

Choosing & Using Sources: A Guide to Academic Research, 1st Canadian Edition



# Choosing & Using Sources: A Guide to Academic Research, 1st Canadian Edition

*LINDSEY MACCALLUM*



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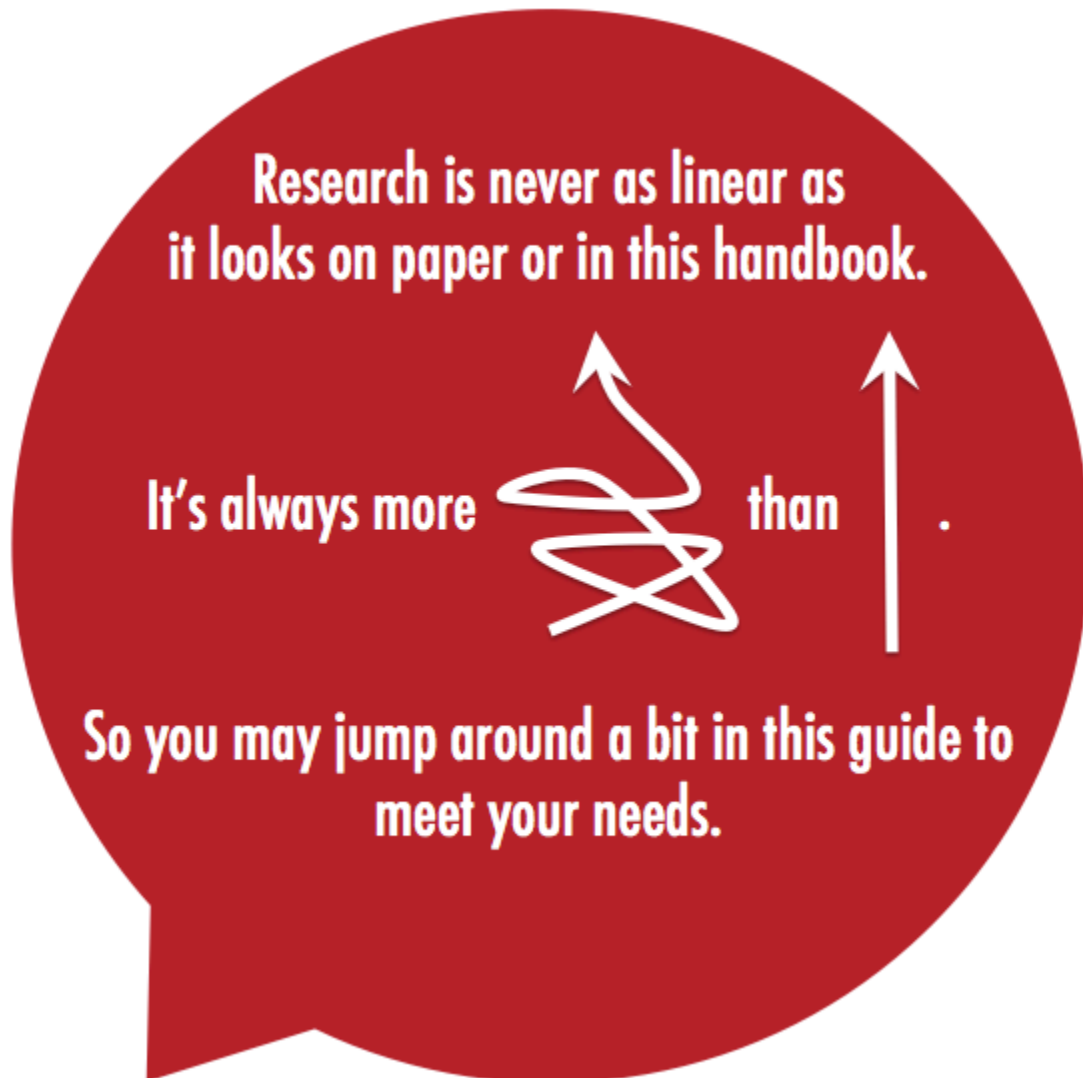
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# Introduction

LINDSEY MACCALLUM AND TEACHING & LEARNING OHIO STATE UNIVERSITY LIBRARIES

Research assignments—resulting in final products such as term papers, essays, posters, multimedia projects, blog posts, 3-D models, etc.—are a common requirement in university 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

Instructors 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 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.

