if the results weren't good enough, edit our search statements and search again—often multiple times. Most of the time, the first statements we try are not the best, even though Google or another search tool we're using may give us many results.

It pays to search further for the sources that will help you the most. Be picky.

Here are the steps for an effective search.

The steps in a precise search

2. Main Concepts

Identify the main concepts in your research question by selecting nouns important to the meaning of your question. Leave out words that don't help the search, such as adjectives, adverbs, prepositions and, usually, verbs. Nouns that you would use to tag your research question so you could find it later are likely to be its main concepts.

Finding the main concepts in a research question is a lot like finding the main idea in an essay or story. Often the main idea is in the first paragraph, but not always. Sometimes it's in a later paragraph or even in the conclusion. The same is true with research questions—the main concepts can be at the beginning, middle, or end. Stick to the nouns and only what's necessary, not already implied. Don't read in concepts that are not really there. Be alert to words that may have connotations other than the concept you are interested in. For instance, if you identify depression as a main idea, be aware that the search engine won't automatically know whether you mean depression as a psychological state or as a condition of the economy or as a weather characteristic.

EXAMPLE: How are birds affected by wind turbines?

The main concepts are birds and wind turbines. Avoid terms like affect (except the noun) and effect as search terms, even when you're looking for studies that report effects or effectiveness.

EXAMPLE: What lesson plans are available for teaching fractions?

The main concepts are lesson plans and fractions. Stick to what's necessary. For instance, don't include: children—nothing in the research question suggests the lesson plans are for children; teaching—teaching isn't necessary because lesson plans imply teaching; available—available is not necessary.

Sometimes your research question itself can seem complicated. Make sure you've stated the question as precisely as possible (as you learned in Research Questions). Then apply our advice for identifying main concepts as usual.

ACTIVITY: Main Concepts

Open activity in a web browser.

ACTIVITY: More Main Concepts

Open activity in a web browser.

EXAMPLE: Does the use of mobile technologies by teachers and students in the classroom distract or enhance the educational experience?

Acceptable main concepts are teaching methods and mobile technology. Another possibility is mobile technologies and education.
Watch out for overly broad terms. For example, don't include:

- Educational experience (it misses mobile technology).
- Classroom distractions (too broad because there are distractions that have nothing to do with technology).
- Technology (too broad because the question is focused on mobile technology).

3. Related and Alternative Terms

For each main concept, list alternative terms, including synonyms and singular and plural forms of the words.

Sometimes synonyms, plurals, and singulars aren't enough. So also consider associations with other words and concepts. For instance, it might help, when looking for information on the common cold, to include the term virus—because a type of virus causes the common cold.

Check to make sure that your terms are not too broad or too narrow for what you want. Figuring out what's too broad or too narrow takes practice and may differ a bit with each search.

TIP: Try a Thesaurus

Have you considered using a thesaurus, such as thesaurus.com? Or adding a thesaurus to your browser search bar?

ACTIVITY: Finding Synonyms

When figuring out search terms, you can try your search terms in Visuwords <visuwords.com>, an online graphical dictionary, to see the connections visually in a diagram reminiscent of a neural net. It can help you see connections between terms that are not easy to think of.

ACTIVITY: Alternate Terms

Open activity in a web browser.

Subject Headings Instead of Keywords

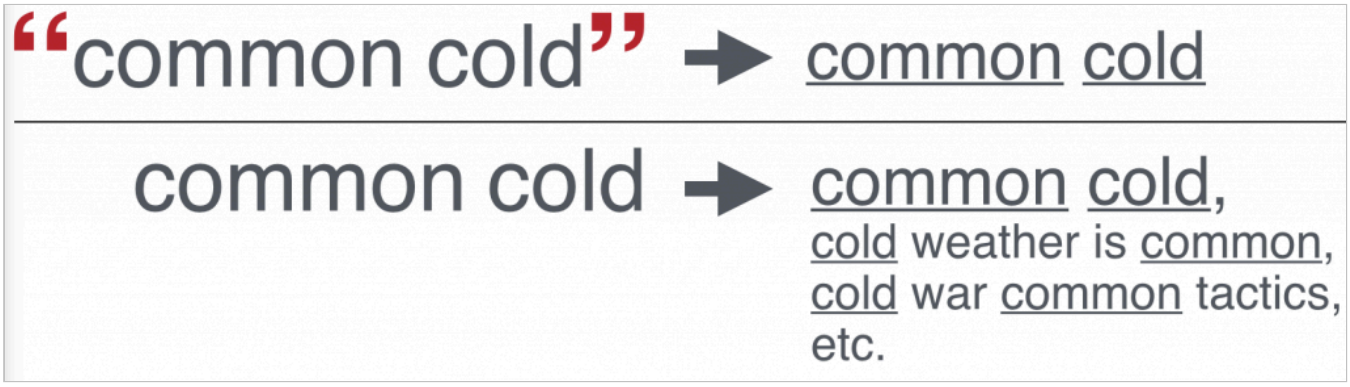
All the searches we have talked about so far have been keyword searches, usually used in search engines. But sometimes it pays to use tools—such as library catalogs and journal article databases—that have subject headings that you can search. Subject headings are standardized terms that are assigned by trained experts. (Some such tools also allow keyword searching.) See the section on Specialized Databases for more detail about searching subject headings.

4. Search Statements

At this point in your search process, you are moving from merely identifying main concepts and similar search *terms* to developing more complicated search *statements* that can do more precise searching.

Use Quotation Marks for Phrases

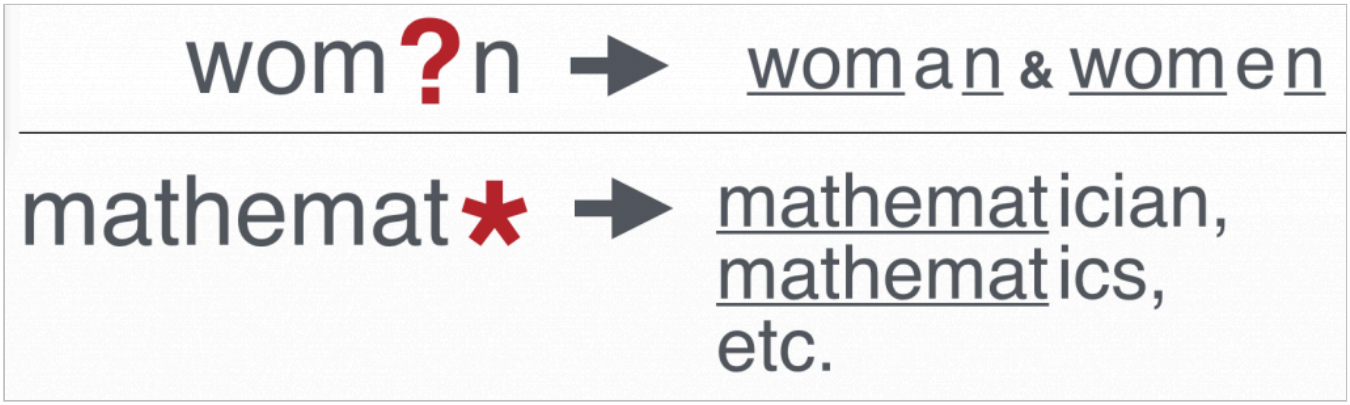
Put quotation marks around any phrases among your terms so that the phrase is what's searched for, rather than the separate words. "Common cold" instead of common cold is a good example. Without those quotation marks, just think how many sources Google or other search tools would waste their/your time on things that have nothing to do with our sniffles.



Putting a phrase in quotes returns results containing that phrase, and not the results for the individual words.

Use Wildcard and Truncation Symbols to Broaden

Consider whether using wild card or truncating symbols would help find variations of a word. For instance, the wildcard symbol in wom?n finds both woman and women, and the truncating symbol in mathemat* finds mathematics, mathematically, mathematician, etc.



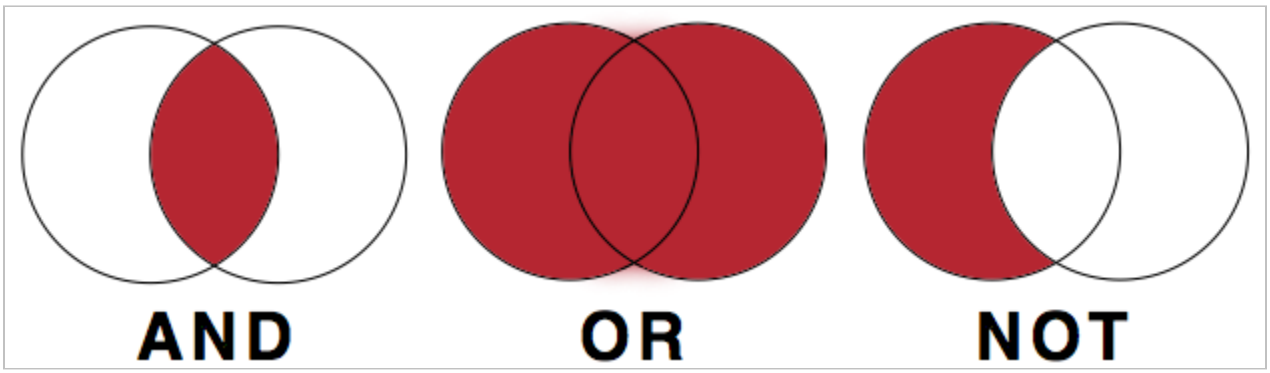
Using wildcard characters allows you to find variations of a word.

ACTIVITY: Wildcards and Truncation

Open activity in a web browser.

Consider AND, OR, NOT

You can often do more precise searching by combining search terms by using the words AND, OR, and NOT. These are known as Boolean Operators. Generally, using these operators narrows your search, making it more precise.



The Boolean operators AND, OR, and NOT exclude or include subsets of sources.

AND – If the main idea contains two or more ideas, you'll want to use AND to combine those terms in your search statement. To look for information about spiders as signs of climate change, you'll want to have both terms in the search and perform an AND search. That's what automatically happens in search engines such as Google and Bing unless you tell them to do something different by using OR,NOT, or-.

OR – If the main idea has several synonyms, use OR to combine them. Most search tools search for all terms (AND) by default, so you need to use the operator OR between terms to let them know you want to find any of the terms not documents with all the terms. For instance, in the previous example of Latino small business growth, we would want to also use the term Hispanic.

NOT – If the main idea has a common use you want to exclude, use NOT to exclude that word. For example, if we were looking for information about illegal drug use we would want to exclude prescription drugs from the search results. This is commonly done with NOT or the use of the minus (-) sign. In Google, to exclude a word use-word with no space between the – and the word you want to exclude. If you put a space in there, Google will not exclude the word.(When using some search tools, you have to use AND NOT before the word to exclude it.)

Using Parentheses with Multiple Operators

When a search requires multiple Boolean operators (AND, OR, NOT, or their symbols), you must use parentheses to group the appropriate terms and quotation marks with each Boolean operator. The resulting statements connect terms, remove terms, and organize search terms in ways that result in complex and precise searching.

The use of parentheses may remind you of the mathematical statements written in math courses. The reason parentheses are necessary in searching is that search tools, including Google, generally perform their operations from the left to right of a search statement. If you are using multiple Boolean operators, then the way to make sure that the search is done as a whole statement requires that you use parentheses to combine the sets in your statement.

Never use parentheses unless you are using multiple Boolean operators.

Parenthesis are used with Boolean operators to combine terms for complex searches.

Being skillful at this task of envisioning the effects Boolean operators have on a search can help you troubleshoot your own search statements when they aren't turning up what you expected.

EXAMPLE: "United States" AND (immigration or emigration)

Can you tell that the searcher wants to find information about the United States' immigration or emigration?

The searcher will find more with this arrangement than would turn up if the statement had been "United States" immigration emigration. That's because the latter arrangement without parentheses would find only information that was about both United States immigration and emigration, instead of either.

EXAMPLE: (cats OR dogs) AND (treatment OR therapy)

Can you tell that the searcher wants to find information about either treatment or therapy for either cats or dogs?

That's a different search from what the searcher would have gotten if this statement had been used: cats dogs treatment therapy. Anything found with the latter statement without parentheses would have had to be about both— not just either—therapy and treatment for both—not just either—cats and dogs. So the latter statement would have turned up fewer pieces of information.

ACTIVITY: Search Analysis

Open activity in a web browser.

Practice with Search

Take some time to practice searching precisely – start by identifying main concepts, then listing related and alternative terms (with the help of wildcard and truncation symbols), and finally constructing search statements.

ACTIVITY: Search Practice

This activity focuses on the research question "How does a person's diet affect the risk for getting cancer?" Work through the three activities below.

Search Terms – Open activity in a web browser.

Truncation – Open activity in a web browser.

Search Statements – Open activity in a web browser.

ACTIVITY: More Search Practice

This activity focuses on the research question "What is the effect of gamma radiation on crops?" Work through the three activities below.

More Search Terms – Open activity in a web browser.

More Truncation – Open activity in a web browser.

More Search Statements – Open activity in a web browser.

5-Search Tools

1. Library Catalog

The Ohio State University library catalog is searchable online and contains records for all the items owned or licensed by OSU Libraries. It also includes a circulation system that is used to check out materials. Students can use the system to have books and other materials quickly sent to their residence hall or for pick up at a library on the Columbus campus or at any of the regional campus libraries. Items in the catalog include books, journals (but not individual journal articles), documents, maps, movies, and recordings.

When to Use It

Use the library catalog to search for items that you can access because you are affiliated with Ohio State, to locate where those materials are stored, and to request them.

Note that OSU's library catalog:

- Does not contain the full-text of any materials. However, some items may include a table of contents and a link to full-text digital content.
- Does not contain specific articles. The catalog can only tell you whether a journal or other periodical title is available.

How to Use It

To access the catalog, choose the Books and More tab on the OSU Libraries' main page at http://library.osu.edu. From there, you can do a search or click on More Options to get access to other search options.

Searching Ohio State's catalog from library.osu.edu

Search Types

The catalog allows searching by author, title, journal title, subject, and keyword as well as specialty numbers such as the Library of Congress call number and ISBN (International Standard Book Number). There is also an option for advanced search.

Additional tips:

- Keyword searches are the broadest search, as they search all information in an item record. (The search tips in Precision Searching, are based on using keywords.)
- Subjects are a very specific set of terms that are helpful for precision searches. Often, the easiest way to find subject terms is to do a keyword search first and then look at the subject terms for those that are good matches for your topic. There is more about subject heading searching in Specialized Databases later in this section.
- The Advanced Search screen allows a few additional search capabilities, such as multiple search fields to narrow the scope of a search term. You can also limit by year range, language, location, or format.

2. WorldCat@OSU

WorldCat@OSU searches the holdings of libraries from all over the world (including Ohio State University Libraries and OhioLINK libraries), as well as content from thousands of journals and millions of electronic books and web-accessible documents.

When to Use It

WorldCat@OSU is good for quick searches on a topic, as a starting point, and for interdisciplinary topics. However, despite its size, it is not all-inclusive. It does not search all journals and databases, and full-text searching is limited.

How to Use It

To access WorldCat@OSU, choose the Search All tab on the OSU Libraries' main page at http://library.osu.edu. (Off-campus users will be asked to sign in with an OSU username and password or proceed as a guest for fewer options.)

Searching WorldCat@OSU from library.osu.edu

Narrowing Searches

- To specific databases – From the Search All tab, click the Advanced Search link to get access to other search options, including selecting specific databases.
- To articles – Under the Articles tab on the OSU Libraries home page, you will be using WorldCat@OSU to search only for articles.

3. Google Scholar

Google Scholar is a tool for finding books and journal articles that you might normally get from a library. Where possible, it provides links to online versions and to library copies to help you locate an item.

When to Use It

Use Google Scholar to find scholarly articles and books, verify citations, and explore related resources. When books are available through Google Books, some of their content may be available online.

How to Use It

Go to Google Scholar (http://scholar.google.com).

MOVIE: Using Google Scholar

Watch this tutorial on the basics of Google Scholar use.

4. Specialized Databases

A specialized database—often called a research or library database—allows targeted searching on one or more specific subject areas (i.e., engineering, medicine, Latin American history, etc.), for a specific format (i.e., books, articles, conference proceedings, video, images), or for a specific date range during which the information was published. Most of what specialized databases contain can not be found by Google or Bing.

There are several types of specialized databases, including:

- Bibliographic – details about published works
- Full-text – details plus the complete text of the items
- Multimedia – various types of media, such as images, audio clips, or video excerpts
- Directory – brief, factual information
- Numeric – data sources
- Product – model numbers, descriptions, etc.
- Mixed – a combination of other types, such as multimedia and full-text

ACTIVITY: Database Types

Open activity in a web browser.

When to Use Specialized Databases

Search specialized databases to uncover scholarly information that is not available through a regular web search. Specialized databases are especially helpful if you require a specific format or up-to-date, scholarly information on a specific topic.

Many databases are available both in a free version and in a subscription version. Your affiliation with a subscribing library grants you access to member-based services at no cost to you. For example, using PubMed via OSU Libraries enables a Find It link to help you request an item.

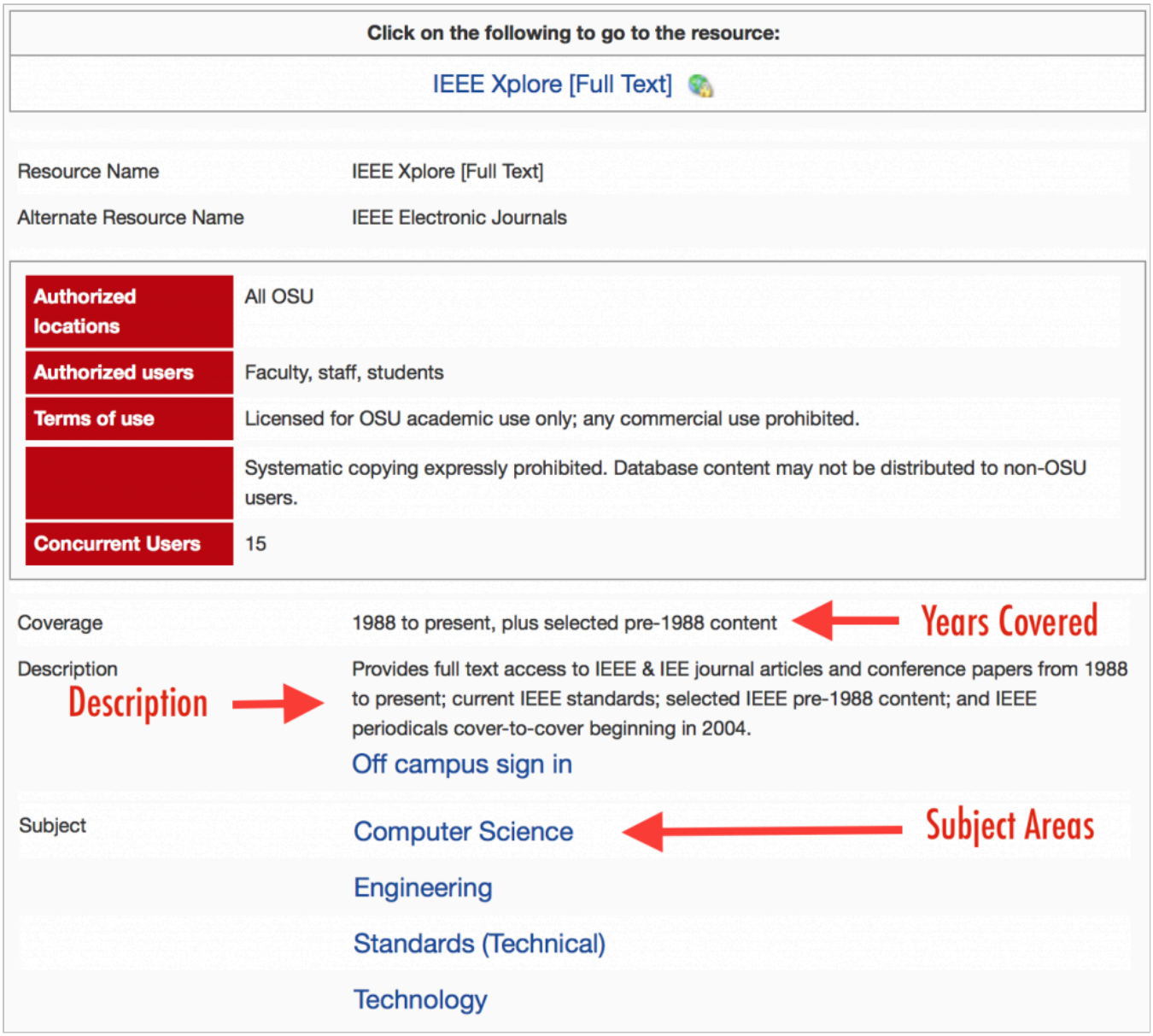
TIP: Free vs. Subscription?

In some cases, the data available in free and subscription versions are the same, but the subscription version provides some sort of added value or enhancement for searching or viewing items.

Database Scope

Information about the specific subject range, format, or date range a particular specialized database covers is called its scope. A specialized database may be narrow or broad in scope, depending on whether it, for instance, contains materials on one or many subject areas.

If you are using a database licensed by OSU Libraries and have clicked the title in the list of databases, you will see scope information at the bottom of the same page that says “Click on the following to go to the resource.”



This example shows the scope page for an OSU-licensed database. View the live example.

Once you are aware of a database's scope, you'll be able to decide whether the database is likely to have what you want (for instance, journal articles as opposed to conference proceedings). Reading about the scope can save you time you would have otherwise wasted searching in databases that do not contain what you need.

ACTIVITY: Determining Subject Scope

Open activity in a web browser.

ACTIVITY: Years of Coverage

Instructions: In addition to subject scope, database descriptions should include years of coverage. Visit Ohio State's Research Databases List to search for the databases listed below. Which database contains the oldest information? Which covers the fewest years?

- Evidence Based Medicine Reviews
- MathSciNet
- GeoRef

ANSWER TO ACTIVITY: Years of Coverage

The answer to the "Years of Coverage" Activity above is:

- The database containing the oldest material is GeoRef, which goes back to 1785.
- The database covering the fewest years is Evidence Based Medicine Reviews, which goes back to 1991.

How to Use Them

Use of each database varies somewhat.

See Ohio State's research database list.

EXAMPLE: Academic Search Complete

Academic Search Complete (OSU only) is a general article database available through most academic and large public libraries that is often recommended for undergraduate research projects.

MOVIE: Academic Search Complete Database in 3 Minutes

View video

Keyword Searching

Although keyword search principles apply (as described in Precision Searching), you may want to use fewer search terms since the optimal number of terms is related to database size. Google and Bing work best with

several terms since they index billions of web pages and additional terms help narrow the results. Each scholarly database indexes a fraction of that number, so you are less likely to be overwhelmed by results even with one or two keywords than you would be with a search engine.

Phrase searching (putting multiple words in quotes so Google or Bing will know to search them as a phrase) is also less helpful in specialized databases because they are smaller and more focused. Databases are better searched by beginning with only a few general search terms, reviewing your results and, if necessary, limiting them in some logical way. (See Limiting Your Search below.)

ACTIVITY: Compare Them!

Instructions:
Compare a search for items containing both phrases "United States" and "female serial killers" in the article database Academic Search Complete (OSU only) and in the web search engine Bing. (Make sure you include the quotation marks so they will be searched as phrases.) Notice how searching too narrowly (searching for phrases) affects results in the specialized database. How could you revise the specialized database search to get more results?

Limiting Your Search

Many databases allow you to choose which areas (also called fields) of items to search for your search term(s), based on what you think will turn up documents that are most helpful.

For instance, you may think the items most likely help to you are those whose titles contain your search term(s). In that case, your search would not show you any records for items whose titles do not have your term(s). Or maybe you would want to see only records for items whose abstracts contain the term(s).

When this feature is available, directing your search to particular parts of items, you are said to be able to "limit" your search. You are limiting your search to only item parts that you think will have the biggest pay-off at distinguishing helpful items from unhelpful items.