Throughout this guide, we try to make more explicit some things less often talked about 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, publishing, and more.

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## 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.*

PART I

# I-RESEARCH QUESTIONS



# I. 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.

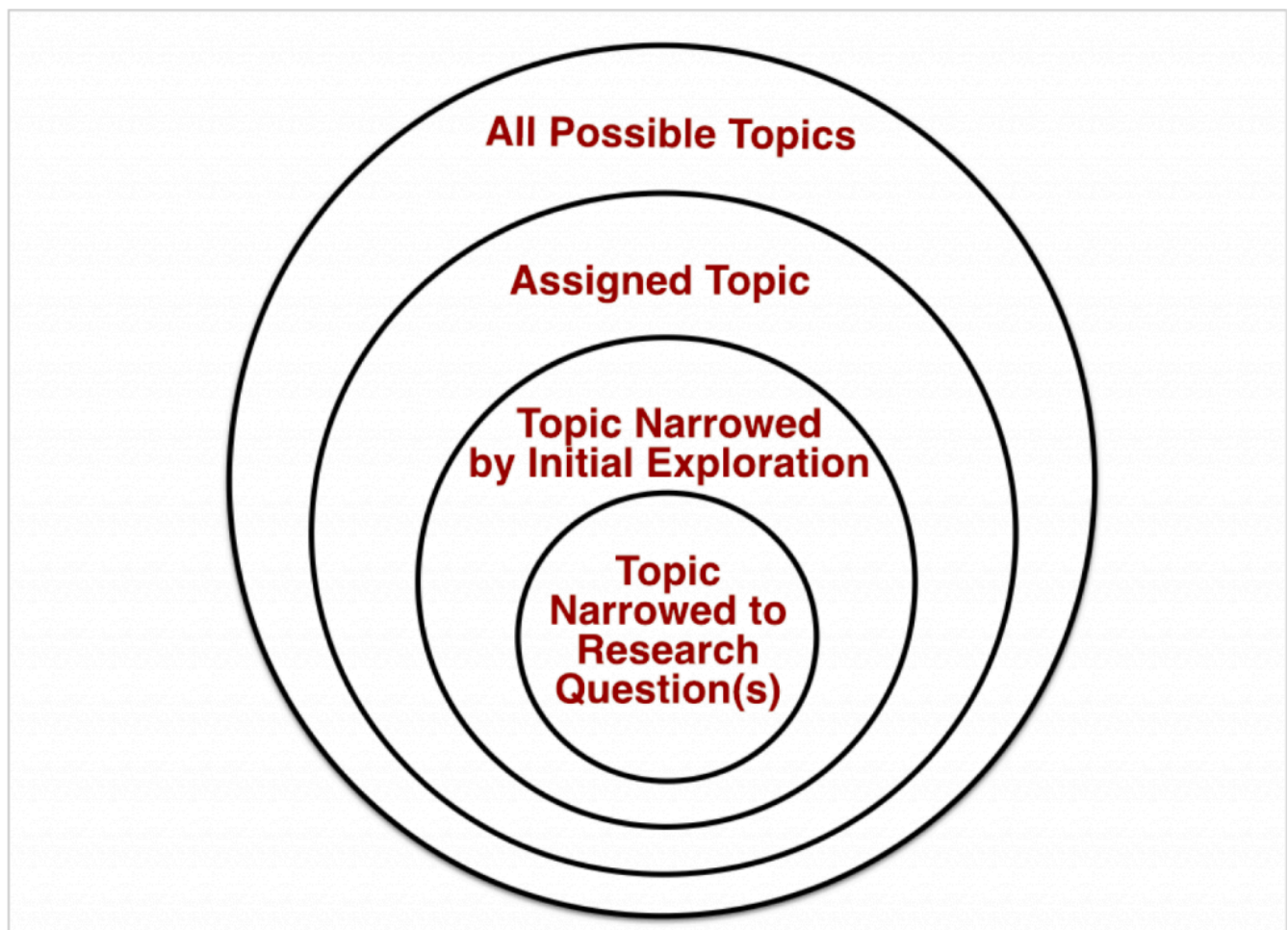
## 2. Narrowing a Topic

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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 university 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."