Searching fields such as title, abstracts, and subject classification often gives helpful items.

TIP: Full-Text Searches

Some databases allow for full-text searching, but this option includes results where a search term appears only once in dozens or more pages. Searching fields such as title, abstracts, and subject classification will often give more relevant items than full-text searching.

Subject Heading Searching

One precision searching technique may be helpful in databases that allow it, and that's subject heading searching. Subject heading searching can be much more precise than keyword searching because you are sure to retrieve only your intended concept.

Subject searching is helpful in situations such as:

- There are multiple terms for the same topic you're interested in (example: cats and felines).
- There are multiple meanings for the same word (example: cookie the food and cookie the computer term).
- There are terms used by professionals and terms used by the general public, including slang or shortened terms (example: flu and influenza).

Here's how it works:

Database creators work with a defined list of subject headings, which is sometimes called a controlled vocabulary. That means the creators have defined which subject terms are acceptable and assigned only those words to the items it contains. The resulting list of terms is often referred to as a thesaurus. When done thoroughly, a thesaurus will not only list acceptable subject headings, but will also indicate related terms, broader terms and narrower terms for a concept.

TIP: Finding Useful Subject Headings

Try this strategy to find useful subject headings. Remember it by thinking of the letters KISS:

- **K**eyword-search your topic.
- **I**dentify a relevant item from the results.
- **S**elect subject terms relevant to your topic from that item's subject heading.
- **S**earch using these subject terms. (Some resources will allow you to simply click on those subject terms to perform a search. Others may require you to copy/paste a subject term[s] into a search box and choose a subject field.)

ACTIVITY: Searching Specialized Databases

Open activity in a web browser.

Records and Fields

The information researchers usually see first after searching a database is the "records" for items contained in the database that also match what was asked for by the search.

Each record describes an item that can be retrieved and gives you enough information so that, hopefully, you can decide whether it should meet your information need. The descriptions are in categories that provide different types of information about the item. These categories are called "fields." Some fields may be empty of information for some items, and the fields that are available depend on the type of database.

EXAMPLE: Database Fields

A **bibliographic database** describes items such as articles, books, conference papers, etc. Common fields found in bibliographic database records are:

- Author.
- Title (of book, article, etc.).
- Source title (journal title, conference name, etc.).
- Date.
- Volume/issue.
- Pages.
- Abstract.
- Descriptive or subject terms.

In contrast, a **product database** record might contain the following fields:

- Product Name.
- Product Code number.
- Color.
- Price.
- Amount in Stock.

5. Web Search Engines

Web search engines use special software programs (called robots, spiders, or crawlers) to find Web pages and list (or index) all words within each one to make searching large quantities of pages faster. Indexes capture the largest amount of information on the Web, but no index lists everything on the Internet.

Commonly used search engines include Google (https://www.google.com) and Bing (http://www.bing.com).

In addition to search engines, there are also:

- Specialized web search engines – A tool that has a specialty, usually either a subject or format focus. It ignores the rest of the information on the web. Examples include science.gov (http://www.science.gov/) and TinEye Reverse Image Search (https://www.tineye.com).
- Metasearch engines – Tools that search multiple web search engines and gives you results from all of them. Some of these return the best results from the search engines they search. Examples include Dogpile (http://www.dogpile.com) and WebCrawler (https://www.webcrawler.com).
- Web directories – Tools created by editors or trained researchers who categorize or classify web sites by subject. Directories are more selective than search engines. An example is the Directory of Open Access Journals (https://doaj.org/).

When to Use Them

Web Search Engines and related web search tools are helpful for locating background information, news (especially if it's recent), and public opinion.

However, scholarly information is often not available through a regular web search. If you do find scholarly information through a web search engine, especially if you are off campus, you may be asked for payment to access it. Ohio State Libraries can usually get you what you need without additional payment.

Remember to follow the advice in Evaluating Sources to determine whether information you locate online is suitable for your information needs.

How to Use Them

See links above. Use of each tool varies. If a search engine has an advanced search, it may include options such as specifying format, language, domain, or date range.

6. Tips for Common Search Tools

Academic Search Complete

- **AND:** default (alternatively: term AND term)
- **OR:** term OR term
- **NOT:** term NOT term
- **Exact Phrase:** “exact phrase search”
- **Grouping:** term AND (term OR term)

Bing

- **AND:** default
- **OR:** term OR term
- **NOT:** term NOT term
- **Exact Phrase:** “exact phrase search”
- **Grouping:** Not available

Google

- **AND:** default
- **OR:** term OR term
- **NOT:** term -term (example: animal -cat)
- **Exact Phrase:** “exact phrase search”
- **Grouping:** term AND (term OR term)

WorldCat

- **AND:** term AND term
- **OR:** term OR term
- **NOT:** term NOT term
- **Exact Phrase:** “exact phrase search”
- **Grouping:** term AND (term OR term)

OSU Library Catalog

- **AND:** term AND term
- **OR:** term OR term
- **NOT:** term NOT term
- **Exact Phrase:** “exact phrase search”
- **Grouping:** term AND (term OR term)

6-Evaluating Sources

1. Thinking Critically About Sources

Evaluating sources often involves piecing together clues.

Evaluating sources for relevance, currency, and credibility is one of the most complex tasks you'll do when working on a research project. Such sources will meet the information needs of your research project and make it possible for you to complete your final product.

In order to evaluate a source, you have to answer three questions about it. The first two are intertwined and answered pretty much at the same time as you're looking for sources. Then you answer the third question about those sources that you have already decided are relevant and recent enough.

- Is this source relevant to my research question?
- Is this source recent enough (or created in the right time period)?
- Is this a credible source–a source my audience and I should be able to trust?

You should be able to answer "yes" to these three questions about each source you cite for a research project.

TIP: Other Criteria from Your Professor

Don't forget that you also have to make sure your sources meet any other criteria that your professor may have given you for this assignment. For instance, professors often stipulate that

some of your sources have to be scholarly sources or journal articles from a particular database. Professors in the humanities may also say that some of your sources must be primary sources. So make sure you have identified enough of the kind of sources your professor has requested.

It's important to determine relevance before credibility because no matter how credible a source is, if it's not relevant to your research question it's useless to you for this project. By the same token, a source that is not recent enough or not created in the right time period will also be unsuitable for your project, except perhaps for background information that you don't cite.

You might already be worrying about how long evaluating sources is going to take. So let's say right off that you won't have to read all of every source to decide whether it is relevant, current or created in the right time period, and credible. (Later, of course, it will take a closer read to determine what direct quotes, paraphrases, and summaries you may want to use from the sources you have selected. We take that up in Chapter 10, Writing Tips.)

Regardless, our advice is to not begrudge the time you spend evaluating sources. It's one of the most important things to learn in college—the opportunity to evaluate sources is one of the big reasons your professors assign research projects. And your future employers will expect you to have learned how to do it. For the rest of your professional and personal life, you will be using the critical thinking skills that make choosing the right sources possible. So taking the time to learn those skills is a great investment.

Happily, you'll also get much faster the more you do it.

ACTIVITY: Evaluation Basics

Making Inferences: Good Enough for Your Purpose?

Sources should always be evaluated relative to your purpose – why you're looking for information. But because there often aren't clear-cut answers when you evaluate sources, **much of the time it is inferences – educated guesses from available clues –** that you have to make about whether a source is relevant, current, and credible.

That's true even when your purpose is to answer the research question of your research assignment.

Your purpose will dictate:

- What kind of information will help?
- How serious you consider the consequences of making a mistake by using information that turns out to be inaccurate? When the consequences aren't very serious, it's easier to decide a source and its

information are good enough for your purpose. Of course, there's a lot to be said for always having accurate information, regardless.
- How hard you're willing to work to get the credible, timely information that suits your purpose. What you're learning here will make it easier.

Thus, your standards for relevance and credibility may vary, depending on whether you need, say:

- Information about a personal health problem.
- An image you can use on a poster.
- Evidence to win a bet with a rival in the dorm.
- Dates and times a movie is showing locally.
- A game to have fun with.
- Evidence for your argument in a research project.

For your research assignments or a health problem, the consequences may be serious if you use information that is irrelevant, or out-of-date, or not credible.

ACTIVITY: Quick Check

Instructions: Select one answer to each question.

2. Evaluating for Relevancy

Relevant sources are those that pertain to your research question. You'll be able to identify them fairly quickly by reading or skimming particular parts of sources and maybe jotting down little tables that help you keep track. We'll show you how below, including where to look in specific kinds of sources and what questions to ask yourself as you do.

One thing to consider early on as you make inferences about relevancy is the effect that timeliness– called a source's currency–should have on deciding whether a source is relevant. Sometimes timeliness has a lot to do with relevancy; sometimes it is less important. Your research question and your discipline will determine that.

For instance, if your research question is about the life sciences, you probably should consider only the most recent sources relevant for citing because the life sciences are changing so quickly. There is a good chance that anything but the most recent sources may be out of date. So it's a good idea to aim for life sciences sources no more than 5 years old. (An example of a discipline that calls for even newer sources is computer security.)

Sometimes emergencies change the schedule of what is recent enough. For instance, when the Covid-19 pandemic started, it was incredibility important for scientists to share their research information as quickly as possible. At that time, scientific information about Covid-19 could become outdated in weeks or months–before the peer review process was barely started.

Lives were at stake and for that reason, scientists started publishing their new research results on Covid-19 as **preprints**—publications of results that had not yet been peer-reviewed–in an attempt to have them be useful faster. Nonetheless, after preprint publication, the peer review process continued for much of that research.

But pre-prints didn't start with the Covid pandemic. Around for more than 30 years and now at Cornell University, arXiv is a free distribution service and an open-access archive for more than two million scholarly articles first published as preprints in the fields of physics, mathematics, computer science, quantitative biology, quantitative finance, statistics, electrical engineering and systems science, and economics. Materials on the site are not peer-reviewed by arXiv itself. (arXiv is pronounced archive.)

Before using preprints as sources, talk with your professor about whether she or he recommends their use in your situation.

Many sciences other than life sciences primarily use newer content under 10 years old. But not always. That's because the history department is not alone in valuing older content. For instance, mathematics is a discipline that makes heavy use of older content. So how important the currency of your sources is will depend on your research question and your discipline. Your professor can guide you about your own situation.

In most cases, it's best not to use a hard and fast rule about how current your sources have to be. Instead, consider your discipline and research question and do some critical thinking. For example, suppose your research question is about the Edo Period in Japan (1603-1868) or about Robert Falcon Scott, who explored the Antarctic from 1901-1913. In these cases, an item from 1918 might be just as useful as an item from 2018 (although new information may have been found in the 100-year gap). But something from 1899 about Antarctica or from 1597 about Japan would not be current enough for these research questions.

These examples also give you two more clues about how to treat the timeliness or currency of sources as you consider relevance:

- Because of how long ago they lived or occurred, it would be unusual for many sources on Robert Scott or the Edo Period to have been published very recently. So, unlike sources for the life sciences, whether a source is very recent should probably not determine its relevancy to research questions about Scott or the

Edo Period.

- Primary sources might be considered especially relevant to many humanities and other non-science research questions. For disciplines in the humanities, the phrase primary sources refers to sources created at the same time as something under study—in this case, things such as Scott's diaries and expedition photographs, as well as paintings, literature, clothing, and household items from the Edo Period. They go a long way to explain faraway people and times. (See Primary, Secondary, & Tertiary Sources.) On the other hand, when science disciplines use the phrase primary source, they usually mean where they primarily find the information they consider valid—in research journals.

EXAMPLE: TED Currency

Check out how currency is handled on TED. This site provides videos of speakers talking about new ideas in technology, entertainment, and design. (That's what TED stands for.) Some videos are labeled "Newest Talks," and TED tells when every video was recorded. That's because currency matters with TED Talks.

For your own sources for which timeliness matters, see the section below called Where to Look, which includes where to look in websites, articles, and books for information about a source's currency.

Time-Saving Tips

Instead of thinking you have to read all of every source in order to figure out whether it's relevant, read or skim only parts of each source. If you're looking at the right parts, that should give you enough information to make an educated guess about relevancy and currency.

But what should you be looking for as you do that reading and skimming? One way to figure that out is to first parse your research question so that you can figure out its main concepts. (This is like identifying main concepts in your research question in order to search precisely, as we advise in Chapter 4.)

For instance, suppose your research question is: How does having diverse members in a group increase the critical thinking of the group?

What are this question's main concepts? Our answer is: group diversity and critical thinking.

So when trying to judge which sources are relevant to these main concepts, you would assess whether each source you've found pertains to at least one of these main concepts. We recommend you jot down a little table like the one in the example below to keep track of which sources address each main concept.

To be considered relevant to your research question, a source wouldn't necessarily have to cover all of your main concepts. But finding sources that do is ideal. Otherwise, you just have to make do with what you've got. Don't forget that each source would have to pass the currency test, too, if the currency is important to your research question. So it saves time to record your decisions about the sources' currency on your tables, too.

EXAMPLE: Sources' Main Concepts and Currency

Research question: How does having diverse members in a group increase the critical thinking of the group?

Sources and Currency

	Currency Okay	*Group Diversity*	*Critical Thinking*
Source A title	X	X	
Source B title	X		
Source C title	X	X	X

The table in this hypothetical example indicates that both Sources A and C are relevant because each pertains to at least one main concept from the research question. Currency doesn't seem to matter much to our research question, so all three sources were marked current. But since currency is all that Source B has to offer, it is not relevant for this project.

If you do make little tables for relevance, it's probably a good idea to hang on to them. You might find them helpful later in your research process.

Where to Look in Websites, Articles, and Books

The information below tells where to look and what questions to ask yourself to assess the relevancy of articles, books, and websites. The name of a source seldom tells you enough about its relevance, so **whatever you do, don't stop evaluating after looking only at a website's name or the title of another source.**

Save time by looking in particular places in sources for information that will help you figure out whether the source is relevant to your research project. Much of our advice below comes from "Speedy Reading" in *The Craft of Research*, second edition, by Wayne Booth, Gregory Colomb, and Joseph Williams, University of Chicago Press, 2003, pp. 108-109.

On a **website**, check the name of the website and its articles for clues that they contain material relevant to your research question. Consider whether time should have an impact on what information can be considered relevant to your research question. If so:

- Skim any dates, datelines, What's New pages, and press releases to see whether any website content works with the time considerations you need.
- Check for page creation or revision dates that you find. What you've already learned from other sources can also help. For instance, you may know that the information covered by a particular website, which seems relevant, is no longer considered the latest thinking. In that case, you could mark it irrelevant on your little table.
- Skim any site map and index on the website for key words related to your research question.
- Try the key words of your research question in the search box. Do you see enough content about your keywords to make you think parts of the website could be helpful?

For a **research journal article, magazine article, or newspaper article**, think about the title. Does it have something to do with your research question? Consider whether time should have an impact on what sources can be considered relevant. If so:

- Is the publication date of any of these three kinds of articles within your parameters?
- Skim the **abstract** of a journal article to see whether the article works with the time considerations you

need. For instance, if there is a time period in your research question, does the article address the same time period or was it created during that time period?
- Look at the abstract and section headings in a journal article or the early parts of a newspaper or magazine article to locate the problem or question that the article addresses, its solution, and the outline of the article's argument for its main claim. Can those help answer your research question? Do they make it seem as if the article will give you information about what others have written about your research question? Do they offer a description of the situation surrounding your research question?
- Do the journal article's introduction and conclusion sections help you answer your research question and/or offer a description of the situation surrounding your question so you can explain in your final product why the question is important?
- Check whether the journal article's bibliography contains keywords related to your research question. Do the sources cited by the bibliography pertain to your research question? (Bibliographies are especially good places to look for sources.)
- **If you decide the newspaper or magazine article is relevant, look at sources quoted or otherwise identified within it. Those may be additional sources for you.**

For a **book (perhaps in its library catalog listing)**, check whether the title and/or subtitle indicates the book could be about your research question. You can find a lot of such information about the book from its listing in a library catalog. Consider whether time should have an impact on what sources can be considered relevant.

- Is the publication date or copyright date (usually listed in the library catalog or on the back of the book's title page) too early or late for any time constraints in your research question? Maybe it's just right.
- Skim some of the preface and introduction to see whether the book works with the time considerations you need.
- Check the bibliography to see whether the sources cited are about your research question.
- Skim the book's table of contents and any summary chapters to locate the problem or question that the book addresses, its solution, and the broad outline of the book's argument for its main claim. Will any of that be helpful in answering your research question?
- Skim some of the preface and introduction to see whether the book works with the time considerations you need.
- Do those sections give you information about what others have written about your research question?
- Do they offer a description of the situation surrounding your research question?
- Look for your key words in the bibliography. Do the sources cited pertain to your research question?
- Skim the index for topics with the most page references. Do the topics with the most page references pertain to your research question?

ACTIVITY: Follow a Title's Clues for Relevance

Instructions: This quiz asks you to use logic, the titles of sources, and their publication dates, to identify the source *most* likely to be relevant to each research question. (Outside of this quiz, sources are not actually in competition with one another to be relevant. But this seemed like a

good way to have you practice your skills at assessing relevance.) Many titles and dates below are fictitious, but that doesn't affect their relevance within the quiz. Book, journal, website, and newspaper titles are italicized; chapter and article titles are in quotes.

1. For each, read the information about the research question and each source.
2. For each, record your judgments on a little table that you jot down like those illustrated earlier.
3. For each, mark your answer, which should be the most relevant source according to the little table you completed for the question.
4. Check your answers with our feedback.

ACTIVITY: Connecting the Dots Beyond the Title

Instructions: You always need to go beyond the title of a source when judging relevance. In the previous activity, you evaluated the titles of sources for currency and relevance. For this activity, you will investigate beyond the title to see whether one of the (hypothetical) articles named in the last activity is indeed relevant to meeting your information needs.

1. Read the abstract of the article below, using your critical thinking skills to try to identify the information needs of your project it could help you meet.
2. Then answer the questions about which information needs the source can help you meet. (Mark all that apply.)
3. If there is at least one need it can help meet, you should judge the article relevant. Don't forget to compare your answers with our feedback.

Your research question is: How does "prospect theory" in behavioral economics help explain medical doctors' decisions to favor surgery or radiation to cure cancer in patients?

As usual, your information needs are:

- To learn more background information.
- To answer your research question.
- To convince your audience that your answer is correct or, at least, the most reasonable answer.
- To describe the situation surrounding your research question for your audience and explain why it's important,
- To report what others have said about your question, including any different answers to

your research question.

Abstract:

"Cancer Treatment Prescription–Advancing Prospect Theory beyond Economics," in *Journal of The American Medical Association Oncology*, June, 2022. (This article and abstract are fictitious but the journal and its form for abstracts are real.)

Importance Cancer treatment is complex. We expect oncologists to make treatment decisions according to definitive standards of care. Finding out that prospect theory demonstrates that they react very much like most other people when deciding to recommend surgery or chemotherapy for their patients indicates that more self-reflection on oncologists' part could help patients make better decisions. (Prospect theory describes how people choose between alternatives that have risk when the probability of different outcomes is unknown.)

Objective To show whether prospect theory applies to how oncologists framed their recommendations for surgery or chemotherapy for patients in good condition and bad condition.

Design, Settings, and Participants Records of 100 U.S. oncologists were examined for the years 2019 and 2020, which documented patient conditions and the way oncologists framed their recommendations regarding surgery or chemotherapy. Records of nine thousand patients were involved. Thus, a quasiexperimental ex post facto design was used for the study.

Main Outcomes and Measures This study explored the relationship between the way in which the oncologists "framed" the choice of surgery or chemotherapy as they made recommendations to patients, the patients' conditions, and the choice actually made. Those results were compared to what prospect theory would predict for this situation.

Results Physicians seemed to present their recommendation of surgery or chemotherapy in a loss frame (e.g., "This is likely to happen to you if you don't have this procedure") when patients' conditions were poor and in a gain frame (e.g., "By having this procedure, you can probably dramatically cut your chances of reoccurrence") when their conditions were less poor. These results are what prospect theory would have predicted.

Conclusions and Relevance This study opens up the possibility that, as described by prospect theory, a person's choice of framing behavior is not limited to how we naturally act for ourselves but includes how we act for other people, as the oncologists were acting on behalf of their patients. More research is necessary to confirm this line of evidence and determine whether oncologists' decision making and framing is the most effective and entirely according to the best standards of care.

Which information needs could this source help you meet if your research question was: How does "prospect theory" in behavioral economics help explain medical doctors' decisions to favor surgery or radiation to cure cancer in patients?

3. Evaluating for Credibility

Once you have determined that a source is relevant and current, it's very important to evaluate it for credibility. That is, should you be able to trust that source?

The best practices for evaluating credibility have recently changed in interesting ways. Previously, we looked deeper and deeper into the source itself to evaluate it. That was sort of a "vertical" look at the source. But because of research conducted at Stanford University in 2017, now we recommend you instead look at what others have written about your source. Look across other sources at what they have to say about the source you are evaluating so that you are not just accepting what sources say about themselves. This method is called "lateral reading," and we will show you how to do it below.

To sum up right now, if you have not considered what others have written about your source and its author and publisher, you have not evaluated its credibility.

> The new recommendations stem from a 2017 Stanford University study that compared university students' and faculty members' actions to evaluate sources with those of professional fact-checkers. The fact-checkers' actions were superior and faster, the study concluded. You can read about the study yourself at **Lateral Reading: Reading Less and Learning more When Evaluating Digital Information.**

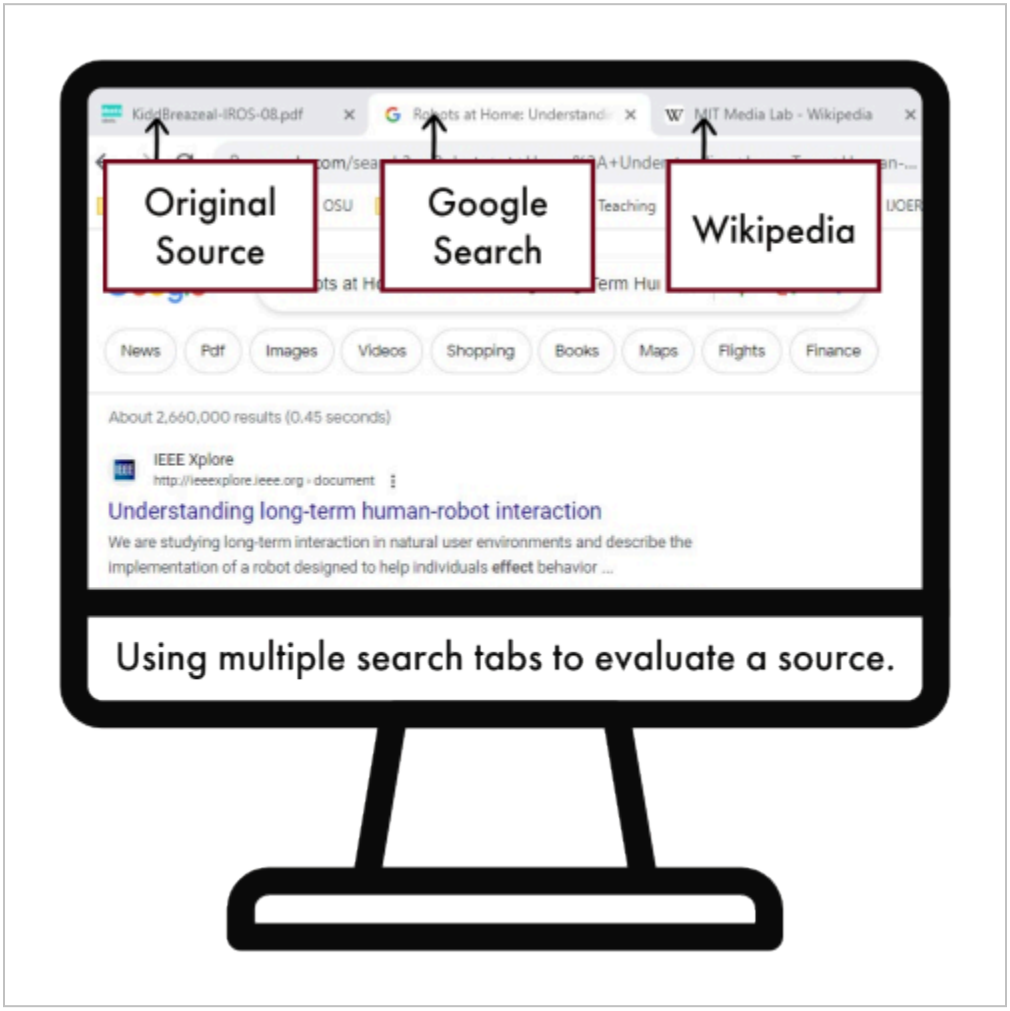
How to Use Lateral Reading+

Here's what we recommend for evaluating credibility of the relevant sources you have found.