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### 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** – 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 in 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?*

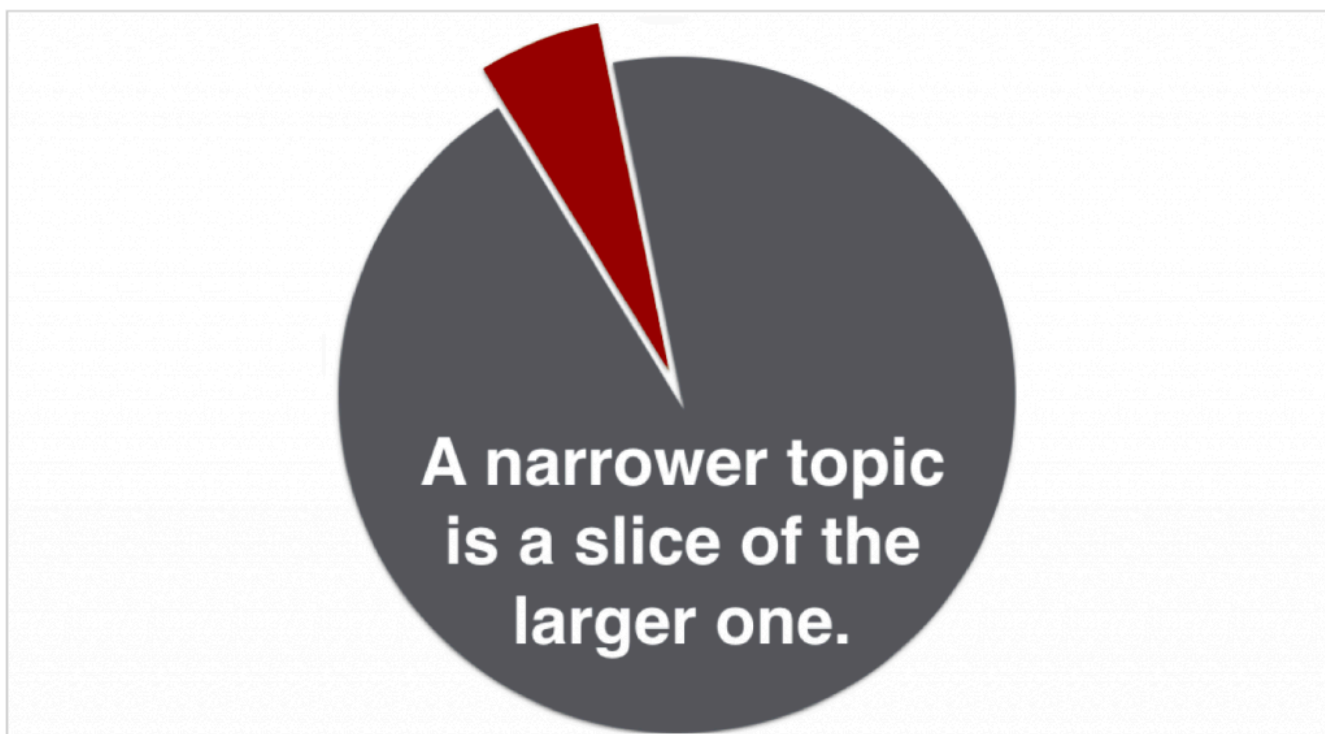


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<https://opentextbooks.uregina.ca/choosingsources/?p=33#h5p-1>

## 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 “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 favourites, the crabapple trees.