The goal is to end up with a list of trustworthy sources. It's from that list you will choose some to answer your research question in your final product and meet the rest of your information needs as you complete your final product. (You can read about your information needs in Chapter 3, What Sources to Use When.)

You will get very fast at this, the more you do it. Remember, you are only checking the credibility of these sources, not whether you will use them. You'll end up identifying trustworthy sources you **can** safely use, not with a list you **will** use. (Help for figuring out which you **will** use is in Chapter 10, Writing Tips.)

Your mental attitude should be one of **skepticism**—make the sources prove to you that they are credible.



A Lateral + Search

Steps for Lateral Reading+

As you take the steps below, keep brief notes on what you find out from Steps 1-5 so that you build a context with which to infer in Step 6 that the source is credible or not credible. (We give you the details about particular steps after this list of steps.)

1. Bring up the relevant source on your screen. (If you are evaluating a relevant print source, have it in front of you.) As you'll see below, you will be reading or viewing one aspect of this source at a time and checking those things out online.
2. Open a new tab to evaluate the source as a whole. You can look on our suggested sites that may be helpful to quickly weed out individual sources that are untrustworthy. Make brief notes on what you find out.
3. Open a new tab to determine what type of source it is. This is important because different kinds of sources usually have more or fewer processes in place to ensure credibility, which is a big clue to whether you can trust them. (To review kinds of sources, see Chapter 2, Types of Sources.) Make brief notes on what you find out.
4. Open a new tab to evaluate whether there is reason to believe the author and/or publisher know what they are talking about. Or do they just have opinions? Make brief notes on what you find out.

5. Open a new tab to evaluate major bits of information the source puts forward as fact. Make brief notes on what you find out.
6. Make your inference about the source's credibility by grading on credibility and record it in your notes: Give it an A (very acceptable), B (good, but could be better), C (OK in a pinch), D (marginal), or E (unacceptable). You may decide to use those sources that received a C or higher grade, although you should obviously prefer those with grades A or B, especially for answering your research question.
7. Go on to the next relevant source you want to evaluate.

Do you notice how almost all of your time is spent looking outside the source itself during those steps? That's lateral reading. The idea is to not spend much time reading a source that may not turn out to be credible.

TIP:

What you should ignore online when determining credibility:

- Whether it's a .com, .org, .edu, or .net. (It is a myth that domains of a URL indicate anything about credibility.)
- Whether it looks aesthetically pleasing.
- Whether the site has advertisements.
- Whether scientific jargon or statistics are used.
- How socially approved a website's or its organization's name is.

Details about Step 2

You'll want to find out what others have thought of your source as a whole. Open a new tab and use Google or Bing to type in the name of the website, the publisher, and/or the author of the source. View some of your initial results.

Has anyone raised concerns about your source? If so, look for assessments of your source on a few of these websites: Wikipedia, NPR, Snopes, Politifact, SciCheck, FactCheck.org, and Washington Post Fact Checker. Wikipedia also has a list of fact-checking websites about political and not-political subjects.

What they found out may make you immediately distrust the source and rule it out. But their reviews of your source—**or lack of a review**–may be positive enough to keep you evaluating it.

Next, look for other websites' assessments of your source among your search results. Your Google results page should show you above each title where each result was published, as is illustrated here for a search for consumerism ecology and here in Google Scholar for the same search. Did others identify any problems or good things about the source? Record that in your notes.

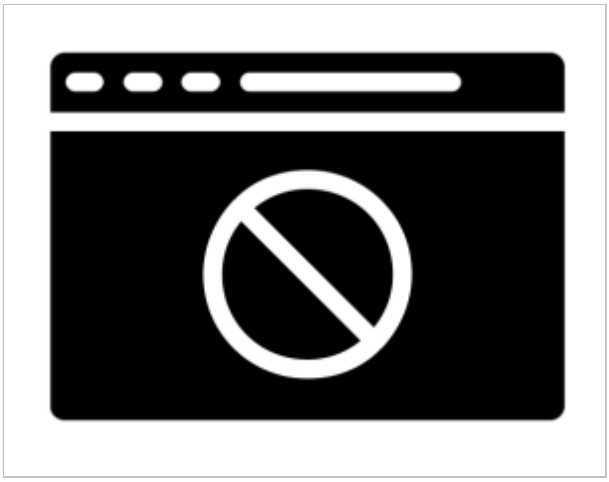
TIPS:

Are you trying to see what others are saying about a journal article? There are tools that track where journal articles (and some conference papers and books) are being cited. Scopus and Web of Science are two library databases that do this. Google Scholar also does this, as well. A few cautions:

- New content hasn't had a chance to get cited.
- Some subject areas may make use of certain formats more than other subjects (books may get more citations in math than in physics, for example).
- Citing something doesn't equal agreeing with it.
- Different subject areas have different citation levels. Areas like medicine or physics articles tend to get more citations than history or literature articles, for example.
- Some journals' items get cited more because of their reputation, but that doesn't mean other titles have bad content.

Details about Step 3

This step accounts for the "+" in "Lateral Reading +". Here's where you determine which **type of source** you're evaluating, which involves thinking about who it was created for. If you get stuck, thinking about what the source's purpose is can help.



Spam by remmachenasreddine from Noun Project (CC BY 3.0)

Figure out who it was created for. Ask yourself whether it is (a) a popular source for everyone, (b) a substantive popular source created for educated people or those very interested in the subject, (c) a professional source created for members of a particular profession, or (d) a scholarly source aimed at scholars and others who want a deep view of a subject. (If you need to brush up on these distinctions, see Chapter 2, Types of Sources.)

You can often get fast clues to what kind of source it is even before clicking on it on your results page in Google or Bing. For instance, the URL may tell you the source was published in an online version of a newspaper or magazine.

Or maybe you searched for the source in Google Scholar or a library database, so you already know that your source is likely to be a professional source or a scholarly article in a research journal. For more on how to tell what each database covers (often called its scope), see Chapter 5, Search Tools. (If you are in a life sciences course, make sure to ask your professor whether Google Scholar is a good search engine for you.)

Wikipedia can sometimes tell you whether your source is a magazine, newspaper, journal, etc. For instance, see what Wikipedia says about Men's Health, Investopedia, and Cell. Library catalogs can also tell you about sources, as these OSU Libraries full catalog entries do about Athletic Business and The Ballad of Songbirds and Snakes.

In general, substantive popular sources, professional sources, and scholarly sources tend to be more credible

than popular sources. That's because the creation of these kinds of sources often involves processes that help ensure their accuracy. (You still need to evaluate them, but it tends to be easier.)

Those processes include ways of preventing inaccuracies (including fact checkers for many substantive popular sources and peer review for scholarly sources) and ways of correcting mistakes that nonetheless occur. For instance, major U.S. newspapers correct previously published information every day or week and research journals retract journal articles whose inaccuracies becomes apparent. Even articles by Nobel laureates have been retracted, as this article in the journal *Nature* illustrates.

Because their processes are so strong, *The New York Times* and The *Washington Post* are considered to be newspapers of record. Other news sources such as the *Wall Street Journal*, *Boston Globe*, *Los Angeles Times*, *Star Tribune* in Minnesota, NPR, PBS, ABC News, CBS News, NBC News, the Associated Press and Bloomberg wire services, and the BBC are also substantive popular sources with strong processes for credibility.

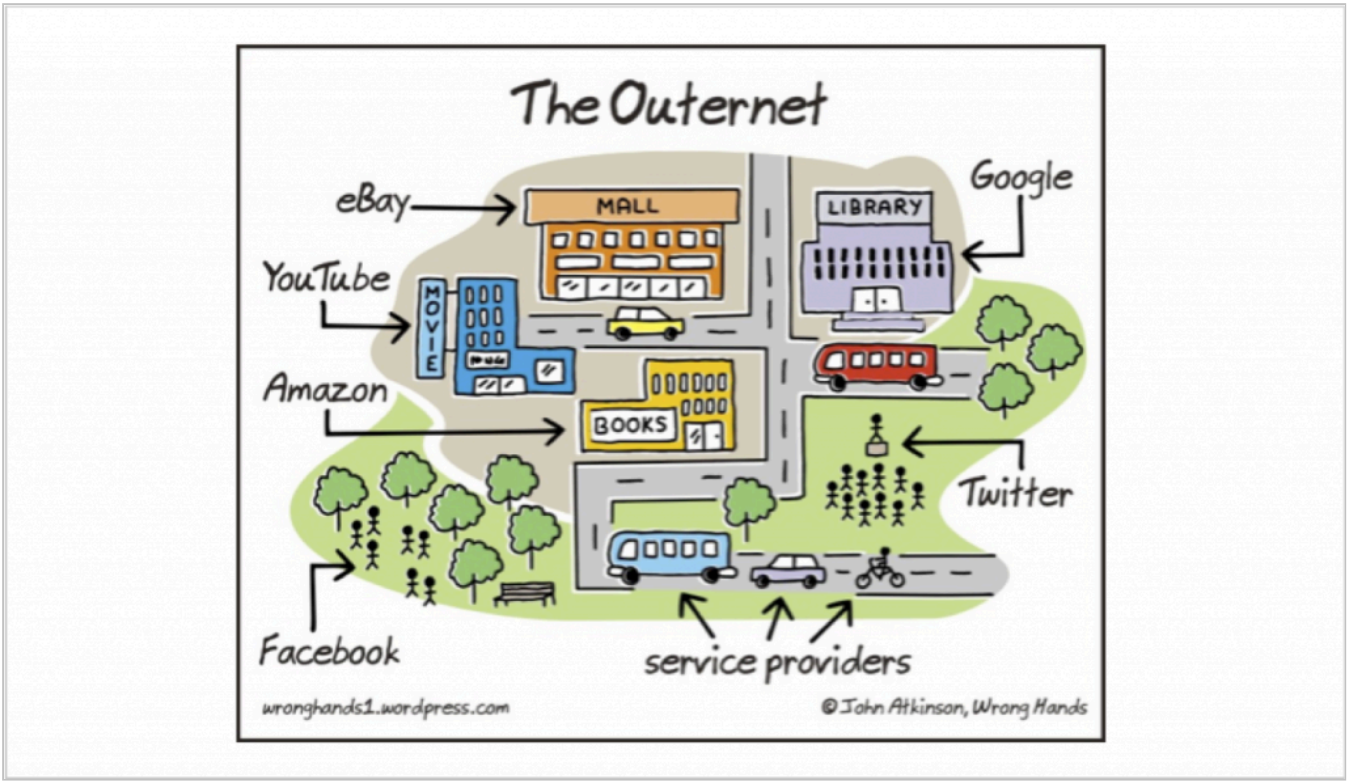
The same is true for magazines such as *The Atlantic*, *The New Yorker, Harpers, National Review, Discover, Popular Science, Popular Mechanics, Psychology Today, Wired, Forbes, The Chronicle of Higher Education, Smithsonian, FiveThirty Eight,* National Geographic, and Slate. TED is also a substantive popular source.

That doesn't mean they and the many, many other credible substantive popular sources never make mistakes. But it means that those like the ones named take special care to be more credible than popular sources in general.

Here's an essay called "Journalism's Essential Value" by the publisher of the *New York Times* about the importance of news sources remaining an independent source of information, unlike many newspapers in Europe (such as the Guardian and the Guardian U.S., which lean left politically) and what some would want here in the U.S. The essay was published in the *Columbia Journalism Review* (a professional source) on May 15, 2023.

If, after considering who the source was created for, you are still unsure of an online source's type, determining the source's purpose can help. To do so, consider what Internet neighborhood the source is published in.

To understand this concept and begin to use it, imagine that all the sites on the web constitute a community. Just like in a geographical community, there are neighborhoods in which individual sites hang out.



Audio: Neighborhoods on the Web

Listen to the audio clip (or read the text version) to hear how intuitive this concept is. After you listen or read, the next activity will show you how to apply the concept.
Listen to Audio | View Text Version

Start making short notes of the clues you found to start building a context for your eventual decision to trust or not trust the source.

ACTIVITY—What Kinds of Sources?

Here's a chance to start evaluating for credibility yourself. To find out what kind of sources are in the questions below, look at each source but then use lateral reading to look outside the source itself.

Source Links:

Scientific American
The Economist
Web of Science
Birds of a Feather Video-Flock Together: Design and Evaluation of an Agency-Based Parrot-to-Parrot Videos-Calling System for Interspecies Ethical Enrichment

Nude Descending a Staircase by Marcel Duchamp
Editor and Publisher
Braiding Sweetgrass by Dr. Robin Kimmerer
Science Friday podcast
"Efficient Evolution of Human Antibodies from General Protein Language Models"

Answer to Self-Check Question above: When that advocacy group is the subject of your research project.

Details about Step 4

Now go back to your source and open up a new tab. **This time you will be identifying who created and published your source and whether you think they are trustworthy about the information in this source.**

As you consider what you learn about the author and/or publisher, ask yourself whether any of your results give you a reason to suspect they are interested in providing misinformation, perhaps for profit or for religious or political reasons.

If so, that doesn't necessarily make it an unacceptable source, depending on your research question. But you should **be aware** of that potential bias of the source because it's part of the context of the conversation around that source.

In addition, if you end up using and citing such a source, you may want to couch your language about it in your final product, as in "These authors say X about Y, although one has to keep in mind what might be their political bias." That way, your instructor will know that you are aware of the whole conversation so far about this source, which always counts as a positive. (See our feedback about the sources in our last activity in this chapter called Your Turn to Evaluate for more on this subject.)

The reputation of the author and publisher influences your confidence in a source.

The more you know about the author and/or publisher, the more confidence you can have in your decision about credibility. Sites that do not identify an author or publisher are generally considered less credible for many purposes, including for research papers and other high-stakes projects. The same is true for sources in other formats, including videos and print.

Authors and publishers can be individuals, organizations, companies, or government agencies. (Webmasters put things on the site but do not usually decide what goes on all but the smallest websites. They often just carry out others' decisions.)

university by ABDUL LATIF from Noun Project (CC BY 3.0)

If your source is online, you may see a hyperlinked author name. Click on that to see if you can get more information about the person. Sometimes, you may see information about them at the bottom of the source. If it's a scholarly journal, book, or conference paper that you are examining, you will often see their affiliation (where they work) – often a university, research lab, museum, or some other institution with experts. Databases like Scopus and Web of Science also allow you to look up authors and see profiles of their research (just be careful to get the right person – some names are very common!).

You may find the publisher's name next to the copyright symbol, ©, at the bottom of at least some pages on a site. In books, the identity of the publisher is traditionally on the back of the title page, with a few sentences about the author on the back cover or on the flap inside the back cover. (But, of course, remember that those comments are those the publisher decided to publish.)

If your source is a website, sometimes it helps to look at the source's URL for whether it belongs to a single person or to a reputable organization. Because many colleges and universities offer blog space to their faculty, staff, and students that uses the university's web domain, this evaluation can require deeper analysis than just looking at the address. Personal blogs may not reflect the official views of an organization or meet the standards of formal publication.

Unless you find information about the author to the contrary, such blogs and websites should not automatically be considered to have as much authority as content that is officially part of the university's site. But you may instead find that the author has a good academic reputation and is using their blog or website to share resources he or she authored and even published elsewhere. That would nudge him or her toward the school's neighborhood of the Intranet and toward credibility.

In this step, you are trying to figure out whether the author and/or publisher publishes serious information and has a "good" reputation. **Is there reason to believe that the author knows what he or she is talking about?** This involves considering what they have published before and where, where they work, and their academic and other credentials.

Don't be automatically impressed with Ph.D. or M.D. degrees. A Ph.D., M.D., or other advanced degree is not automatically a marker of someone you can trust about the information in your source.

Ask yourself whether their academic degree makes sense with the subject matter they are writing about. Someone with a Ph.D. in chemistry, for instance, may not know anything about criminology and whether sentencing guidelines should be changed for Americans convicted of a crime.

College credentials are not the only thing that could matter. Maybe an author has substantial life experience or training that seems sufficient to make them authorities on the subject of your research question. For that reason, for example, a comparatively uneducated person who has lived for many years in a rural county may be able to provide you with information about what that's like that is just as credible as what a university professor of rural sociology can provide.

ACTIVITY: Checking the Authors and/or Publishers

Check out the author and/or publisher of these sources on the web and select things you notice about them that you think should be considered in your decision about the credibility of each. Some answer options are not true, so don't assume an answer option is true until you verify it.

Source Links:

Outsmart Your Brain: Why Learning is Hard and How You Can Make It Easy, by Daniel T. Willingham, Ph.D. Gallery Books, 2023.
"What to Know about Romance Scams"
"The Illusion of Moral Decline." Mastroianni, A.M., Gilbert, D.T. The illusion of moral decline. *Nature* (2023). https://www.nature.com/articles/s41586-023-06137-x#author-information

Looking for what else the author has written can include searching a large library catalog (OSU Library Catalog, OhioLINK, WorldCat@OSU).

If your source is an article, you might also look in Google Scholar. (While you can search for free, you may not be able to retrieve articles unless searching through a library.) Specialized library databases that cover the same topical area as information on a website can also be helpful (and free). For example, use the database ERIC (OSU users only) to locate any articles published by the author on an education website. Scopus and Web of Science are other good examples where you can look. OSU Libraries databases, arranged by subject or guides.osu.edu can also direct your search for information about an author or publisher.

Record whether you consider the author and/or publisher trustworthy in your notes and why or why not.

TIP:

What should help you trust?

- Determining that the source is a substantive popular source, a professional source, or a scholarly source.
- Seeing that other sources you respect trust it.
- Its author/publisher seems expert.
- Its author/publisher seems uninterested in providing misinformation for profit or for religious or political reasons.

Details about Step 5

Go back to your source and start reading or viewing it, engaging in the argument the author is trying to make. Identify major statements of fact the author makes and then check a few of them out on Google, Bing, or any of the search tools or databases and other links listed in Step 4. Keep track of what others have said about your source's statements of fact so that you get an idea of how well their ideas are accepted by others.

Remember, though, that if your source is especially innovative, not everyone may agree with some of its statements of fact and it could still be a credible source. You'll have to use your own critical thinking skills about the topic and your research question as you consider your course's credibility here.

Australia by Milinda Courey from Noun Project (CC BY 3.0)

For example, this New York Times story covers how long and hard two Australian medical researchers had to work to convince other doctors that a bacterium, rather than stress, causes most stomach ulcers—one even infected himself with the bacterium so as to cure the resulting ulcer with a drug. In the story, a former dean of the University of Chicago's Pritzker School of Medicine states that peer review "tends to adhere to things that are consistent with prevailing beliefs and models," and "really new ideas usually just get thought of as crazy."

That fits with the fact that the Australian researchers identified the bacterial cause of ulcers in 1979, but it wasn't until 2005 that they received a Nobel Prize for the importance of that discovery and their persistence in convincing other doctors.

A note about data:

You can use the same skills to evaluate text for credibility to evaluate data. Use the 5Ws and 1H questions to ask yourself:

- **Who** created or owns the data? A non-profit or government organization? A corporation? A lobbyist? Does the individual or organization who created or owns the data have an incentive to collect or present the data in a particular way to support its mission?
- **What** variables were collected and how are these variables defined?
- **Where** did the data originate? If survey data, are the survey demographics relevant for your project? If scientific data, is the material or population sampled relevant for your project?
- **When** was the data first created or last updated?
- **Why** is the data important to you? Will it support your argument? Help you make a decision?
- **How** was the data created? What was the methodology used to collect the data? Was the methodology valid?

Data is influenced by the individuals who design and implement the processes used to collect it. Consider the influence of bias when evaluating both raw and reported data.

ACTIVITY: Your Turn to Evaluate

Use lateral reading to evaluate which of these organizations is more credible. (These sites were used in the 2017 Stanford study cited in Chapter 6.)

1. American Academy of Pediatrics
2. American College of Pediatricians

After Making Your Inferences in Step 6

Success! After evaluating for credibility and making your inferences, you should have a group of sources that you feel confident are not just relevant and current or in the right time period but that are also ones you can trust.

7-Ethical Use of Sources

1. Ethical Use and Citing Sources

It's helpful to understand why to cite your sources.

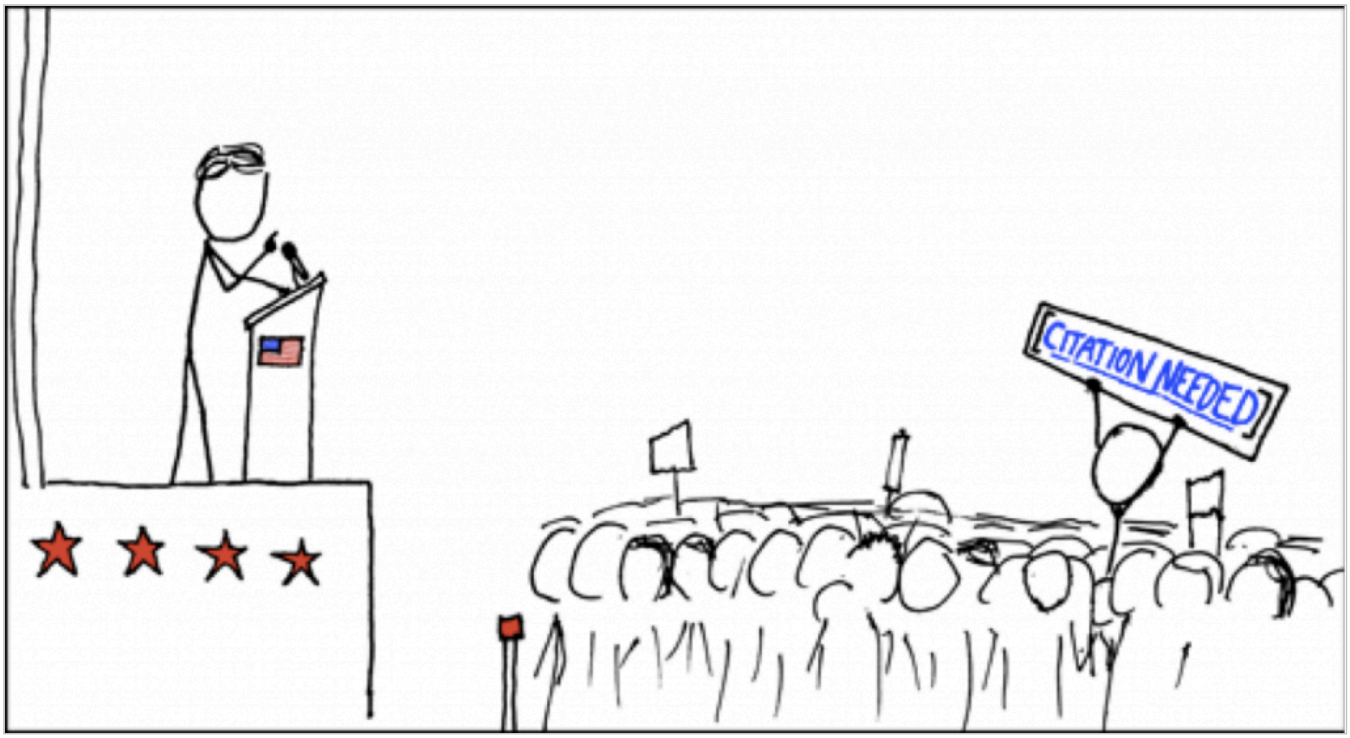
You likely know that research projects always need a reference or a works cited page (also called a bibliography). But have you ever wondered why?

There are some big picture reasons that don't often get articulated that might help you get better at meeting the citation needs of research projects. It's helpful to understand both the theory behind citing, as well as the mechanics of it, to really become a pro.

TIP: How to Cite Sources

This section introduces the concept of citing sources, so you can begin your search for sources with it in mind. See the next section, How to Cite Sources for examples and the steps for citing appropriately.

In everyday life, we often have conversations where we share new insights with each other. Sometimes these are insights we've developed on our own through the course of our own everyday experiences, thinking, and reflection. Sometimes these insights come after talking to other people and learning from additional perspectives. When we relate the new things we have learned to our family, friends, or co-workers, we may or may not fill them in on how these thoughts came to us.



In everyday conversation and political speeches, evidence for arguments is often not provided. (Image source: XKDC)

Academic research leads us to the insight that comes from gaining perspectives and understandings from other people through what we read, watch, and hear. In academic work we must tell our readers who and what led us to our conclusions. Documenting our research is important because people rely on academic research to be authoritative, so it is essential for academic conversation to be as clear as possible. Documentation for clarity is a shared and respected practice, and it represents a core value of the academy called "academic integrity." It is a way to distinguish academic conversations (or discourse) from everyday conversations (or discourse).

It is hard to talk about citation practices without considering some related concepts. Here are some definitions of those concepts that are often mentioned in assignments when citation is required.

What Is Academic Integrity?

Different universities have different definitions. Ohio State University uses this definition:

> Academic integrity is a commitment, even in the face of adversity, to five fundamental values: honesty, trust, fairness, respect, and responsibility. From these values flow principles of behavior that enable academic communities to translate ideals into action.

Please take a few moments to read the Office of Undergraduate Education web page that describes these values in more detail.

In other words, you must take full responsibility for your work, acknowledge your own efforts, and acknowledge the contributions of others' efforts. Working/Writing with integrity requires accurately representing what you

contributed, as well as acknowledging how others have influenced your work. When you are a student, an accurate representation of your knowledge is important because it will allow both you and your professors to know the extent to which you have developed as a scholar. Part of that development is evidenced by how you apply the rules for acknowledging the work of others.

What Is Academic Misconduct?

As you might imagine, academic misconduct is when you do not use integrity in your academic work. Academic misconduct includes many different unacceptable behaviors, but the one most relevant to what we are discussing here is submitting plagiarized work:

> Submitting plagiarized work for an academic requirement. Plagiarism is the representation of another's work or ideas as one's own; it includes the unacknowledged word-for-word use and/or paraphrasing of another person's work, and/or the inappropriate unacknowledged use of another person's ideas.

To see the full definition of academic misconduct, refer to the Ohio State University Code of Student Conduct.

NOTE: Check Your Syllabi

You might have noticed a reference to the Code of Student Conduct on several of your syllabi, as faculty are asked to include this statement for your benefit:

> It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct.

What Is Plagiarism?

Plagiarism is defined by the OSU First Year Experience Office in this way:

> At any stage of the writing process, all academic work submitted to the teacher must be a result of a student's own thought, research or self-expression. When a student submits work purporting to be his or her own, but which in any way borrows organization, ideas, wording or anything else from a source without appropriate acknowledgment of the fact, he/she is engaging in plagiarism.

Take time to look at the full definition, which also describes another form of academic misconduct called "collusion."

Plagiarism can be intentional (knowingly using someone else's work and presenting it as your own) or unintentional (inaccurately or inadequately citing ideas and words from a source). It may be impossible for your

professor to determine whether plagiarized work was intentional or unintentional. But in either case, plagiarism puts both you and your professor in a compromising position.

While academic integrity calls for work resulting from your own effort, scholarship requires that you learn from others. So in the world of academic scholarship you are actually expected to learn new things from others AND come to new insights on your own. There is an implicit understanding that as a student you will be both using others' knowledge as well as your own insights to create new scholarship. To do this in a way that meets academic integrity standards you must acknowledge the part of your work that develops from others' efforts. You do this by citing the work of others. You plagiarize when you fail to acknowledge the work of others and do not follow appropriate citation guidelines.

What Is Citing?

Citing, or citation, is a practice of documenting specific influences on your academic work. See How to Cite Sources for details.

In other words, you must cite all the sources you quote directly, paraphrase, or summarize as you:

- Answer your research question
- Convince your audience
- Describe the situation around your research question and why the question is important
- Report what others have said about your question

2. Why Cite Sources?

As a student citing is important because it shows your reader (or professor) that you have invested time in learning what has already been learned and thought about the topic before offering your own perspective. It is the practice of giving credit to the sources that inform your work.

Our definitions of academic integrity, academic misconduct and plagiarism, also give us important reasons for citing the sources we use to accomplish academic research. Here are all the good reasons for citing.

To Avoid Plagiarism & Maintain Academic Integrity

Misrepresenting your academic achievements by not giving credit to others indicates a lack of academic integrity. This is not only looked down upon by the scholarly community, but it is also punished. When you are a student this could mean a failing grade or even expulsion from the university.

To Acknowledge the Work of Others

One major purpose of citations is to simply provide credit where it is due. When you provide accurate citations, you are acknowledging both the hard work that has gone into producing research and the person(s) who performed that research.

Think about the effort you put into your work (whether essays, reports, or even non-academic jobs): if someone else took credit for your ideas or words, would that seem fair, or would you expect to have your efforts recognized?

To Provide Credibility to Your Work & to Place Your Work in Context

Providing accurate citations puts your work and ideas into an academic context. They tell your reader that you've done your research and know what others have said about your topic. Not only do citations provide context for your work but they also lend credibility and authority to your claims.

For example, if you're researching and writing about sustainability and construction, you should cite experts in sustainability, construction, and sustainable construction in order to demonstrate that you are well-versed in the most common ideas in the fields. Although you can make a claim about sustainable construction after doing research only in that particular field, your claim will carry more weight if you can demonstrate that your claim can be supported by the research of experts in closely related fields as well.

Citing sources about sustainability and construction as well as sustainable construction demonstrates the diversity of views and approaches to the topic. In addition, proper citation also demonstrates the ways in which research is social: no one researches in a vacuum—we all rely on the work of others to help us during the research process.

To Help Your Future Researching Self & Other Researchers Easily Locate Sources

Having accurate citations will help you as a researcher and writer keep track of the sources and information you find so that you can easily find the source again. Accurate citations may take some effort to produce, but they will save you time in the long run. So think of proper citation as a gift to your future researching self!

3. Challenges in Citing Sources

Here are some challenges that might make knowing when and how to cite difficult for you. Our best advice for how to overcome these challenges is in the first item.

Running Out of Time

When you are a student taking many classes simultaneously and facing many deadlines, it may be hard to devote the time needed to doing good scholarship and accurately representing the sources you have used. Research takes time. The sooner you can start and the more time you can devote to it, the better your work will be. From the beginning, be sure to include in your notes where you found information you could quote, paraphrase, and summarize in your final product.

Having to Use Different Styles

Different disciplines require that your citations be in different styles: which publication information is included and in what order. So your citations for different courses could look different, particularly for courses outside your major.

Not Really Understanding the Material You're Using

If you are working in a new field or subject area, you might have difficulty understanding the information from other scholars, thus making it difficult to know how to paraphrase or summarize that work properly.

Running Out of Time

When you are a student taking many classes simultaneously and facing many deadlines, it may be hard to devote the time needed to doing good scholarship and accurately representing the sources you have used. Research takes time. The sooner you can start and the more time you can devote to it, the better your work will be. From the beginning, be sure to include in your notes where you found information you could quote, paraphrase, and summarize in your final product.

Shifting Cultural Expectations of Citation

Because of new technologies that make finding, using, and sharing information easier, many of our cultural expectations around how to do that are changing as well. For example, blog posts often "reference" other articles or works by simply linking to them. It makes it easy for the reader to see where the author's ideas have come from and to view the source very quickly. But in these more informal writings, blog authors do not have a list of citations (bibliographic entries). The links do the work for them. This is a great strategy for online digital

mediums, but this method fails over time when links break and there are no hints (like an author, title and date) to know how else to find the reference, which might have moved.

This example of a cultural change of expectations in the non-academic world might make it seem that there has been a change in academic scholarship as well, or might make people new to academic scholarship even less familiar with citation. But in fact, the expectations around citing sources in academic research remain formal.

8-How to Cite Sources

1. Citation and Citation Styles

Sources that influenced your thinking and research must be cited in academic writing.

Citing sources is an academic convention for keeping track of which sources influenced your own thinking and research. (See Ethical Use of Sources for many good reasons why you should cite others' work.)

Most citations require two parts:

- The full bibliographic citation on the Bibliography page or References page, or Works Cited page of your final product.
- An indication within your text (usually author and publication date and maybe the page number from which you are quoting) that tells your reader where you have used something that needs a citation.

With your in-text citation, your reader will be able to tell which full bibliographic citation you are referring to by paying attention to the author's name and publication date.

Let's look at an example.

EXAMPLE: Citations in Academic Writing

Here's a citation in the text of an academic paper:

> Studies have shown that compared to passive learning, which occurs when students observe a

> lecture, students will learn more and will retain that learning longer if more active methods of teaching and learning are used (Bonwell and Eison 1991; Fink 2003).

The information in parentheses coordinates with a list of full citations at the end of the paper.

At the end of the paper, these bibliographic entries appear in a reference list:

> Bonwell, C. G., and Eison, J. A.1991. "Active learning: Creating excitement in the classroom." ASHE-ERIC Higher Education Rep. No. 1, George Washington Univ., Washington, D.C.
>
> Fink, L. D. 2003. Creating significant learning experiences, Wiley, New York.

You can see the full article [OSU login required] from which this example was taken online.

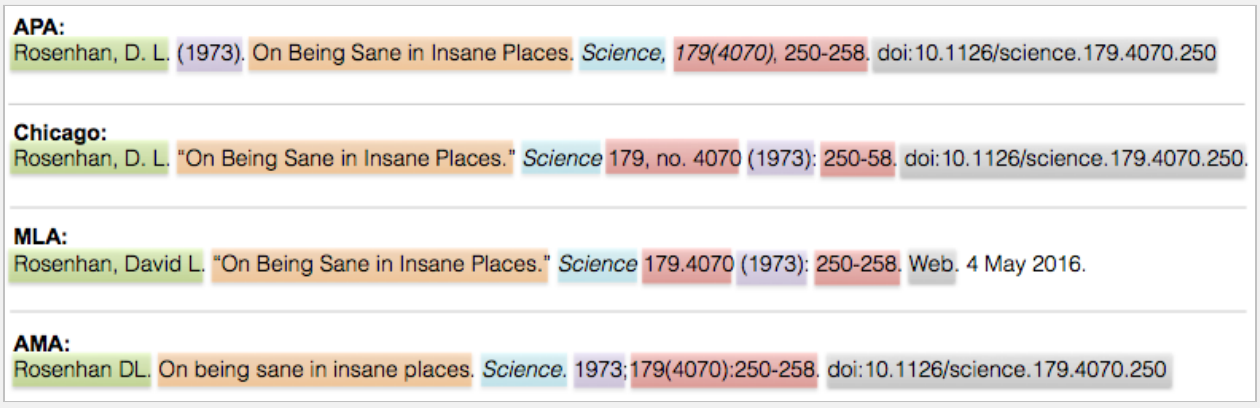
Citation Styles

Style guides set the specific rules for how to create both in-text citations and their full bibliographic citations.

There are over a dozen kinds of citation styles. While each style requires much of the same publication information to be included in a citation, the styles differ from each other in formatting details such as capitalization, punctuation, order of publication information, and whether the author's name is given in full or abbreviated.

EXAMPLE: Differences in Citation Styles

The image below shows bibliographic citations in four common styles. Notice that they contain information about who the author is, article title, journal title, publication year, and information about volume, issue, and pages. Notice also the small differences in punctuation, order of the elements, and formatting that **do make a difference**.



Differences between citation practices occur mainly in formatting.

Compare citation elements (including the punctuation and spacing) in the same color to see how each style handles their information.

2. Steps for Citing

To write a proper citation we recommend following these steps, which will help you maintain accuracy and clarity in acknowledging sources.

Step 1: Choose Your Citation Style

Find out the name of the citation style you must use from your instructor, the directions for an assignment, or what you know your audience or publisher expects. Then search for your style at the Purdue Online Writing Lab (OWL) or use Google or Bing to find your style's stylebook/handbook and then purchase it or ask for it at a library.

Step 2: Create In-Text Citations

Find and read your style's rules about in-text citations, which are usually very thorough. Luckily, there are usually examples provided that make it a lot easier to learn the rules.

EXAMPLE: Style Guides Are Usually Very Thorough

For instance, your style guide may have different rules for when you are citing:

- Quotations rather than summaries rather than paraphrases
- Long, as opposed to short, quotations.
- Sources with one or multiple authors.
- Books, journal articles, interviews and email, or electronic sources.

Step 3: Determine the Kind of Source

After creating your in-text citation, now begin creating the full bibliographic citation that will appear on the References or Bibliography page by deciding what kind of source you have to cite (book, film, journal article, webpage, etc.).

EXAMPLE: Using a Style Guide to Create an In-Text Citation

Imagine that you're using APA style and have the APA style guide rules for in-text citations open in OWL. In your psychogeography paper, you want to quote the authors of the book The Experience of Nature, Rachel Kaplan and Stephen Kaplan, which was published in 1989. What you want to quote is from page 38 of the book.

Here's what you want to quote:

> "The way space is organized provides information about what one might want to do in that space. A relatively brief glance at a scene communicates whether there is room to roam, whether one's path is clear or blocked."

1. Skim the headings in the style guide to remind yourself of what its rules concern.
   Since it has rules about the length of quotations, you count the number of words in what you want to quote and find that your quote has 38, which is within the range for short quotations (less than 40), according to the APA style guide.According to the rule for short quotations, you see that you're supposed to introduce the quote by attributing the quote to the author (last name only) and adding the publication date in parentheses. You write:

   > **According to the Kaplans (1989)**, "The way space is organized provides information about what one might want to do in that space. A relatively brief glance at a scene communicates whether there is room to roam, whether one's path is clear or blocked."

2. Then you notice that the example in the style guide includes the page number on which you found the quotation. It appears at the end of the quote (in parentheses and outside the quote marks but before the period ending the quotation). So you add that:

   > According to the Kaplans (1989), "The way space is organized provides information about what one might want to do in that space. A relatively brief glance at a scene communicates whether there is room to roam, whether one's path is clear or blocked" **(p.38)**.

3. You're feeling pretty good, but then you realize that you have overlooked the rule about having multiple authors. You have two and their last names are both Kaplan. So you change your sentence to:

   > According to **Kaplan and Kaplan** (1989), "The way space is organized provides information about what one might want to do in that space. A relatively brief glance at a scene communicates whether there is room to roam, whether one's path is clear or blocked" (p.38).

   So you have your first in-text citation for your final product:

   > According to Kaplan and Kaplan (1989), "The way space is organized provides information about what one might want to do in that space. A relatively brief glance at a scene communicates whether there is room to roam, whether one's path is clear or blocked" (p.38).

Step 4: Study Your Style's Rules for Bibliographic Citations

Next, you'll need a full bibliographic citation for the same source. This citation will appear on the References page or Bibliography page or Works Cited page. (APA style, which we're using here, requires a page called References.) Bibliographic citations usually contain more publication facts than you used for your in-text citation, and the formatting for all of them is very specific.

EXAMPLE: Bibliographic Citation Rules Are Very Specific

- Rules vary for sources, depending, for instance, on whether they are books, journal articles, or online sources.
- Sometimes lines of the citation must be indented.
- Authors' names usually appear last name first.
- Authors' first names may be initials instead.
- Names of sources may or may not have to be in full.
- Names of some kinds of sources may have to be italicized.
- Names of some sources may have to be in quotes.
- Dates of publication appear in different places, depending on the style.
- Some styles require Digital Object Identifiers (DOIs) in the citations for online sources.

Step 5: Identify Citation Elements

Figure out which bibliographic citation rules apply to the source you've just created an in-text citation for. Then apply them to create your first bibliographic citation.

EXAMPLE: Using a Style Guide to Create a Bibliographic Citation

Imagine that you're using APA style and have the APA style guide rules for bibliographic citations open in OWL. Your citation will be for the book called The Experience of Nature, written by Rachel Kaplan and Stephen Kaplan and published in 1989.

1. You start by trying to apply OWL's basic rules of APA style, which tell you your citation will start with the last name of your author followed by his or her first initial, and that the second line of the citation will be indented. So you write:**Kaplan, R. and Kaplan, S**. and remind yourself to indent the second line when you get there.
2. Since you have two authors, you look for a rule regarding that situation, which requires a comma between the authors and an ampersand between the names. So you write:Kaplan, R., **&** Kaplan, S.
3. Because you know your source is a book, you look for style guide rules and examples about books. For instance, the rules for APA style say that the publication date goes in parentheses, followed by a period after the last author's name. And that the title of the book is italicized. You apply the rules and examples and write the publication information you know about your source:Kaplan, R., & Kaplan, S. **(1989). The Experience of Nature.**
4. Next, you look at the rules and examples of book citations and notice that they show the city where the book was published and the publisher. So you find that information about your source (in a book, usually on the title page or its back) and write:Kaplan, R., & Kaplan, S. (1989). The Experience of Nature. **Cambridge:**
   Cambridge University Press.
5. Congratulations, especially about remembering to indent that line! You have created the first bibliographic citation for your final product.

Step 6: Repeat the steps for creating an in-text citation and a bibliographic citation for each of your sources.

Create your bibliographic citation by arranging publication information to match the example you chose in Step 4. Pay particular attention to what is and is not capitalized and to what punctuation and spaces separate each part that the example illustrates.

MOVIE: Finding the Information You Need: PDF and HTML Journal Articles

3. Citation Software

You may be familiar with the many citation generators that allow you to auto-generate reference lists from citation data. Some allow you to save and store citations to reuse them in different lists and in different work, as needed.

Such tools are worth investigating and learning about for any long-term research project. Zotero is online and available for free to anyone from anywhere. RefWorks and EndNote are available to all OSU students, faculty, and staff from anywhere because OSU Libraries subscribes to this service. For information about using any of these tools, go to software available to OSU students.

Common Citations Tools

Good reasons to use citation generation software include:

- To save time: it takes citation generation software only a few seconds to create a citation.
- To easily convert citations from one style to another.
- To have a centralized source list that is not attached to a specific project, which allows you to reuse references and their citations in various projects.

Care you must use with citation generation software includes:

- Citation generation software is only as good as the information entered into it. In other words, if you provide incorrect information or do not include some information, then your citation will be incorrect.
- Most citation generation software can create citations by searching for the information online. Sometimes software can pull the information from the wrong edition of a source, for example, or specific formatting (such as italics) might be lost. Or perhaps the generator didn't use the latest version of the style guide.
- **Always review the citations you create with this software.**

4. When to Cite

Citing sources is often described as a straightforward, rule-based practice. But in fact, there are many gray areas around citation, and learning how to apply citation guidelines takes practice and education. If you are confused by it, you are not alone – in fact you might be doing some good thinking. Here are some guidelines to help you navigate citation practices.

Cite when you are directly quoting. This is the easiest rule to understand. If you are stating word-for-word what someone else has already written, you must put quotes around those words and you must give credit to the original author. Not doing so would mean that you are letting your reader believe these words are your own and represent your own effort.

Cite when you are summarizing and paraphrasing. This is a trickier area to understand. First of all, summarizing and paraphrasing are two related practices but they are not the same. Summarizing is when you read a text, consider the main points, and provide a shorter version of what you learned. Paraphrasing is when you restate what the original author said in your own words and in your own tone. Both summarizing and paraphrasing require good writing skills and an accurate understanding of the material you are trying to convey. Summarizing and paraphrasing are difficult to do when you are a beginning academic researcher, but these skills become easier to perform over time with practice.

Cite when you are citing something that is highly debatable. For example, if you want to claim that the Patriot Act has been an important tool for national security, you should be prepared to give examples of how it has helped and how experts have claimed that it has helped. Many U.S. citizens concerned that it violates privacy rights won't agree with you, and they will be able to find commentary that the Patriot Act has been more harmful to the nation than helpful. You need to be prepared to show such skeptics that you have experts on your side, too.

TIP: Why Cite Sources?

This section covers how and when to cite sources. For a discussion of *why* to cite sources, see Ethical Use of Sources.

When Don't You Cite?

Don't cite when what you are saying is your own insight. As you learned in The Purpose of Academic Argument, research involves forming opinions and insights around what you learn. You may be citing several sources that have helped you learn, but at some point you must integrate your own opinion, conclusion, or insight into the work. The fact that you are *not* citing it helps the reader understand that this portion of the work is your unique contribution developed through your own research efforts.

Don't cite when you are stating common knowledge. What is common knowledge is sometimes difficult to discern. In general, quick facts like historical dates or events are not cited because they are common knowledge.

Examples of information that would not need to be cited include:

- The Declaration of Independence was signed in 1776.
- Barack Obama became the 44th president of the United States in January, 2009.

Some quick facts, such as statistics, are trickier. For example, the number of gun-related deaths per year

probably should be cited, because there are a lot of ways this number could be determined (does the number include murder only, or suicides and accidents, as well?) and there might be different numbers provided by different organizations, each with an agenda about gun laws.

A guideline that can help with deciding whether or not to cite facts is to determine whether the same data is repeated in multiple sources. If it is not, it is best to cite.

The other thing that makes this determination difficult might be that what seems new and insightful to you might be common knowledge to an expert in the field. You have to use your best judgment, and probably err on the side of over-citing, as you are learning to do academic research. You can seek the advice of your instructor, a writing tutor, or a librarian. Knowing what is and is not common knowledge is a practiced skill that gets easier with time and with your own increased knowledge.

TIP: Why You Can't Cite Wikipedia

You've likely been told at some point that you can't cite Wikipedia, or any encyclopedia for that matter, in your scholarly work.

The reason is that such entries are meant to *prepare* you to do research, not be evidence of your having done it. Wikipedia entries, which are tertiary sources, are already a summary of what is known about the topic. Someone else has already done the labor of synthesizing lots of information into a concise and quick way of learning about the topic.

So while Wikipedia is a great shortcut for getting context, background, and a quick lesson on topics that might not be familiar to you, don't quote, paraphrase, or summarize from it. Just use it to educate yourself.

Wikipedia, while good for early research and background information, shouldn't be cited as a source because it's already a summary.

ACTIVITY: To Cite or Not to Cite?

Open activity in a web browser.

9-Making an Argument

1. The Purpose of Academic Argument

Scholarly conversation makes an argument for a given point of view.

Nearly all scholarly writing makes an argument. That's because its purpose is to create and share new knowledge so it can be debated in order to confirm, dis-confirm, or improve it. That arguing takes place mostly in journals and scholarly books and at conferences. It's called the scholarly conversation, and it's that conversation that moves forward what we humans know.

TIP: Prezi on Scholarly Publishing

View an overview of the different ways in which scholars share their work with each other and the public.

2. Components of an Argument

Making an argument in an essay, research paper, blog post or other college writing task is like laying out a case in court. Just as there are conventions that attorneys must adhere to as they make their arguments in court, there are conventions in arguments made in research assignments. Among those conventions is to use the components of an argument.

NOTE:

This section on making an argument was developed with the help of "Making Good Arguments" in *The Craft of Research*, by Wayne Booth, Gregory Colomb, and Joseph Williams, University of Chicago Press, 2003.

The arguments you're used to hearing or participating in with friends about something that is uncertain or that needs to be decided contain the same components as the ones you'll need to use in academic writing. Arguments contain those components because those are the ones that work—used together, they stand the best chance of persuading others that you are correct.

For instance, the question gets things started off. The claim, or thesis, tells people what you consider a true way of describing a thing, situation, relationship, or phenomenon or what action you think should be taken. The reservations, alternatives, and objections that someone else brings up in your sources (or that you imagine your readers logically might have) allow you to demonstrate how your reasons and evidence (maybe) overcome that kind of thinking—and (you hope) your claim/thesis comes out stronger for having withstood that test.

ACTIVITY: Labeled Components

Read the short dialog on pages 114 and 115 in the ebook *The Craft of Research* by Wayne Booth, Gregory Colomb, and Joseph Williams. The components of an argument are labeled for you.

EXAMPLE: Argument as a Dialog

Here's a dialog of an argument, with the most important components labeled.

Jerald: Where should we have my parents take us for dinner when they're here on Sunday? *[He asks the question about something that's unsettled.]*

Cathy: We should go to The Cascades! *[She makes her main claim to answer the question.]* It's the nicest place around. *[Another claim, which functions as a reason for the main claim.]*

Jerald: How so? *[He asks for a reason to believe her claims.]*

Cathy: White table cloths. *[She gives a reason.]*

Jerald: What's that have to do with how good the food is? *[He doesn't see how her reason is relevant to the claim.]*

Cathy: Table cloths make restaurants seem upscale. *[She relates her reason for the claims.]* And I've read a survey in Columbus Metro that says the Cascades is one of the most popular restaurants in town. *[She offers evidence.]*

Jerald: I never read the Metro. And Dino's has table cloths. *[He offers a point that contradicts her reason.]*

Cathy: I know, but those are checkered! I'm talking about heavy white ones. *[She acknowledges his point and responds to it.]*

Jerald: My dad loves Italian food. I guess he's kind of a checkered-table-cloth kind of guy? *[He raises another reservation or objection.]*

Cathy: Yeah, but? Well, I know The Cascades has some Italian things on the menu. I mean, it's not known for its Italian food but you can order it there. Given how nice the place is, it will probably be gourmet Italian food. *[She acknowledges his point and responds to it. There's another claim in there.]*

Jerald: Ha! My dad, the gourmet? Hey, maybe this place is too expensive. *[He raises another reservation.]*

Cathy: More than someplace like Dino's. *[She concedes his point.]*

Jerald: Yeah. *[He agrees.]*

Cathy: But everybody eats at The Cascades with their parents while they're students here, so it can't be outlandishly expensive. *[She now puts limits on how much she's conceding.]*

ACTIVITY: Components of an Argument

Open activity in a web browser.

3. Order of the Components

The order in which the components should appear in your argument essays, papers, and posters may depend on which discipline your course is in. So always adhere to the advice provided by your professor and what you learn in class.

One common arrangement for argument essays and research papers is to begin with an introduction that explains why the situation is important—why the reader should care about it. Your research question will probably not appear, but your answer to it (your thesis, or claim) usually appears as the last sentence or two of the introduction.

The body of your essay or paper follows and consists of:

- Your reasons the thesis is correct or at least reasonable.
- The evidence that supports each reason, often occurring right after the reason the evidence supports.
- An acknowledgement that some people have/could have objections, reservations, counterarguments, or alternative solutions to your argument and a statement of each. (Posters often don't have room for this component.)
- A response to each acknowledgement that explains why that criticism is incorrect or not very important. Sometimes you might have to concede a point you think is unimportant, if you can't really refute it.

(Again, posters often don't have much room for this part of an argument.)

After the body, the paper or essay ends with a conclusion, which states your thesis in a slightly different way than occurred in the introduction. The conclusion also may mention why research on this situation is important. (Posters often don't have much room for this component.)

A Blueprint for Argument

It's no accident that people are said to **make** arguments—they're all constructed, and these components are the building blocks. The components are important because of what they contribute. The components generally, though not always, appear in a certain order because they build on or respond to one another.

For example, the thesis or claim is derived from the initial question. The reasons are bolstered by evidence to support the claim. Objections are raised, acknowledged and subsequently responded to.

The components of argument build on each other.

ACTIVITY: Order of Argument Components

Open activity in a web browser.

4. Where You Get the Components

This section will help you figure that out which components may come from your professor, which you just have to think about, which you have to write, and which you have to find in your sources.

Here, again, are the components we'll cover:

- The research question you (or your professor) wanted answered.
- Your claim or thesis.
- One or more reasons for your thesis.
- Evidence for each reason.
- Others' objections, counterarguments, or alternative solutions.
- Your acknowledgment of others' objections, counterarguments, or alternative solutions.
- Your response to others' objections, counterarguments, or alternative solutions.

The Question You Wanted Answered

Sometimes your professor will give you the research question, but probably more often he or she will expect you to develop your own from an assigned topic. You learned how to develop research questions in another section. Though vitally important, they are often not stated in essays or research papers but are usually stated in reports of original studies, such as theses, dissertations, and journal articles.

EXAMPLES: Research Questions for Hypothetical Essays or Term Papers

- How do at least some animals' bones help control their weight?
- Did the death of his beloved daughter have any effect on the writings of Mark Twain?

Your Claim or Thesis

You write the claim or thesis–it doesn't come directly from a source. Instead, it is the conclusion you come to in answer to your question after you've read/listened to/viewed some sources. So it is a statement, not a question or a hypothesis that you plan to prove or disprove with your research.

After you've read/listened to/viewed more sources, you may need to change your thesis. That happens all the time–not because you did anything wrong but because you learned more.

EXAMPLES: Claims (or Theses) for Hypothetical Essays or Term Papers

- Bone cells monitor whether more or less weight is pressing down on the skeleton and send biochemical signals to appetite centers in their brains to turn appetite down or up, accordingly.
- Mark Twain wrote more urgently and with less humor during the four years immediately after the death of his daughter.

One or More Reasons

You write what you believe makes your claim or thesis (the answer to your research question) true. That's your reason or reasons. Each reason is a summary statement of evidence you found in your research. The kinds of evidence considered convincing varies by discipline, so you will be looking at different sources, depending on your discipline. How many reasons you need depends on how complex your thesis and subject matter are, what you found in your sources, and how long your essay or research paper must be. It's always a good idea to write your reasons in a way that is easy for your audience to understand and be persuaded by.

EXAMPLES: Reasons in Hypothetical Essays or Term Papers

- Animals (including humans) have a biological tendency to regain any weight that they lose and lose any weight that they gain, seemingly in an effort to maintain whatever weight they have sustained for some time. Skeletons are logical places where any gains or losses could be noted, and recent studies seem to show that osteocytes (a kind of bone cell) are involved in whether appetites go up or down after weight gain or loss.
- My content analysis and a comparison of publication rates four years before and after Mark Twain's daughter died indicate that his writing was more urgent and less humorous for four years after. It is reasonable to conclude that her death caused that change.

Evidence for Each Reason

You write this also. This is the evidence you summarized earlier as each reason your thesis is true. You will be directly quoting, paraphrasing, and summarizing your sources to make the case that your answer to your research question is correct, or at least reasonable.

EXAMPLES: Evidence for Reasons in Hypothetical Essays or Term Papers

- Report the results of studies about osteocyctes' possible effect on weight grain or loss.
- Report the results of your comparison of writing content and publication rate before and after Twain's daughter's death.

Others' Objections, Counterarguments, or Alternative Solutions

Do any of your sources not agree with your thesis? You'll have to bring those up in your research paper. In addition, put yourself in your readers' shoes. What might they not find logical in your argument? In other words, which reason(s) and corresponding evidence might they find lacking? Did you find clues to what these could be

in your sources? Or maybe you can imagine them thinking some aspect of what you think is evidence doesn't make sense.

EXAMPLES: Objections, Counterarguments, or Alternative Solutions in Hypothetical Essays or Term Papers

- Imagine that some readers might think: The hormone leptin is released by fat cells when they are added to animals' bodies so it is leptin that tells appetite centers to turn down when weight is gained.
- Imagine that some readers might think: Computerized content analysis tools are sort of blunt instruments and shouldn't be used to do precise work like this.

Your Acknowledgement of Others' Objections, Counterarguments, or Alternative Solutions

So what will you write to bring up each of those objections, counterarguments, and alternative solutions? Some examples:

- I can imagine skeptics wanting to point out...
- Perhaps some readers would say...
- I think those who come from XYZ would differ with me...

It all depends on what objections, counterarguments, and alternative solutions your audience or your imagination come up with.

EXAMPLES: Acknowledgement of Others' Objections, Counterarguments, or Alternative Solutions in Hypothetical Essays or Term Papers:

- Some readers may point out that the hormone leptin, which is released by fat cells, signals appetite centers to lower the appetite when weight is gained.
- Readers may think that a computerized content analysis tool cannot do justice to the subtleties of text.

Response to Others' Objections, Counterarguments, or Alternative Solutions

You must write your response to each objection, counterargument, or alternative solution brought up or that you've thought of. (You're likely to have found clues for what to say in your sources.) The reason you have to include this is that you can't very easily convince your audience until you show them how your claim stacks up against the opinions and reasoning of other people who don't at the moment agree with you.

EXAMPLES: Response to Others' Objections, Counterarguments, or Alternative Solutions in Hypothetical Essays or Term Papers:

- But leptin must not be the entire system, since many animals do keep on the new weight.
- Unlike other content tools, the XYZ Content Analysis Measure is able to take into account an author's tone.

ACTIVITY: Quick Check

Open activity in a web browser.

Here is our Plan for Sources form from Sources and Information Needs updated with information from this section on where in your final product you'll likely use particular kinds of sources. This one is filled out for a research paper as an example. You can download a blank copy to use with your own projects at http://go.osu.edu/planforsources. (Our Source Locator can help you figure out where to look for sources.)

Plan for Sources				
Course: ARTS & SCIENCES 3200		Due Date: 2/15/16	Type of Final Product: term paper	
Research Question: In what ways has the checklist movement affected surgery patient outcomes in U.S. hospitals?				
Information Needs / Argument Component / Parts of Final Product		Kinds of Sources (Popular, Professional, or Scholarly) That Should Meet Each Need	Publication Formats Likely to be Helpful in Meeting Each Need	Where to Look
To answer your research question / Thesis / Last couple sentences of introduction	✔	Professional Scholarly (Original and secondary sources are usually best.)	Books Research journal articles Conference papers	Library catalog Library databases Google Scholar
To convince your audience / Evidence / Body	✔	Professional Scholarly (Original and secondary sources are usually best.)	Books Research journal articles Conference papers	Library catalog Library databases Google Scholar
To report what others have said / Evidence / Body	✔	Professional Scholarly	Any, including professional blogs and association websites and publications Research journal articles Conference papers	Google and Bing Library databases Google Scholar
To describe the situation and why it's important / Introduction / Conclusion	✔	Popular Professional	Any, including magazine articles, professional blogs, and association websites and publications	Google and Bing

Your plan for sources should include where to use them in your final product.

EXAMPLE: Where to Use Your Sources in a Term Paper

Information need: To answer your research question(s) (and present your thesis statement)
Use Sources: Last couple of sentences of introduction

Information Need: To convince your audience that your answer is correct or, at least, the most reasonable answer.
Use Sources: Evidence / Body

Information Need: To report what others have said about your question, including any different answers to your research question.
Use Sources: Evidence / Body

Information Need: To describe the situation surrounding your research question for your audience and explain why it's important.
Use Sources: Introduction / Conclusion

10-Writing Tips

1. Writing Tips

This section features advice for using sources well in your writing projects.

If your final product is a research paper or essay, much of your writing will be devoted to:

- Reporting what others have said about your research question.
- Answering your research question.
- Convincing your audience that your answer is correct or, at least, the most reasonable answer (giving them evidence).
- Describing the situation surrounding your research question for your audience and explaining why it's important.

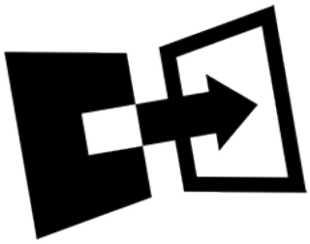
To do that writing, you will often use direct quotes from your sources and will paraphrase and summarize sources. But how should you choose which technique to use and when?

When to Quote, Paraphrase, or Summarize

Choose a direct quote when:

- It is more likely to be accurate than summarizing or paraphrasing would be.
- When what you're quoting is the text you're analyzing.
- When a direct quote is more concise than a summary or paraphrase would be and conciseness matters.
- When the author is a particular authority whose exact words would lend credence to your argument.

When the author has used particularly effective language that is just too good to pass up.



Choose to paraphrase or summarize rather than to quote directly when the meaning is more important than the particular language the author used and you don't need to use the author's preeminent authority to bolster your argument at the moment.

Choose to summarize instead of paraphrasing when you need to provide a brief overview of a larger text. Summaries let you condense the resource material to draw out particular points, omit unrelated or unimportant points, and simplify how the author conveyed thier message.

Tip: Citing Sources
Remember to cite your sources when quoting, paraphrasing, and summarizing. See How to Cite Sources for details.

Activity: Quote, Paraphrase, or Summarize?

2. Helping Others Follow

As you switch from component to component in your paper, you'll be making what are called rhetorical moves—taking subsequent steps to move your argument along and be persuasive. Your readers will probably know what you're doing because the components in everyday oral arguments are the same as in written arguments. But *why* you're switching between components of your argument, and with these particular sources, might be less clear.

Note:

The ideas and examples in this section are informed by all five editions of *They Say/I Say*, by Gerald Graff and Cathy Birkenstein, and published by W.W. Norton and Company. The third edition of the *They Say/I Say* provides templates of actual language to be used in written arguments. This can be extremely helpful to beginning writers because it takes some of the mystery out of what to say and when to say it. For these templates, check the book out from your library. (OSU only)

You can help readers follow your argument by inserting phrases that signal why you're doing what you're doing. Here are some examples:

- **To state that what you're saying in your thesis (answer to your research question) is in opposition to what others have said:**
  "Many people have believed ..., but I have a different opinion."
- **To move from a reason to a summary of a research study that supports it (evidence):**
  "Now let's take a look at the supporting research.
- **To introduce a summary of a resource you've just mentioned**:
  "The point they make is..."
- **If the objection is that you're not being realistic:**
  "But am I being realistic?"
- **To acknowledge an objection you believe a reader could have:**
  "At this point, I should turn to an objection some are likely to be raising..."
- **To move from the body of an essay to the conclusion:**
  "So in conclusion..."

Phrases like these can help facilitate your argument in your readers' minds, making it a lot easier for them to quickly understand it instead of getting stuck on figuring out why you're bringing something up at a particular point. You will have pulled them into an argument conversation.

Examples: The Language of Arguments

The blog that accompanies the book *They Say/I Say* with Readings, by Gerald Graff, Cathy Birkenstein, and Russel Durst, contains short, well-constructed contemporary arguments from a

variety of publications. Take a look at the They Say/I Say blog for a moment and read part of at least one of the readings to see how it can be helpful to you the next time you have to make a written argument.

Additional Advice Sources

- Take a look at these sites for argument essay advice for students:
  - Tips and Tools– Ohio State Center for the Study and Teaching of Writing
  - Introductions, Body Paragraphs, and Conclusions for an Argument Paper – Purdue Online Writing Lab (OWL)
  - Argument Handout – University of North Carolina Writing Center
  - Rewriting: how to do things with texts – Utah State University Press (Project Muse affiliates only)

3. Synthesis of Your Own Ideas

Professors usually want to see evidence of your own thinking in your essays and papers. Even so, it will be your thoughts in reaction to each of your sources:

- What was the author really trying to say?
- What parts of the source do you agree with?
- What parts of the source do you disagree with?
- Did they leave anything out?
- What does an author's work lead you to say?

It's wise to not only analyze—take apart for study—the sources, but also to try to combine your own ideas with ideas you found in class and in the sources.

Professors frequently expect you to interpret, make inferences, and otherwise synthesize—bring ideas together to make something new or find a new way of looking at something old. It might help to think of synthesis as the opposite of analysis.

Activity: Creative Thinking

Synthesis is a creative act. Are there places, things, activities, or situations that you already use to spark your creativity? Sometimes even simple things can help us be more creative. Take a look at the NPR article 5 Ways to Spark Your Creativity for some tips.

The book *Thinker Toys*, 2nd edition, by Michael Michalko, may help you expand your ability to think creatively.

Getting Better at Synthesis

To get an A on essays and papers in many courses, such as literature and history, what you write in reaction to others' work should use synthesis to create new meaning or show a deeper understanding of what you learned.
|
To do so, it helps to look for connections and patterns. One way to synthesize when writing an argument essay, paper, or other project is to look for themes among your sources. So try categorizing ideas by topic rather than by source—making associations across sources.

Synthesis can seem difficult, particularly if you are used to analyzing others' points but not used to making your own. Like most things, however, it gets easier as you get more experienced at it. So don't be hard on yourself if it seems difficult at first.

EXAMPLE: Synthesis in an Argument

Here's an example of synthesis: Imagine that you have to write an argument essay about Woody Allen's 2011 movie *Midnight in Paris*. Your topic is "nostalgia," and the movie is the only source you can use. In the movie, a successful young screenwriter named Gil is visiting Paris with his girlfriend and her parents, who are more politically conservative than he is.

: Inexplicably, every midnight he time-travels back to 1920's Paris, a time period he's always found fascinating, especially because of the writers and painters—Hemingway, Fitzgerald, Picasso—that he's now on a first-name basis with. Gil is enchanted and always wants to stay. But every morning, he's back in real-time—feeling out of sync with his girlfriend and her parents.

You've tried to come up with a narrower topic, but so far nothing seems right. Suddenly, you start paying more attention to the girlfriend's parents' dialogue about politics, which amount to such phrases as "we have to go back to...," "it was a better time," "Americans used to be able to..." and "the way it used to be."

And then it clicks with you that the girlfriend's parents are like Gil—longing for a different time, whether real or imagined. **That kind of idea generation is synthesis.**

You decide to write your essay to answer the research question: How is the motivation of Gil's girlfriend's parents similar to Gil's? Your thesis becomes "Despite seeming to be not very much alike, Gil and the parents are similarly motivated, and Woody Allen meant *Midnight in Paris*'s message about nostalgia to be applied to all of them."

Of course, you'll have to try to convince your readers that your thesis is valid and you may or not be successful—but that's true with all theses. And your professor will be glad to see the synthesis.

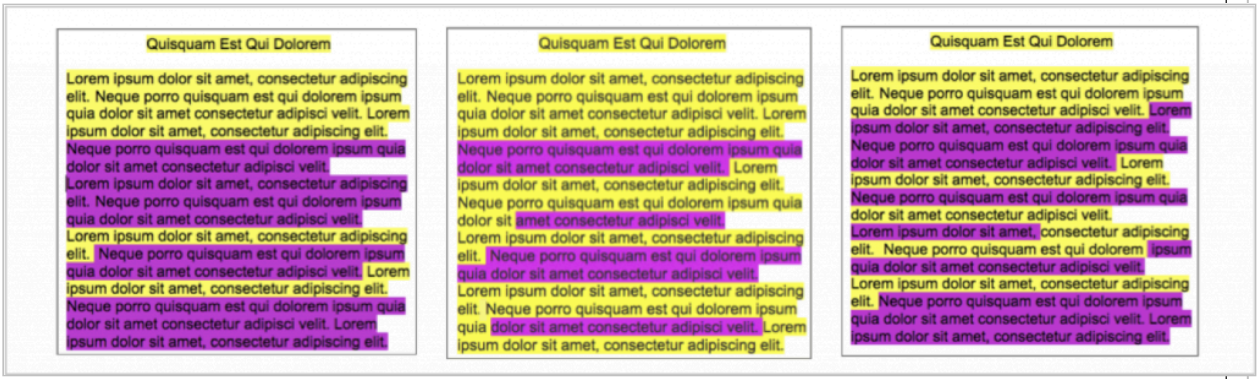
There is a lot more you can learn about creating synthesis in scholarly writing. One place synthesis is usually required is in literature reviews for honors' theses, master's theses, and Ph.D. dissertations. In all those cases, literature reviews are intended to contribute more than annotated bibliographies do and to be arguments for the research conducted for the theses or dissertations. You will find more help with Susan Imel's Writing a Literature Review in *The Handbook of Scholarly Writing and Publishing* (OSU only), edited by Tonette S. Rocco and Tim Hatcher, 2011.

Activity: Balancing Sources and Synthesis

Here's a technique to quickly assess whether there is enough of your original thought in your essay or paper, as opposed to information from your sources: Highlight what you have included as quotes, paraphrases, and summaries from your sources. Next, highlight in another color what

you have written yourself. Then take a look at the pages and decide whether there is enough you in them.

For the mocked-up pages below, assume that the yellow-highlighted lines were written by the writer and the pink-highlighted lines are quotes, paraphrases, and summaries she pulled from her sources. Which page most demonstrates the writer's own ideas? See the answer below.



Mocked-up passages showing the division between quotes, paraphrases, summaries, and original ideas

Source: Joy McGregor. "A Visual Approach: Teaching Synthesis," School Library Monthly, Volume XXVII, Number 8/May-June 2011.

Answer to Activity: Balancing Sources and Synthesis

The answer to the "Balancing Sources and Synthesis" Activity above is:

The Middle Sample.

The yellow-highlighted sections in The Middle Sample show more contributions from the author than from quotes, paraphrases, and summaries of other sources.

11-Copyright Basics

1. What Is Copyright?

Copyright gives creators an incentive to produce and share new works by granting them exclusive rights to their work for a limited time.

Copyright is the law. While digital technology has made some aspects of copyright more complex, knowing the basics can help you to use material legally and to protect your own creative works.

You create copyrighted works regularly. When you write an original email or paper, record a song or video, or take a photograph you have created a work that is protected by copyright. It is important to know how to manage your rights as a creator.

Every day you work with copyrighted materials created by other people. Whenever you read a book, download a song, stream a video or play a video game, you are potentially dealing with copyrighted materials. It is important to understand what is and is not covered by copyright law and the ways you may use these works under the law.

Copyright Law

U.S. Copyright Law has its origin in the U.S. Constitution:

> The Congress shall have the power ... to promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.
>
> – U.S. Constitution Article 1, Section 8

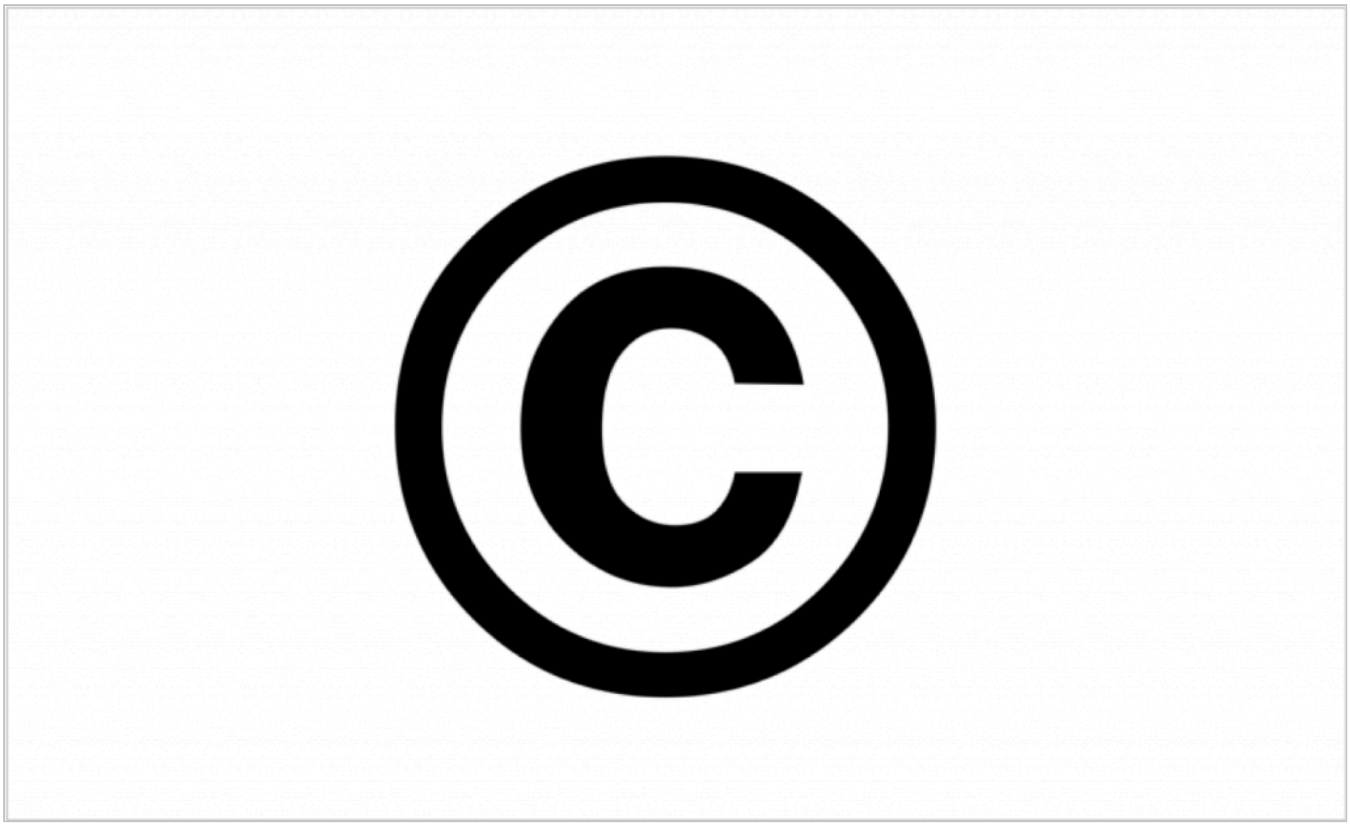
The U.S. Congress has the power to create laws that govern copyright. (Image Source: National Archives and Records Administration, Public Domain.)

The purpose of copyright is to encourage the creation and sharing of creative works. Copyright gives creators an economic incentive to produce and share new works by granting them exclusive rights to their work for a limited time. This provides an opportunity for a creator to benefit from his or her work.

Congress determines the limits of this monopoly, including the length of time that copyright lasts. These limits can (and have) changed over time.

2. What Copyright Covers

The kinds of works covered by copyright are listed in Section 102 of the Copyright Act. In order for a work to be covered by copyright, it must be an original work of authorship fixed in any tangible medium of expression. (See the detailed explanations below.)



Copyright covers original work that is fixed in a tangible medium of expression.

There are several types of works that can be protected, including:

- Literary works
- Musical works, including any accompanying words
- Dramatic works, including any accompanying music
- Pantomimes and choreography
- Pictorial, graphic, and sculptural works
- Motion pictures and other audiovisual works
- Sound recordings
- Architectural works

These categories are broad and can include print and digital works, such as email, computer software, web pages, and video games.

DEFINITION: Original Work of Authorship

In copyright law, originality means that a work is independently created and possesses at least a minimum amount of creativity. For example, an alphabetized list of names and phone numbers would not receive copyright protection because it required no creativity to produce. Under the law, it does not matter how much time or effort you put into creating a work; if the work does not meet the minimum amount of creativity, it will not receive copyright protection.

DEFINITION: Tangible Medium of Expression

For a work to be "fixed in a tangible medium," it must exist in some perceptible format for more than a transitory duration. For example, a work that is fixed in a tangible medium could be written on paper, saved to a computer hard drive, or recorded on film. An improvised jazz performance that is not recorded would not have copyright protection, because the creative expression of the musician has not been saved in any tangible format.

What ISN'T Covered by Copyright?

Not all works are covered by copyright. Those not covered include:

Works already in the public domain (discussed in detail later in this book)

- *Moby Dick*
- Shakespeare's plays
- Beethoven's works

Works not fixed in a tangible medium

- A song in your head, but not recorded or written down

Ideas

- Boy meets girl, they fall in love and live happily ever after
- Hero protagonist saves the world with the help of wacky sidekick

Facts

- 1+1=2
- George IV died in 1830
- Copenhagen is the capital of Denmark

Works of the U.S. government produced by government employees

- Federal government reports
- Acts/Bills of Congress
- www.whitehouse.gov

Copyright in Cases of a Work Made for Hire

If you create something as part of your job duties, it is likely a work made for hire. In these cases, the employer is considered the author and rights holder of a work made for hire rather than the employee.

Read the United States Copyright Office's Works Made for Hire circular for a more nuanced discussion.

ACTIVITY: Copyrightable?

Open activity in a web browser.

3. Rights Granted by Copyright

So, now that you know what kinds of works are covered by copyright, what exactly are the rights granted to a copyright holder?

Six exclusive rights are granted to the author of a copyrighted work. We call these the author's bundle of rights. This means the copyright holder is the only person who has the right to do these things and has the authority to grant permission for others to do these things, with some important exceptions that we will discuss later in this chapter.

If you are not the copyright holder and want to do any of the examples, you may need to get permission to do so from the holder of the copyright.

AUTHOR'S BUNDLE OF RIGHTS

To Reproduce

- Example: Making physical and digital copies.

To Prepare Derivative Works

- Example: Creating foreign language translations, movie adaptation of a book, etc.

To Distribute

- Example: Selling, renting, lending, or leasing a work online or in physical copies.

To Perform Publicly

- Example: Performing a play, showing a movie, or reading aloud from a book to an audience outside of your normal circle of family or friends.
- Example: Playing recorded music in clubs, restaurants, stores, on the radio, etc.

To Display Publicly

- Example: Displaying in a gallery, putting posters on a noticeboard, etc.

To Perform Publicly a sound recording by means of a digital audio transmission

- Example: Streaming music online.

ACTIVITY: Author Rights

Open activity in a web browser.

When Does Copyright Apply?

Under current U.S. law, copyright applies as soon as an original work is fixed in a tangible medium of expression. This means that when you save a file, take a photograph, record a song, or paint a picture your work has copyright protection.

As the creator, provided that the work is not a work made for hire, you are the owner of the copyright on your work. You do not have to register the work with the U.S. Copyright Office, publish it, or put a copyright notice on it.

If you wish to give away, sell or license any or all of the copyright on your work, you have the right to do so.

If you give away or sell your exclusive copyright to someone else, you no longer have the rights mentioned above and need to treat the work the same as any other copyrighted work created by someone else.

See Public Domain and Term of Copyright later in this section for details about the duration of copyright.

4. Respecting Copyright

While working with other people's copyrighted works, remember that their works are under copyright protection from the moment of creation.

Additionally, U.S. Copyright Law applies to works found on the Internet. Many of the works you find online are protected by copyright, even if there is no copyright notice. Your ability to access copyrighted materials on the Internet, including public social media accounts, does not necessarily mean that you have the right to use, reuse and distribute the works in any manner you wish. It is important to respect copyright, whether the works are in a physical or digital format.

Risks of Infringing Copyright

If you violate one or more of the exclusive rights of a copyright owner, the copyright owner can bring a claim against you for copyright infringement. There are a few different penalties that are possible if you are accused of copyright infringement:

- Under specific circumstances, U.S. copyright law allows criminal prosecution in cases of willful infringement.
- If the infringing work is online, such as a video posted to YouTube, the copyright owner can request the material be taken down. This may be done through a Cease-and-Desist Letter or DMCA Takedown Notice. The material will be taken down and you will be notified of the accusation of infringement. If you believe that your use of the material is legal, you can respond with your explanation of why. Some Internet Service Providers will cut off your access if you receive too many takedown notices.
- The copyright owner can sue you. They could ask for an injunction to stop your use of their work. They can also ask for either actual damages or statutory damages. Actual damages are the actual amount of money the copyright owner lost due to your activity plus any profit you made from using the work. These can be hard to determine, so the law alternatively allows for statutory damages under certain conditions. These are a set range, from $750 to $30,000 per infringed work, that the judge or jury awards to the rights holder if you are found guilty. These damages can increase to $150,000 per infringed work if your use is determined to be a "willful" infringement and can go no lower than $200 per infringed work for cases of "innocent" infringement.
- Some rights holders may offer the option of settling out of court. This agreed settlement may be cheaper than the cost of a trial for the rights holder and you.

The accusation of infringement is not the same as a conviction. You always have the right to defend your use.

5. Exceptions to Copyright

U.S. Copyright Law includes exceptions that limit the rights of the copyright holder. These exceptions allow for certain uses of copyrighted material without seeking permission. Congress created these exceptions in order to balance the rights of creators and users and to enable some socially beneficial uses of copyrighted works.

Some of these exceptions are explained below.

Fair Use

Fair Use (Sec. 107) allows for various uses of copyrighted works. This is the most flexible of the exceptions in the copyright law and can apply in a wide variety of situations.

To learn more check out our section on Fair Use.

Reproduction for Libraries

Section 108 of the Copyright Act allows libraries and archives to make copies of copyrighted works under very specific conditions. For example, a patron can ask the library to make a copy of a journal article or portion of a book in the library's collection as long as it is for the patron's personal study.

First Sale Doctrine

The first sale doctrine (Sec. 109) allows you to distribute a legally acquired physical copy of a copyrighted work. This allows libraries to lend books and individuals to lend or sell used books, movies or CDs.

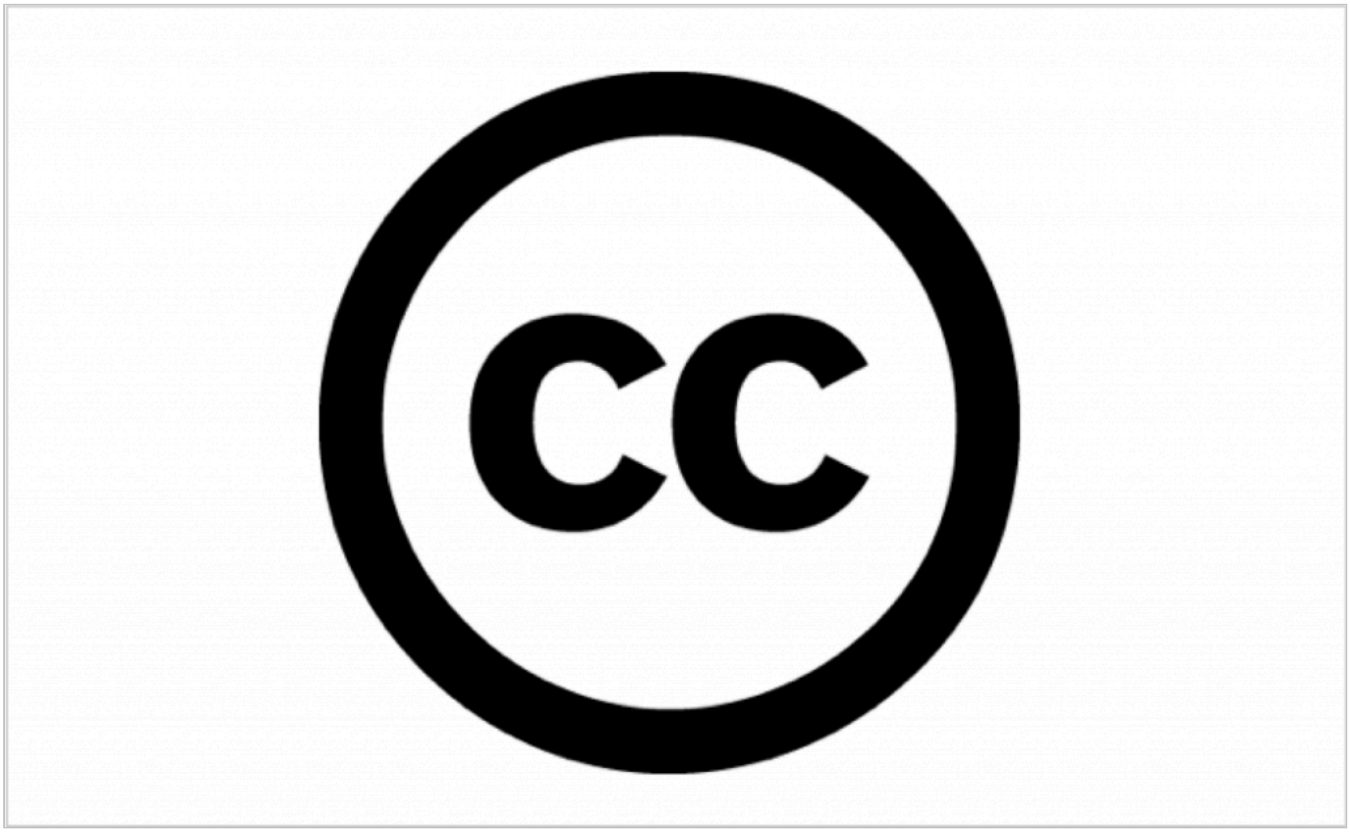
Classroom Display or Performance

Under Section 110(1) it is okay to display or perform copyrighted works in a face-to-face classroom setting at a non-profit educational institution. This allows a teacher to show a video or students to display multimedia projects in class. Section 110(2) allows for the display or performance of copyrighted works for distance learning (e.g., on a course management system), but you must fulfill many specific requirements in order to qualify for this exception.

6. Creative Commons - An Open Option

The internet has made the creation and sharing of creative works much easier than it has ever been. Most of these new works are protected by copyright as soon as they are created. But not everyone wants to lock up their creativity behind the protection of copyright. Many people want their work to be freely shared and even built upon.

Creative Commons (CC) was developed out of the desire to make it easier to share and use copyrighted works. Creative Commons allows a creator to grant licenses to their work that could include the ability to share, adapt and/or use material for commercial purposes without having to ask for permission. The creators still own the copyright, but they proactively decide to let others use their works under certain conditions.



Creative Commons allows a creator to grant licenses to their work without requiring they grant individual permission.

MOVIE: Get Creative

The origin and adventures of the creative commons licensing project.

ACTIVITY: Finding Creative Commons Works

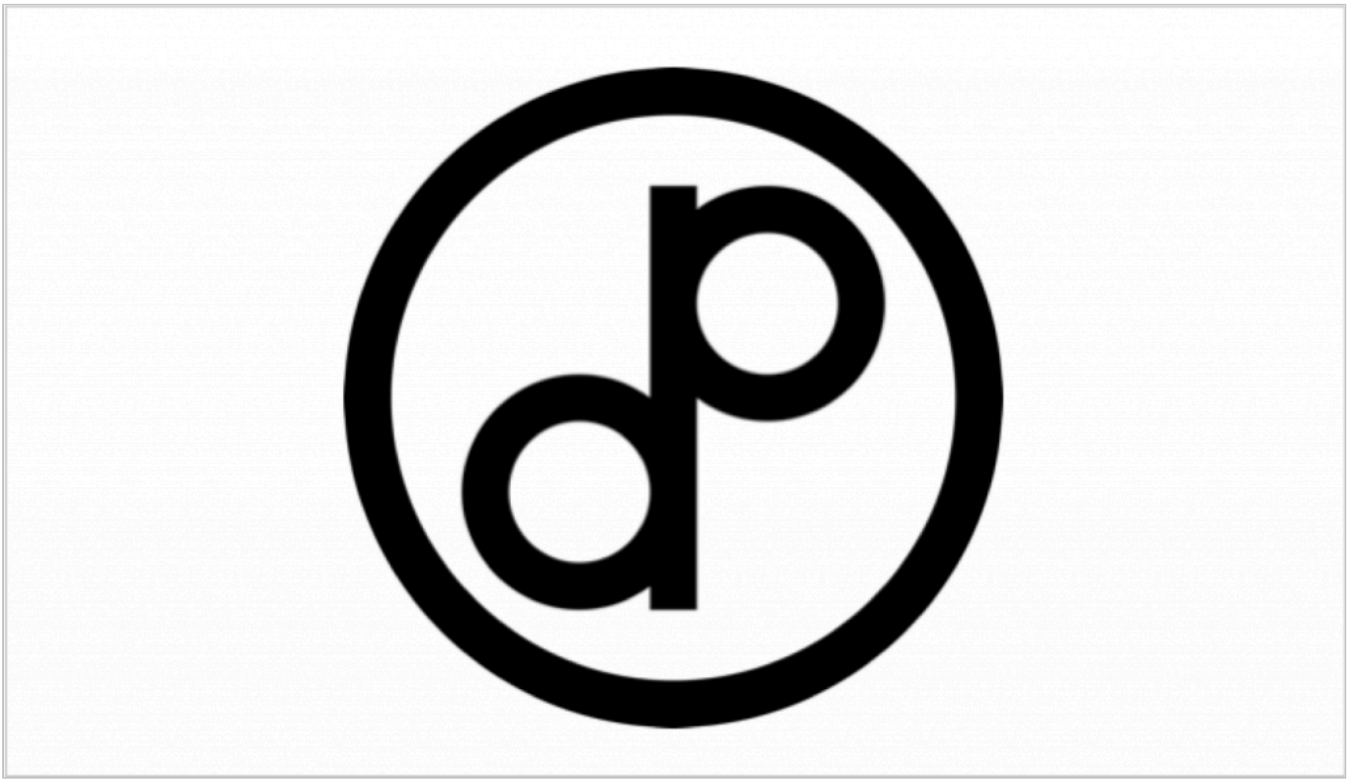
Many websites include CC licensed works. You can search them to find materials that you can freely use in creating your own work provided that you comply with the terms of the license. You can also upload your own CC licensed works to share with others.

Examples include:

- Flickr
- YouTube
- The Noun Project
- Wikipedia's Wikimedia Commons

7. Public Domain and Term of Copyright

Copyright protection of a work doesn't last forever. Once the copyright term ends for a work, it enters the public domain. This means that no one owns the rights to the work anymore, so the work may be used by anyone, for any purpose, without permission. The public domain includes works where copyright has expired and works that were never protected by copyright in the first place (such as works of the U.S. federal government created by federal employees).



The public domain includes works where copyright has expired and works that were never protected by copyright.

Activity: Finding Works in the Public Domain

The public domain provides a great source of materials that you can use for any purpose, without requesting permission or paying a fee. The internet is full of useful sites that can help you find Public Domain materials, including:

- Copyright Services: Find Public Domain and Openly Licensed Materials
- HathiTrust
- Internet Archive
- Project Gutenberg

When Does a Work Enter The Public Domain?

Congress has placed a limitation on the length of copyright so that works can eventually become part of the public domain and be re-used and built upon by others. Over the years, due to U.S. participation in international treaties and changes to U.S. copyright law, the term of copyright has changed significantly.

The current term is:

- 70 years after death of author. If there are multiple authors, then it is 70 years after the death of the last author.
- If corporate, or anonymous, authorship the term is either 95 years from date of first publication, or 120 years from the date of creation, whichever comes first.

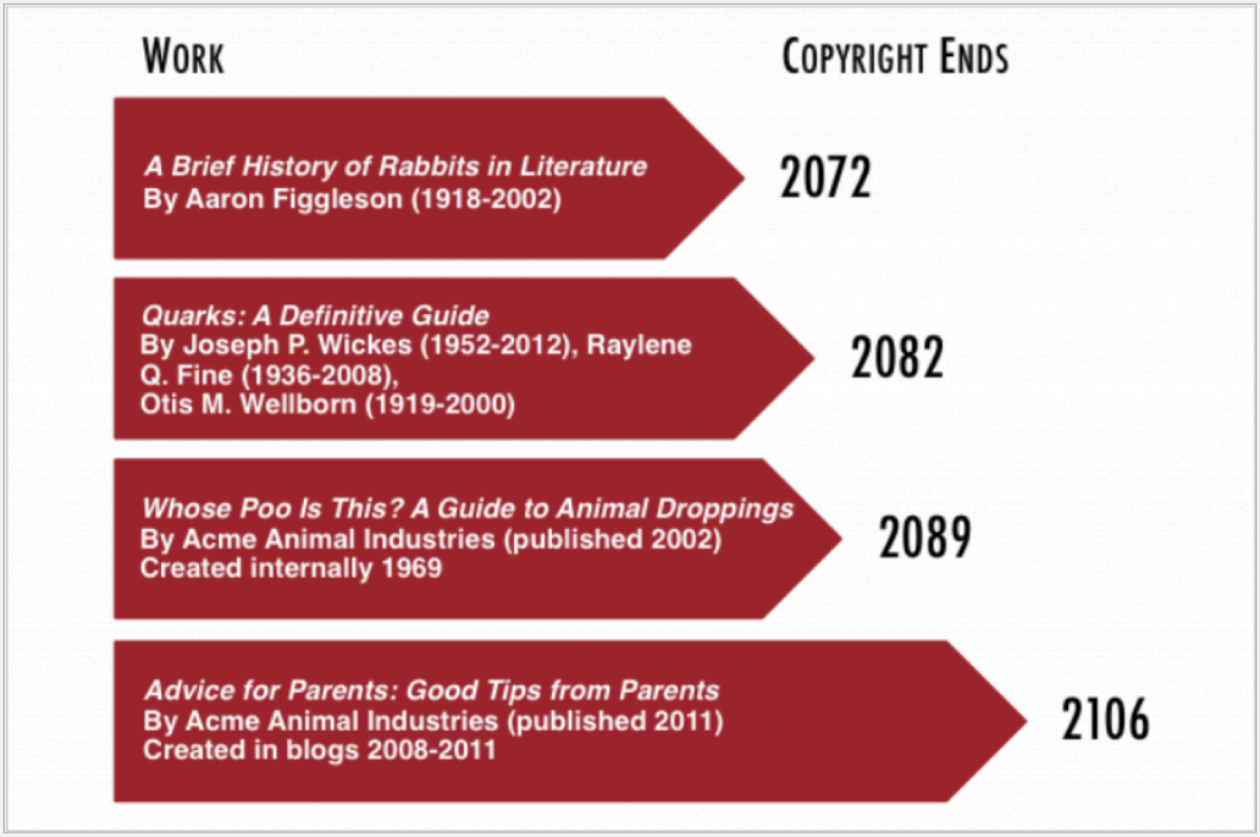
Term of Copyright

Since the duration of copyright has changed throughout the years, it can be difficult to determine when copyright expires for a particular work. Below are links to a couple of online sources to help you determine when a particular work enters the public domain.

- Copyright Term and the Public Domain in the United States
- ALA Copyright Genie

EXAMPLES: Copyright Duration

The duration of copyright depends on when the work was created and whether it was the work of a single author, multiple authors, or an anonymous or corporate author.



Copyright terms are based on factors such as the date of death of the author and on what laws were in effect when a work was created.

- *A Brief History of Rabbits in Literature* by Aaron Figgleson (1918-2002):
  Copyright ends 2072 – 70 years after the author's death
- *Quarks: A Definitive Guide* by Joseph P. Wickes (1952-2012, Raylene O. Fine (1936-2008), and Otis M. Wellborn (1919-2000):
  Copyright ends 2082 – 70 years after the death of the last author to die
- *Whose Poo Is This? A Guide to Animal Droppings* by Acme Animal Industries (published 2002) – Created internally 1969:
  Copyright ends 2089 – 120 years from the date of creation
- *Advice for Parents: Good Tips from Parents by* Acme Animal Industries (published 2011) – Created in blogs 2008-2011:
  Copyright ends 2106 – 95 years from the date of first publication

12-Fair Use

1. What Is Fair Use?

Fair Use is an exception to U.S. copyright law that allows use of copyrighted work under certain conditions.

Are you incorporating any materials in your research final product that were created by someone else, such as images or text from other works? These materials could be protected by copyright. For example, content you find online, text, books, movies, songs, email, images, and videos are most likely copyrighted. Fortunately, U.S. copyright law includes an exception that could allow you to use copyrighted work in your assignments for class.

However, if you would like to share your research product outside of the classroom (such as on a webpage or blog or in your portfolio), you will need permission from the copyright owner(s) unless your use is covered under another statutory exception. Fair use is one such exception, and it can apply to a wide variety of uses.

Note: Fair Use and Educational Use

Fair Use plays an important role in education. Although educational use receives several protections in copyright law, not all educational use is automatically fair use. It's important to know that there are limits to how you can use others' creative works even as a student or teacher in the classroom.

In this section, you will learn about fair use and strategies to help determine whether or not a proposed use of someone else's copyrighted works falls under the fair use exception. Understanding

how to properly perform a fair use analysis and assert your fair use rights can help you to build upon others' works with confidence.

Fair Use and Copyright – A Balance

Copyright in the U.S. is intended to promote the creation of new works by providing an incentive for creators. However, recognizing that new works often build on or incorporate existing works, the law strikes a balance between the rights of creators and the rights of users via exceptions to the exclusive rights of the creator.

The fair use exception is detailed in Section 107 of the U.S. Copyright Act. Unlike other copyright exceptions, fair use is flexible and can apply to a broad array of uses. It is designed to be adaptable to new uses and technologies so that Congress doesn't have to create new exceptions before a new technology can be utilized.

Movie: What Is Fair Use?

Watch a short introduction to fair use from Copyright Services.

2. The Four Factors

Most of the copyright exceptions are very specific about what kinds of uses may qualify for the exception and often include various restrictions about who can use the exception and under what precise conditions.

Fair use, on the other hand, is much more flexible and can apply to a wide variety of uses. Instead of specifying an exact type of user, type of material or amount that qualifies for this exception, the fair use statute provides a framework for the analysis and application of four factors that determine whether or not a particular use may qualify as fair use.

The four factors of fair use are:

- Purpose & character of use, including whether commercial (i.e., publishing a book) or non-commercial (i.e., using in a classroom assignment)
- Nature of the original material (i.e., is the work published or unpublished? Fact or fiction? Highly creative?)
- Amount and substantiality of the original work (are you using the entire work or just a portion?)
- Effect on the market for the work (will your use have a substantial negative financial impact on the creator or market for the work? Will your use be a substitute for the original work?)

When considering whether a proposed use of a copyrighted work may qualify as fair use, you must weigh all four factors together.

Transformation

The courts have recently emphasized the concept of transformation or a transformative purpose, which falls under the first factor of fair use.

Transformation means that the way in which the work is being used is different than the original use for which it was created, adding a new expression, meaning, or message.

In many cases a transformative use of a copyrighted work will strongly favor a determination of fair use.

There are two ways in which a use can be transformative.

First, you could actually make changes to the original work in order to use it for a new purpose. An example would be to take short clips of popular movies and remix them to create a video for the purpose of social commentary or teaching.

The second form of transformative use does not require that you alter the original work in any way. Instead, you use the work for a purpose that is significantly different than the use for which it was created. An example of this would be using clips from a blockbuster movie that was originally sold for mass market entertainment for the purpose of teaching and research.

Movie: *Remix Culture*

See examples of remixing that fall under fair use.

3. Evaluating Your Case for Fair Use

Copyright law lacks specificity, so it can be difficult to determine whether or not a particular use may qualify as fair use. Fortunately, there are a number of useful tools available online to help you consider the four fair use factors as they apply to your intended use.

A Fair Use Checklist can be very helpful for conducting a fair use analysis. The checklist indicates various criteria for each factor which have been found in a court of law to favor or oppose a finding of fair use. It is highly recommended that you use a fair use checklist to evaluate the strength of your argument for fair use.

Movie: Follow the Four Factors of Fair Use

Watch this video to see a fair use analysis using a fair use checklist.

In a fair use analysis, you consider each of the four factors in light of your proposed use and determine whether your use is favoring or opposing fair use for that factor. You then weigh all four factors together. You cannot rely on a numerical tallying of criteria in favor and opposing fair use in order to make a determination. You must consider all four factors holistically and determine if, taken as a whole, they favor or oppose fair use, and to what extent (e.g., strongly favoring fair use, slightly favoring, etc.).

- If, overall, your use favors fair use, then you may decide to proceed.
- If your use instead opposes fair use, you should reassess your use and determine if you can make any changes that could strengthen your case for fair use.

There are other tools in addition to the checklist that can help you conduct a fair use analysis. The American Library Association has developed a tool called the Fair Use Evaluator.

ACTIVITY: Fair Use Criteria

Visit the Fair Use Checklist and review the criteria for each of the four factors.

ACTIVITY: Fair Use or Not Fair Use?

Open activity in a web browser.

Tips for Best Practice

While it is important to perform a fair use evaluation for each and every use of copyrighted material, there are some general rules that can often help you to strengthen a fair use claim.

Below are a few tips to consider when relying on the fair use exception in order to use copyrighted works in your endeavors.

- **Use only lawfully acquired copyrighted works** – To be able to claim fair use you must have used a legal copy of the original work.
- **Acknowledge all of your sources with a bibliographic citation** – Giving proper credit to the original creator demonstrates good faith and may help strengthen your fair use case.
- **Use only the amount of the original work that you need to accomplish your goal** – Since the amount of the original work that is used is one of the fair use factors, it is always important to only use what you need and not add extra material.
- **Restrict the audience and/or make only the number of copies that you need** – The less you copy and share the parts of the original work, the less effect you have on the market for it.
- **Use Creative Commons licensed or public domain works** – If you use works that expressly allow you to use them or have no copyright protection, you do not need to rely on fair use and can be more confident that your use is legal.
- **Use works that you created** – If you created it, you own the copyright, with the exception of works made for hire. (When you create things for your job, typically your employer owns the copyright.)

If you are in doubt about your fair use claim, either reassess and make changes to your proposed use in order to make a stronger claim or ask for permission to use the copyrighted material – It is much easier to make changes or ask for permission before you use copyrighted material than to get hit with an infringement claim and have to make changes or face a law suit after your use.

Further Reading on Fair Use

A number of groups have developed Codes of Best Practices in Fair Use for different types of activities. These

codes propose examples of fair use within specific communities of practice. Below are links to some of these Codes of Best Practices.

- Code of Best Practices in Fair Use for Online Video
- Code of Best Practices in Fair Use for Poetry
- Code of Best Practices in Fair Use for OpenCourseWare
- Documentary Filmmakers' Statement of Best Practices in Fair Use
- Association of Research Libraries Code of Best Practices in Fair Use for Academic and Research Libraries

4. Common Examples of Fair Use

Students and teachers rely on fair use in order to accomplish many of their educational goals. Below are some, but by no means all, educational activities that rely upon fair use.

Student Projects

Includes both media and text.

Your fair use analysis will change depending on how the project is presented, for example only the professor sees it, you share it with the whole class, you present it to a group outside of the class, or you post it online for anyone to see.

Course Reserves

Includes electronic reserves.

Instructors may in some situations, rely on fair use to copy or post small portions of books or journals for supplementary student readings, but cannot copy entire copyrighted works as a replacement for materials that students would normally be required to purchase.

Sound or Video Clips for Teaching

Students and teachers can make use of video or sound clips in creating multi-media presentations for use in the classroom.

Digitization Projects

Many university libraries rely on fair use in order to create large scale digitization projects that preserve older materials, as well as providing improved access to their collections for the purpose of research. For an example of this type of digitization project check out the HathiTrust Digital Library.

Content in Scholarly Articles

It is common to quote other researchers' writings or use others' images, graphs or charts in your own scholarly writing. These practices have long been considered acceptable under fair use.

Access for People with Disabilities

When specific exemptions don't fit.

While there are specific exceptions that allow for making copies of copyrighted works in order to provide access to the blind or other people with disabilities, they are sometimes too narrow to provide complete access. In these cases it is possible to rely upon fair use in order to provide access to materials.

Fair Use for Non-Educational Purposes

Fair use is not only available for educational purposes. Many other commercial and non-commercial activities depend upon fair use. Some of these common fair uses include:

- Quotes in books, news reports and blogs
- Mash-ups and remixes
- Parody, such as on television shows like South Park or Saturday Night Live
- Video or sound clips in documentary films
- Thumbnail images on search engines

Movie: Sesame Street: Gone With the Wind

Check out this parody from Sesame Street.

Myths about Fair Use

Many people have heard of fair use and have some ideas about what it is. Unfortunately, there are many myths or misunderstandings about exactly what fair use covers, what the law states or how it can be applied. Below we dispel just a few of the most common myths about fair use.

Myth 1: All educational use is fair use.

Fact: While many educational uses are considered fair use, there are some activities that do not meet the fair use criteria. For example, a teacher can't make copies of an entire text book so that students don't have to buy it.

Myth 2: Every educational use is transformative.

Fact: Using copyrighted works for teaching can often be a transformative use, but not always. For example, using a text book created to teach Biology 101 to teach Biology 101 is not transformative.

Myth 3: All socially beneficial use is fair use.

Fact: Fair use is designed to help balance the rights of the creator and the social benefit of using copyrighted works in certain ways. Not all uses of copyrighted works that would be socially beneficial, however, qualify as fair use. For example, scanning and posting an entire medical text book online for anyone to access for free is socially beneficial but probably not fair use.

Myth 4: All commercial use precludes fair use.

Fact: Many commercial activities, such as newspapers and online news sites, rely heavily on fair use.

Myth 5: It is not possible to have a fair use when a permissions scheme exists for a work.

Fact: Just because rights holders are willing to charge you to use their copyrighted material, does not mean that

fair use cannot apply. For example, the Associated Press created a licensing scheme to quote from AP stories but quoting from news stories has long been considered fair use.

Myth 6: Fair use specifies a percentage or amount of a work that is okay to use.

Fact: The law does not state that using 10% of a book or 30 seconds of a song or video clip is fair use. You can often use more than these arbitrary limits, while sometimes using even less might not be fair use. The amount of the original work used is only one of the four factors to consider.

13-Roles of Research Sources

1. Thinking About Roles of Sources

Knowing how to use your "players" effectively improves the outcome. (Image source: Scott Stuart)

Does this nightmare sound like how you feel every time you have to write a research paper?

> *Your team is playing in the big game and you're the coach. (Maybe the real coach missed the plane. Who knows–it's a nightmare!) The stakes are high. You know your players are good athletes—you have access to the best and plenty of them. But you don't really know good strategies of the game, so you don't quite know how to use your players. For instance, is it better to keep your quarterback fresh by substituting often? Your kicker is not as bulky as your tackles. Is that typical of good kickers or should you find somebody else? And what about your linemen—can they tackle as well as block?*

What makes this a nightmare is *not knowing* how to use your players in a high-pressure game. Unfortunately, that situation is similar to writing a research paper if all you know are directions like these:

> Your paper must be in 12 pt. font, Times New Roman, double spaced with no more than 1" margins, and include a minimum of 8 total articles comprised of:
>
> - At least 2 peer-review articles
> - 3 (no more than 6) popular articles (magazine or newspaper)
> - 2 (no more than 4) electronic sources (website or blog)

So you know you need sources. But directions like those aren't much help with what to actually ***do*** with the

sources in your paper. Even with credible sources, it's very difficult to write a persuasive paper until you learn the roles that sources play—how you can use them—within your paper.

But who said anything about a ***persuasive*** paper? Perhaps one of the things you don't know is that with most research papers and essays, the ***unstated expectation*** is that you will use your sources to make an argument. That's because most scholarly writing makes an argument. You will be arguing that your answer to your research question (your thesis) is correct, or at least reasonable.

Obviously, it's high time someone helped you learn all this!

For both professionals and student researchers, successful scholarly writing uses sources to fill various roles within the research paper, journal article, book, poster, essay, or other assignment.

Those roles all have to do with rhetoric—the art of making a convincing argument. Putting your sources to work for you in these roles can help you write in a more powerful, persuasive way—to, in fact, win your argument.

TIP:

For another way to think about choosing the right sources for your needs, see Sources and Information Needs.

NOTE:

This section on rhetorical roles of research sources was influenced by many sources. See the bibliography.

2. BEAM: A Solution That Might Shine

This table, created from the ideas developed by Joseph Bizup, describes the roles that sources can play (some of the ways they can be used) in your finished assignment, such as a research paper. Bizup called his model BEAM, an acronym that stands for background, exhibits (or evidence), argument, and method.

Role for Sources	How to Use Them	Kinds of Sources That Can Have That Role*
Background**	Writers rely on these sources for general factual information. For instance, a writer could use background information to introduce a setting, situation, or problem in the research paper.	Usually secondary sources and tertiary sources, but, basically, just anything other than journal articles that report original research. Some examples: literature review articles, non-fiction books, and biographies (secondary) and field guides and Wikipedia (tertiary).
Exhibits or Evidence	Writers interpret and analyze sources like these in the same way they are used as exhibits and evidence in a museum or a court.	Usually primary sources. Some examples: newspaper articles from the time in question, works of literature or art, and research articles.
Argument	Writers engage with these sources that they agree with or disagree with. The sources are usually written by scholars in their field. For instance, writers often include sources that describe earlier work that is specifically relevant to their own research question and their thesis (what they consider to be the answer to that question.)	Usually primary and secondary sources. Some examples of primary sources: research articles in the sciences and humanities and recordings of performances in the arts. Some examples of secondary sources: commentaries and criticisms, such as those that appear in literature reviews, textbooks, and blogs that comment on research.
Method or Theory	Writers follow the key terms, concepts, or manner of working that are explained in these sources. That is, they pay attention to and use the relevant work of others before them to carry out their own work and then describe it in the research paper.	Often secondary sources. Some examples: literature reviews, textbooks, and blogs that comment on research.

*See Primary, Secondary, and Tertiary Sources

**See Background Reading

TIP: BEAM at a Glance

Download this BEAM Reference Chart to help you quickly determine how you might find or use a source.

3. Using BEAM: An Example

Using sources to function in these roles is how you enter into the scholarly conversation with all the other research and writing that has covered your topic before.

In the next few pages, you'll learn more about each role by analyzing how sources are used in the *pop culture* essay cited in the Example below. Seeing how the essay's author puts his sources to work in their various roles should help you envision how you can do the same in your own papers. The essay discusses how pop culture affects American (and global) values.

EXAMPLE: Manufacturing Taste

Click on the citation below to skim through the essay. When you are finished, come back to this page and begin the next section on background sources.

Booker, M. Keith. "Manufacturing Taste: The Culture Industry, Children's Culture, and the Globalization of American Values." Pop Culture Universe: Icons, Idols, Ideas. ABC-CLIO, 2012. Web. 19 June 2012.

BEAM: Background Sources

These are sources that should be noncontroversial—the author accepts information from these sources as being authoritative (and expects readers to, as well). In other words, the sources (and the information gleaned from them) are generally trusted or undisputed. That information can serve as the incontestable foundation for your claims.

Background information is common knowledge (e.g. the sky is blue) and not necessary to be cited.

It's recommended that you cite background sources when you're unsure, but one rule of thumb suggests finding the same undocumented information in at least 5 other credible sources. It can be difficult to make this determination, so it's always a good idea to consult your professor.

Let's look at a statement in the first paragraph of the pop culture essay:

> Thus, the corporate giants of the American Culture Industry (themselves now mostly multinational conglomerates) clearly must pay attention to the demands of audiences around the world in formulating, producing, and promoting the specific films, television, music, and other artifacts that are the stuff of popular culture.

How do you know that the "corporate giants are mostly multinational conglomerates" as stated in the first sentence? Or that the items listed are indeed the stuff of popular culture? These are examples of common knowledge.

Looking a little deeper...

Without context, this paragraph could also be the conclusion of a paper about what corporations should do (demonstrating the ongoing nature of knowledge itself). But the paper is not about making recommendations to the American Cultural Industry. This is an assertion that the author uses to help set up his different argument and is meant to be taken at face-value. So it's an example of how the same source can play different roles in different written assignments—all depending on how writers use them.

There is more about background sources at Background Reading.

ACTIVITY: Background Sources

Which of the following would be the best example of a background source that doesn't need to be cited, according to the **BEAM** framework?

> There were a total of 39 delegates who signed the U.S. Constitution; William Jackson was the 40th, but served as secretary and did not represent a state.
>
> Thought to be limited to bat populations, the fungi responsible for the fast-spreading disease known as White-nose syndrome has been linked with similar infections affecting amphibians.
>
> Having published over 300 reports since 2000, the Pew Internet & American Life Project has been a trusted source for research into online behavior."

Our Answer: There were a total of 39 delegates who signed the U.S. Constitution; William Jackson was the 40th, but served as secretary and did not represent a state.

BEAM: Exhibit and Evidence Sources

Generally, exhibit and evidence sources are works of literature (or other media), collected data, or some observed phenomenon, etc. that you have been asked to write about. They are what you analyze or interpret.

Looking again at the pop culture essay, the exhibits being examined are pop culture and American (as well as global) values. Specifically, the essay is examining the relationship between the two:

> On the other hand, the international success of Toy Story 3, a film that deals with anthropomorphized toys and is thus essentially a consumerist fantasy of commodities come to life, also suggests that global distribution of the products of the American Culture Industry is beginning to have an impact on the tastes and values of audiences even outside the United States.

Exhibit sources are not limited to examples in the humanities; they could also be data that was collected in a scientific experiment or by a website's user survey. They can also simply serve as examples that help support a claim.

BEAM: Argument Sources

Argument sources provide you with the other voices in the academic conversation about your topic. Who else has done similar research, and how should your paper respond to what they've said? Does your paper refine or extend an existing hypothesis someone else has tested? If so, those sources belong in your paper.

Sometimes the purpose of including an argument source is to disagree with it and definitively indicate a different direction.

From our pop culture essay example:

> Althusser's work remains compelling, despite the fact that theorists such as Michel de Certeau and John Fiske have argued that individuals actually have a considerable ability to resist and oppose the messages conveyed to them by official ideology, in popular culture and elsewhere.

The author is taking part and taking a stand in the ongoing scholarly discussion of culture, although this endorsement of Althusser's work could possibly be considered a method source if the argument in the article went in a different direction.

ACTIVITY: Argument Sources

Which of the follow best defines an argument source in the BEAM framework?

- It's one piece of research or scholarship that your paper is directly responding to.
- It's one of many *voices* in a larger conversation that your research paper participates in.
- It's one of several articles whose authors disagree with the premises of your paper.

Our Answer: It's one of many *voices* in a larger conversation that your research paper participates in.

BEAM: Method Sources

While argument sources help you frame your paper within the larger scholarly discussion about your topic and exhibits provide a focal point, method sources help provide underlying and sometimes implicit assumptions for your argument or analysis.

For some research, these are literally the methods you use to collect data like a focus group or a particular statistical analysis, and they provide justification for them. In other research, your paper might reveal a leaning toward a major attitude or school of thought within a discipline.

As a persuasive piece of writing, the essay has this intrinsic thread of caution and warning that is summed up in its conclusion:

> "The children's film industry might not be quite as sinister as the tobacco industry, with its efforts to addict children to cigarettes. [...] Meanwhile, the lives of those audiences are now being increasingly saturated by popular culture, making it more and more difficult for individuals to form attitudes, opinions, and values that are independent of the messages promulgated by the Culture Industry."

While this is a subtle example, you would generally cite or at least credit your methods and theories that frame your analysis in your bibliography.

4. Practice with BEAM

You've just learned about the various roles sources can play in written material. In this section you'll gain practice identifying roles that other writers have used them for and then be asked to examine your own past work.

ACTIVITY: A Reading Exercise

Identifying BEAM's kinds of sources in already written materials is a good way of learning how to use them in your own writing assignments. For practice, look at an abstract of and two passages from **Lesy, M. (2007). Visual Literacy. Journal of American History, 94(1), 143-153.**

Read the abstract and passages below and identify the most likely role (background, exhibit, argument, or method) each featured source is playing in Lesy's article. See our take on each below:

> ABSTRACT: The article reports on visual literacy and the psychological aspects of photography. The author offers his opinions on the complexities of photographs and reports on the various levels of meaning behind picture taking. Particular attention is given to the psychological aspects of photography and photographers. Additional article topics include the importance of historical photographs, the impact of the Internet and digital media on the profession, as well as the importance of preserving photographs.
>
> Passage 1
>
> Solving one scholarly problem – the need to sort out an image's multiple meanings – opens a clear view of others. No matter how mundane, utilitarian, or circumscribed a photograph's origins may be, an image is not a sentence. Images are forms of sensory data, processed by the right brain. No matter how judicious and objective a historian fancies herself, a photograph will elicit projections and associations in her, stir her imagination, before she even notices what is happening to her. A photograph "is a function, an experience, not a thing," said Minor White, a mid-twentieth-century photographer whom Walt Whitman would have recognized as a fellow poet. "Cameras are far more impartial than their owners and employers," White went on to say. "Projection and empathy [are] natural attributes in man...the photograph invariably functions as a mirror of at least some part of the viewer." SOURCE CITED: Minor White, "Equivalence: The Perennial Trend," PSA Journal, 29 July 1963), 17. 20.
>
> Passage 2
>
> The problem is not that there are too few images, but too many. Historical photographs exist in huge numbers, in well-ordered collections, presided over by knowledgeable curators. More and more of the collections are being digitized. Overload and saturation are only a mouse click away.
>
> One example: in the Prints and Photographs Division of the Library of Congress there are 164,000 black-and-white photographs made between 1935 and 1945 by photographers employed by the Farm Security Administration and the Office of War Information.
>
> "America from the Great Depression to World War 11: Photographs from the FSA-OWI, 1955-1945," Library of Congress: American Memory, http://memory.loc.gov/ammem/fsowhome.html

Our Answer:

The source referred to in Passage 1 is probably a background source. The author is offering White's definition as fact. It helps support one of the author's assertions about the nature of photographs.

The source referred to in Passage 2 is an exhibit source. The author is using the Library of Congress's photographic archive as a self-evident example to support the claim that information overload is a potential problem.

Now you're ready to do role identification in a research paper you've already written yourself. (In the future, it may be helpful to do the same as a last check on research papers you are about to turn in.)

ACTIVITY: Self-Check

Directions: Re-read your research paper. (If you've already gotten feedback from your professor on this paper, also look to see whether any of that feedback applies to the roles you gave your sources.)Then consider the questions below. If you can't answer "Yes" to every question, reconsider how you have used the sources in your paper.

Do My Sources Have the Right Roles?

- Have I used background information to, for instance, introduce a setting, situation, or problem in the paper or essay?
- Did I cite/not cite the background information appropriately?
- Did I avoid using journal articles that report original research for my background information?
- Did I interpret and analyze sources as though they are exhibits or evidence in my argument?
- Were primary sources those that played the role of exhibits and evidence?
- Did I discuss and cite what others have written about my research question?
- Did I include writers who both agree and disagree with what I say is my answer to the research question?
- Did I avoid using tertiary sources to make my argument that my thesis is reasonable?
- Did I make it clear where key terms, concepts, and manner of working that I used in my research were used first by others?
- Were my sources for useful key terms, concepts, and manner of working secondary sources?

Where to Go From Here

Now that you have a better understanding of how sources are used in a paper, check out Academic Argument, which can help you plan and structure your research paper.

Credits

The content of this book was edited by Cheryl Meredith Lowry, Ph.D. Maria Scheid, head of Ohio State University Libraries' Copyright Services, was responsible for Chapters 11 and 12. The visual design and layout are by Robyn Ness. Ingrid Raphael contributed to production and design. Production, Layout, and Visual Design for Version 3 was conducted by Amanda Larson. Contact us at choosingsources@osu.edu.

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Glossary

abstract

A brief summary of what a journal article is about and a quick read in order to decide whether the article is likely to contain information relevant to your research project. The abstract may appear in research databases and, sometimes, in the article itself.

academic argument

The verbal and written argument that academics take part in while arguing that their claims about their research, supported by the research of others, are correct. Collectively, this argument is called the scholarly conversation. For professors, it takes place in journal articles, conference papers, scholarly blogs, and scholarly books. But academic arguments that students put forth in research paper, essay, and poster assignments are also part of the scholarly conversation.

academic integrity

According to The Ohio State University, "Academic integrity is a commitment, even in the face of adversity, to five fundamental values: honesty, trust, fairness, respect, and responsibility. From these values flow principles of behavior that enable academic communities to translate ideals into action." Source: Office of Undergraduate Education web page

academic misconduct

When you don't use integrity in your academic work. Such misconduct includes submitting plagiarized work, which is work that is not your own. See a full definition of academic misconduct in the Ohio State University Code of Student Conduct at https://trustees.osu.edu/sites/default/files/documents/2019/08/CodeStudentConduct_0.pdf.

active listening

Skills used to encourage people, including those being interviewed, to talk more. The skills often include listening closely, showing that attention is being paid, maintaining eye contact, nodding and making other encouraging gestures, making short comments such as "Then what?," and asking follow-up questions. There may be different standards for active listening among cultures.

advanced search

A way that many search tools, such as Google, Bing and many library catalogs, have of doing a search in a more complex way than their usual search box. Advanced search usually helps users use Boolean operators or to search particular fields in sources. Look for the Advance Search heading to click on the site.

alternate terms

Alternatives to the first terms that come to mind for main ideas when developing a search statement. For instance, if the term we first think of is peaceful, the alternative term might be warlike. Alternative terms are often synonyms, anonyms, and singular and plural forms of the main concept term.

analysis

A process that carefully examines something, looking at each part separately and together, in order to understand it.

argument

In academic writing, the case you make that your answer to your research question is correct or at least the most reasonable answer. This kind of argument is based on evidence that you find in credible sources.

BEAM

An acronym that stands for Background, Exhibits or Evidence, Argument, and Method or Theory. These are roles that a researcher/writer can use sources for in a research final project, such as a research paper, as put forth by Joseph Bizup.

bias

One of the factors to be evaluated about a source to determine whether it is credible. Bias decreases information's credibility. Even in opinion pieces, where authors must show their opinions, authors must use evidence to make their argument. It's when authors don't include evidence or when they leave out important information that we can tell they are using their own likes and dislikes, not evidence, to shape the information they are sharing. That indicates bias. Other clues include: learning that the author has a vested interest in our cooperation with the site or issue, not linking to the original piece of information under discussion, including many strongly worded assertions in the text, and using many exclamation points.

bibliographic citation

Citations, often at the end of a publication, that show where ideas or quotes contributed by others and used in the publication came from. These citations usually include titles, authors' names, date and place of publication, and other information that would help readers locate the publications. Such citations are usually on pages called Bibliography, References, or Works Cited. *See intext citations*

boolean operators

The words AND, OR, and NOT when used with search terms to direct a search to include or exclude certain search results. (In some search boxes, you can use the + symbol for AND rather than the word or the – symbol for NOT rather than the word. In Google you can't use the word NOT and must use -.) For instance, if you wanted to find an article about the effects of climate change on the oceans, you might type these terms in the search box: "climate change" AND oceans. (Incidentally, the quotation marks tell Google to search for the words climate change together, as a phrase, instead of searching first for climate and then for change.) Boolean operators can be used to make advanced searches. See Parentheses around search terms in a search box.

citation

Pointing out in what sources you found each direct quote and where/who the ideas that you paraphrased and summarized in your research paper, essay, or poster came from. The citing may appear at the point of quoting, paraphrasing, and summarizing (called in-text citations) and at the end of the document on pages typically called References, Bibliography, or Works Cited. Citations are an integral part of academic integrity and avoiding plagiarism

citation styles

The several sets of rules about exactly how and where to make citations. Examples include Chicago style, the Modern Language Association style (MLA), the American Psychological Association style (APA), American Medical Association style (AMA), and the style of the Institute of Electrical and Electronics

Engineers (IEEE). Disciplines tend to prefer one style over another, so always ask your professors which style they want you to use for your research assignments. Each style appears in a manual or style guide available for free at libraries or for sale online. The rules change periodically, so check online for what's the latest edition. A good source for MLA, APA, IEEE, and Chicago styles is Purdue University OWL, although you still need to make sure OWL is using the latest edition.

components of an arguement

The parts of an argument, which are, according to the authors of *The Craft of Research*: the question; claims about the question; reasons for the claims; evidence for the reasons; acknowledgements of others' objections, counterarguments, and alternative solutions; and responses to others' objections, counterarguments and alternative solutions. Collectively, the components are what make a particular communication an argument.

controlled vocabulary

The collection of search terms chosen by experts to be the preferred ones used in a database. Such vocabulary words are sometimes called descriptors.

copyright

The protections provided for creators of creative works, beginning in the U.S. Constitution and in the Copyright Act, which are intended to promote the creation of new works. Original works of authorship are protected, among them: students' research papers and their other original works of authorship; email; literary works; musical works and any lyrics; dramatic works; choreography; pictorial, graphic, and sculptural works, motion pictures and audiovisual works, including sound recordings; and architectural works. Rights granted by copyright include the right to: reproduce and distribute the work, prepare derivative works, perform and display the work publicly, and perform publicly a sound recording by means of digital audio transmission. The Ohio State University Libraries' Copyright Services is a good source to find out how to protect your rights as a creator and how to legally use material copyrighted by others.

Creative Commons

Free and open licenses that make it easier to share and use copyrighted works. Creators still own the copyright but describe the conditions under which they will let others use their works by adopting a particular kind of Creative Common (CC) license. For example, perhaps the license they choose requires the user only to post appropriate credit (including the creator's name) in order to use it. That's a much quicker process than the user having to formally ask permission from the creator. When potential users of the works see the license, they right away know that they have the creators' permission to use the work under the conditions associated with that particular kind of CC license. You can read more about CC licenses on the CC website. You can search for works with CC licenses at CC Search, flickr, Google Images, YouTube, and the Noun Project.

credibility

The degree to which a piece of information can be believed. Credibility for a source probably cannot be perfect or guaranteed. But if credibility is high, the information is believed to be most likely true and reader/viewers can have confidence in it.

critical thinking

Asking yourself questions about information, an idea, a person, an object, or an event. The intent of the questions is to help you understand more clearly the item and the relationships between items.

data

"Units of information observed, collected, or created in the course of research" (Erway, Ricky. 2013. "Starting the Conversation: University-wide Research Data Management Policy." Dublin, Ohio: OCLC Research. http://www.oclc.org/content/dam/research/publications/library/2013/2013-08.pdf). Data is often assumed to be numbers but they do not have to be.

data visualization

The way data is displayed. A good display makes the data easier to understand and attracts the interest of viewers. But it must also not distort the meaning of the data.

database fields

In a database's documents, a location where information can be searched. For instance, if you think the title of documents is where the documents are most likely to contain your search terms, you can tell the database to look only in the title field. You usually have several fields to choose from and can choose combinations of fields in which to look. You are said to have "limited" your search to the fields you choose.

database scope

Information about the specific subject area(s), format, or date range (generally, years covered) of a specialized database. This information can indicate whether the information you're looking for is likely to be covered in that particular database.

direct quote

Information taken word-for-word from another source and either spoken by you or incorporated into your written work. Quoting someone else directly is acceptable in most cases, sometimes even required. But you should always name the person you are quoting and the source where you found the direct quote.

discipline

A broad academic area of study. Examples are social sciences, physical sciences, life sciences, mathematics and engineering, humanities, and the arts.

evaluation

A process undertaken to prove whether something has value. When we evaluate sources, we are trying to figure out whether they are relevant to what we are trying to do and whether they are credible enough to suit our purpose. (For academic writing, they must be highly credible.)

evidence

When doing research, the facts and reasoning for why you believe your claim in an argument is true. Most of the evidence students use in their research papers comes from sources

fair use

An exception to copyright that gives people permission to use a copyrighted work under certain conditions. The factors you should consider to determine whether your particular use would be fair use are: (1) purpose and character of use, including whether commercial (i.e. publishing a book) or non-commercial (i.e. using in a classroom assignment); (2) nature of the original material (i.e., is the work published or unpublished? Fact or fiction? Highly creative?); (3) amount and substantiality of the original work (are you using the entire work or just a portion?); (4) effect on the marketplace or on the work's value (will your use have a financial impact on the creator?). Even if you believe you can use a copyrighted work under Fair Use, you still need to provide a citation.

full-text search

A search in which entire documents within a database are searched, as opposed to only specific fields in documents or metadata about each document.

in-text citations

Pointing out in what sources you found each direct quote you quoted and ideas that you paraphrased or summarized in your research term paper, essay, presentation, or poster. In-text citations are made right at the point that you used the direct quote, paraphrase, or summarization. In-text citations usually contain the last name of the author you are citing and, in some cases, the date of the source you are citing and/or a specific page number. The sources for which you have in-text citations are listed along with their publication facts at the end of your essay, or research paper.

inference

An educated guess.

information lifecycle

After an event, the various types and formats information that get created about the event as time passes. Information about the event usually changes and becomes more accurate and more detailed as more information becomes available. In general, the order in which formats are created is: social media; newspaper, TV, and radio; talk shows on TV and radio; popular magazines; journal articles; books; government documents; print encyclopedias; and bibliographies about the event.

information needs

The reasons you are looking for information. When you are doing an academic research project, those reasons include (1) to find background information, (2) to answer your research question, (3) to convince your audience that your answer is correct or at least the most reasonable answer, (4) to describe the context surrounding your research question for your audience and explain why it's important, and (5) to report what others have said about your question, including any different answers to your research question.

inquiry-based assignments

College assignments that ask students to consider questions in order to solve problems or explain why something exists, how it works, and/or the effects it has. Students usually need to consult multiple sources to develop their answer or interpretation.

interior monologue

An internal conversation that a person has with himself/herself, they/themselves.

internet

According to the Merriam-Webster dictionary, **"**a global computer network providing a variety of information and communication facilities, consisting of interconnected networks using standardized communication protocols." The Internet contains the World Wide Web.

iterative searching

Searching again and again, adjusting your search statement each time based on the results you produced with the previous statement(s).

journals

Publications that come out periodically (usually quarterly) and most often contain some commentary, reviews of scholarly books, and scholarly research articles that report new research or reviews of previous scholarly research. The reviews of previous research are called literature reviews and, along with the reports of new research, are generally the only scholarly portions of journals and the only portions that get peer reviewed. Many, but not all, journals are peer reviewed, which means that experts in the field assess the scholarship and contributions made by submitted research articles and suggest corrections before the journal will be willing to publish them. Each journal tends to be focused on a specific discipline or sub-discipline. Sometimes professional associations make the journals they publish available to their members. But most journals are very expensive, and for many scholars, it is libraries that make them available. While journals used to be print publications, today most are digital-only publications.

keywords

Search terms that you arrange into a search statement and type into a search box for key word searching.

KISS

A mnemonic to help you remember a good strategy for subject searching in library catalogs and some specialized databases. The letters stand for: **K**eyword search your topic. **I**dentify a relevant item from the results. **S**elect subject terms relevant to your topic from that item's subject heading. **S**earch using those subject terms. (Sometimes you can just click on a relevant item's subject headings.)

limiters

Terms or standards you can use to narrow or focus your search in a digital database. For instance, you can ask many databases to search only for sources published during a particular time period or in a particular language.

literature

The scholarly conversation (in research articles, conference proceedings, preprints, and scholarly books) about a discipline or part of a discipline.

metadata

Information that describes digital information. Without metadata, the web and databases would not be searchable because metadata identifies digital information and gives its location during search.

mobile technology

Digital technology devices, such as smart phones and digital tablets, that you can use while you're on the go.

objective information

Information that reflects a research finding or multiple unbiased perspectives, instead of reflecting only the author's own view that doesn't come from research he/she cites.

paraphrase

In your own work, using the ideas of others by putting them in your own words. This is a way of using your sources when their ideas and meaning is more important than the exact language the author used and when you don't need to use the author's preeminent authority to bolster your argument at the moment. Paraphrases require in-text and bibliographic citations of the sources whose ideas you are using.

parentheses around a search term

An advanced search technique that's useful when you have more than one kind of Boolean operator in your search statement. It lets you give more precise instructions to a search engine than you could otherwise give

peer review

A pre-publication review provided by experts other than the author of a research or literature review article and the editor of the research journal to which the article has been submitted for publication. The experts assess the article, including making sure the article is presented in the context of what is already known, that the methods the researcher used are the right ones, and that the article contributes to the field by reporting new and important content. Based on that assessment, the editor may accept the article or turn it down for publication. If it is accepted, the author is usually asked to make changes. Peer review increases the credibility of many scholarly articles

phrase searching

Within the search box, an instruction to a search engine (Google or BING) to search the terms enclosed by quotation marks in order, instead of separately. (Reminder: If you use quotation marks, there always have to be more than one word within them because phrases always consist of multiple words.) For instance, if you put Abraham Lincoln in the search box, Google would return all documents that had the word Abraham in them somewhere and the word Lincoln in them somewhere. Many of those documents would be irrelevant to your search for information about Abraham Lincoln because they are about other Abrahams or other Lincolns. But if you put "Abraham Lincoln" in the search box, Google or BING would return all documents that contain Abraham Lincoln in that order.

plagiarism

Using the work or ideas of others as though they are your own, which means without citing them. If you

incorporate others' ideas or work into your own by using direct quotes, paraphrases, or summaries, you must cite their sources in order for the use not to be considered plagiarism.

popular sources

Sources written for and able to be understood by the general public. Usually about news and entertainment, popular sources are written by staff writers and reporters and are published, after approval from an editor, by commercial publishers. Popular sources usually contain many advertisements and attractive artwork. They contain no footnotes or references at the end, although substantive popular sources, such as news stories and long form journalism, usually refer to sources in the body of articles.

poster

A way to communicate research findings or data in a visual format. Posters usually contain a brief introduction to the research question or topic, a description of the research method, and a concise summary of the findings, along with supporting graphics or images (charts, tables, photos, etc). The researcher may create a poster in addition to a more formal written report or in place of a report. Posters are often displayed at conferences or symposiums, and the researcher is often available to answer questions or discuss their research with attendees.

precision searching

Using advanced search techniques to find the documents that are likely to give you the information you're looking for. Those techniques include identifying main concepts and related terms for your search terms, using phrase searching, using parentheses when you have multiple Boolean operators among your search terms, and searching iteratively.

primary source

A term applied with different definitions, depending on the academic discipline. In the humanities and many other disciplines, a primary source is information that is firsthand, in its original form. We get primary source information without it having gone through any filter—no one translated it or told us what it meant. Examples of some sources that are often used as primary sources include diaries, breaking news stories, music and dance performances, artworks, eyewitness accounts, and journal articles that report research for the first time. But even those sources have to be actually used in research in order to become primary sources—nothing just exists as a primary source. The term primary source is used much less often in the sciences. When it does come up, scientists tend to use this term for the source, usually a research journal article, that was most important to their work.

professional sources

Sources that were developed and published, usually by a professional association, with the intent of helping those working in a particular profession. Such sources may be considered credible and therefore acceptable in much academic writing.

public domain

Available to the public without copyright. Publications whose copyright has timed out or that were never copyrighted are said to be in the public domain.

publication formats

The form a publication is in, such as book, video, newspaper article, blog, government document, journal article, website, etc. Connected to those forms are particular conventions associated with their creation. The conventions include not just what elements can be found in a form (advertisements in a newspaper but not a book, for instance), but also how much checking a form undergoes before publication.

publication mode

How close to first-hand information a publication is. Publications are generally called primary sources if they are first-hand information. Publications *about* primary sources are considered secondhand information and are called secondary sources. Publications (such as guides, handbooks, dictionaries, and timelines) that are made up of third-hand information repackage firsthand and secondhand information and are said to be tertiary sources.

qualitative information

Information that involves a descriptive judgment that uses words instead of numbers. Some examples are gender, country of origin name, and emotional state.

quantitative information

Information that involves a measurable quantity. Examples are length, mass, temperature, and time.

reasons for claims

Why you believe the claims you make in an argument are true.

recognition from others

Indications that people or organizations other than the author appreciate, believe, and value a published work or group of works. Just like blurbs and endorsements on the back of a printed book, those indications include links from others to a website you are evaluating.

related terms

Search terms that are similar in concept to others you consider using. For instance, if you were looking for information about arthritis, it may be helpful to use the search term joint diseases. Sometimes it can be helpful to look in a thesaurus for related terms.

relevance

The degree to which a source can help you with your inquiry assignment or research project. If its content is related enough to your topic or research question that you can learn or quote from the source or paraphrase or summarize from it, it is relevant.

research

As opposed to just compiling information on a subject, an attempt to answer questions or to solve problems and/or develop an expanded or revised perspective on a topic by synthesizing and interpreting information from multiple sources. Those multiple sources could include experimentation or other investigation (such as surveying and qualitative research) that varies by discipline. In doing so, new knowledge is often created. The sciences use the term research only when new knowledge is created.

research assignments

Assignments that require students to answer research questions and/or solve problems by synthesizing ideas they've found in the literature—usually a discipline's scholarly sources--and drawing conclusions from several sources.

research question

The question to be answered by a research project. Such questions cannot be answered by a simple Google search and require synthesizing information from several sources to find the correct or most reasonable answer. Most answers also result in more questions that need research.

roles played by sources

How a writer uses each source in his/her research paper. According to Bizup's BEAM model, the writer can use quotes, summaries and paraphrases of materials from sources within his/her own paper in these ways: as background information, as evidence or an exhibition of evidence, and as sources to be agreed with or disagreed with. In addition, the writer could use the same method a source used earlier in order to collect data for the paper or the same statistical analysis used by the source. Or, the writer could identify with a school of thought represented by the source.

RSS feed

Stands for Really Simple Syndication and is an easy way to stay up to date about what is being published on one or multiple topics. To receive ongoing links to such updated information, subscribe to RSS on the websites that have information you want to follow.

scholarly publishing

The dissemination of scholarly information, usually through books, preprints, journals, and conference proceedings.

scholarly sources

Sources that contain information involved in the scholarly conversation that takes place primarily among academics at conferences, presentations and in books, blogs, pre-prints, and journal articles.

search engines

Huge databases of web pages that have been assembled automatically by machines, based on algorithms controlled by humans.

search statements

What you type into a search box. Search statements may include search terms (preferably, nouns), along with devices you can use to give precise instructions for searching: symbols you might use to truncate the search terms, a Boolean operator(s), parentheses if you're using multiple Boolean operators, and quotation marks around any multiple-word phrases that you're using. See search terms; truncation; Boolean operators; parentheses around search terms in a search box

search strategy

A plan for searching in an intentional way: thinking and doing what it takes to find the best results.

Search strategies may be very simple for unimportant searches. But for important searches, such as finding sources for a research project, such a plan would involve deciding where to look (sometimes based on who else would need this information so you can look where they would look) and deciding what search statements to use. It also would involve, based on your evaluation of what you find with each search, deciding how you next need to change your search terms to search again and again.

search terms

The words you organize to make a search statement that you type into a search box

search tools

Web-based programs that do online searches to meet a user's request. A few may be internet directories, but nearly all are search engines or metasearch engines. Directories are lists or catalogs of websites that experts have put into categories. Search engines, such as Google and Bing, are huge databases of web pages that have been assembled automatically by machines. (Huge though Google and Bing may be, many if not most web pages are not available to those search engines.) Metasearch engines use multiple search engines and/or directories for data and then summarize the results for the user. Skyscanner.com and Kayak.com are examples of metasearch engines. Despite the fact that machines using algorithms are involved in most search tools, it is humans that are responsible for the algorithms and any consequential discrimination, injustice, and misinformation.

secondary sources

Sources that provide second-hand information. That is, they are not the original information but are about the original information. For instance, such sources are not a novel (the original, first-hand information), but are such sources as a book review of the novel or promo copy that tells readers about the novel (both second-hand information about the first-hand information). Another example: an analysis (secondary source) of a piece of legislation (primary source) that appears in a newspaper. One last example: subsequent news coverage of an event (secondary source) after the initial reporting on the event (primary source) was published by the news outlet.

source's neighborhood

The characteristics of a source found on the Internet that collectively tell you what the source is intended to do and how much you should trust its information, effectively determined by the author or publisher's purpose in publishing the source. Did they intend to inform/educate, persuade, sell, or entertain? When it comes to assessing a source's credibility, it can be helpful to think that sources that do the same things are clustered in the same neighborhood, just as they intend to be in the physical world. And we can accord digital sources the same credibility that we would a school, an advocacy organization, a store, or a movie theatre in the physical world.

sources

People whom you interview or published texts, images, and data that contain information that a researcher or journalist uses to study something and come to conclusions.

specialized databases

Collections of information on one or more specific subject areas that are searchable. Some are broad and others are narrow in the subject matter they cover, which is often delineated in a section called "scope." Those databases associated with university libraries are generally intended for academic research, and the

information searched for is in academic journal articles. Academic libraries often have hundreds, if not thousands, of these databases. Academic Search Complete, Scopus, and JSTOR are examples of specialized databases. Also called and library databases.

subject heading searching

A method of searching that can be used in library catalogs and other databases that are said to have a "controlled vocabulary." Controlled vocabulary databases tag individual documents using chosen vocabulary words so that the documents can be found. To use this method, follow these steps: Keyword search your topic. Identify a relevant item from the results. Select subject terms relevant to your topic from that item's subject heading, which uses the tags. Search by using those subject headings. The ERIC database for education is an example of one in which you can use subject searching.

subjective

A characteristic of some information that makes it the opposite of objective information. Subjective information is the view of one person or one organization and states things in a definite way, even though there may be multiple perspectives or research findings that it doesn't take into consideration.

substantive popular sources

A subset of popular sources. Sources that are intended for a college-educated or otherwise prepared audience. Such sources are complex and thorough and from a credible publisher, yet easily available to nearly everyone.

summarize

One of the techniques you can use to integrate material from a source into your research paper. Summarizing what a source says lets you make another author's long text piece shorter for your reader, yet still retains the author's meaning. Your summaries require citations to give credit and avoid plagiarism.

synthesis

Combining ideas and perspectives to create a new way of thinking about something. Synthesis is generally thought of as the opposite of analysis, although analysis is often necessary in order to synthesize. Synthesis is different from summarization because summarization makes a shorter, concise version of something that exists, while synthesis makes something new.

tertiary sources

Sources that provide third-hand information. That is, they are not the original or primary source (say, a novel) and are not second-hand information (such as a book review of that novel), which is always about the original source and usually by someone other than the creator of the original source. Instead, tertiary sources abstract, compile, digest, or otherwise organize primary and secondary sources. Examples are dictionaries, encyclopedias, guides, and handbooks. Tertiary sources are those you usually wouldn't read from beginning to end.

thesaurus

The collection of words that can be used to search in databases with a controlled vocabulary. Library collections usually have controlled vocabularies. Also, online or print collections of synonyms where you can

look for additional search terms when you are searching in databases or search engines without controlled vocabularies.

thesis

The answer to your research question in your research project.

truncation

A search technique that enables the searcher to widen the range of documents found by a search statement. Unlike what you might think, that happens by shortening a search term to the point its letters and a symbol (usually ? or *) tell the database or search engine to search for more words than the word stem left in the search statement would seem to indicate. For instance, if you truncated the word observation into a word stem like observ and added the symbol *, using that as a search term would get you documents that include the words observe, observes, observer, observers, observing, observation, observatory, etc. The symbols ? and * used for truncation are often called wildcards.

web search engines

Huge databases of web pages that have been assembled automatically by machines that choose the webpages and their order according to algorithms. Google and Bing are examples. Humans write the algorithms and ultimately determine which web pages are included in the databases that search engines search.

wildcard

Used in the advanced search technique called truncation, a question mark or asterisk that takes the place of a letter or letters within in a key word search term to broaden the search.

world wide web

According to Merriam-Webster dictionary, “a part of the Internet accessed through a graphical user interface and containing documents often connected by hyperlinks.” The WWW is within the Internet.

Version History

This page lists both major and minor changes to this book with each marked with a whole 1.0 and a 0.1 increase respectively in the version number. Additional files (e.g., PDF, ePUB) are provided upon request made to choosingsources@osu.edu. To report an error, please fill out the errata form. To report your adoption of Choosing and Using Sources please fill out the adoption form.

Choosing and Using Sources Version History

Version	Date	Change
1.0	2015	Creation of Choosing Using Sources
2.0	July 2018	Revision of accurate activities
3.0	August 2023	Chapters 1, 2, 3, 6, 10, 11, 12 text updated. H5P activities were added to chapters 1, 2, 3, 6, 10. The glossary was created with 94 individual entries. Updated Credits Page. Updated Book Info. Added adoption form. Added errata form. Added Version History Page.

This chapter is based on the Versioning History chapter by Lauri M. Aesoph, published in BC Campus Open Education Pressbooks Guide, and licensed under a Creative Commons Attribution 4.0 International license. This version history has been revised in accordance with the editing and updating history of Choosing and Using Sources. ↵