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## Anna Narrows Her Topic and Works on a Research Question

**The Situation:** Anna, an undergraduate, has been assigned a research paper on Antarctica. Her instructor 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 instructor 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. She also said that research questions often 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; you can mimic her actions and thinking 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.

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.



A desert?



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 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? Maybe it's online? I'll Google it.

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

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



A digital version?

several of his decisions discussed on the Wikipedia page, and I know there are sources like books and articles listed at the bottom of that page.



Really, a desert?

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?

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. My instructor 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

Maybe my 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 instructor 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 broad—do I have enough time for it?

I

think my instructor is the only one who can tell me whether my question about the rocks has enough to do with Antarctica. Since she'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.

### 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.



I should ask.

## 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 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. On a Mac, it's Command-F.
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 university is all about. Anna is way beyond where she was when she started.

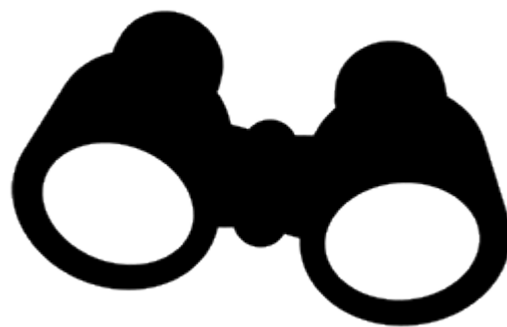
### 3. Background Reading

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 treatment for humans with bird flu, this background reading would teach you that professionals and scholars usually use the term avian influenza instead of bird flu when they write about it. (Often, they also use H1N1 or H1N9 to identify the strain.) If you didn't learn that, you would miss the kinds of sources you'll eventually need for your assignment.

Most sources other than journal articles are good sources for this initial reading, including mainstream Canadian news outlets like CBC, 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.

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.



*Get a good look at your topic through background reading.*

#### 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. Free citation management software include Zotero and Mendeley, while subscription-based software like RefWorks are also available. Check with your institution's library to determine which software they can help you with.



Common Citations Tools

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#### 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 on Friday?

**Research Question:** How do "sleeper" films end up having outstanding attendance figures?

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**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?

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**Regular Question:** How many children in the U.S. have allergies?

**Research Question:** How does their country of birth affect a child's chances of developing asthma?

---

**Regular Question:** What year was metformin approved by Health Canada?

**Research Question:** Why are nanomedicines, such as doxorubicin, worth developing?

---

**Regular Question:** Can I use my library card as proof of ID to vote in Canadian federal elections?

**Research Question:** How do public libraries in Canada support democracy?

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**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 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: Which Kind of Question?

**Instructions:** Consider these examples of research questions and regular questions in order to answer the multiple choice questions below.

Examples of Regular Questions	Examples of Research Questions
Which colours have <i>House Beautiful</i> designated as trends for Fall 2021?	Is it possible to teach good taste?
What is the congruity principle used by designers of multimedia instruction?	Are 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 is plagiarism?	How do university students' understanding of plagiarism vary, depending on which countries they come from?
What are the most popular peer-reviewed journals for historians?	How could journal reading be increased among undergraduate history majors?
How do I vote in a Canadian federal election?	How does the Canadian electorate decide how to vote in federal elections?



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<https://opentextbooks.uregina.ca/choosingsources/?p=39#h5p-2>

## 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 it's feasible for you to find out (given your available time and access to information sources).
- How you can find it out, including what search 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, or term paper.

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 term 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 term 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: From Topic to Thesis Statement*



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<https://opentextbooks.uregina.ca/choosingsources/?p=42#h5p-3>

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## 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).

---

## 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 which 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.

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## 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: Quick Check*



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# 6. Developing Your Research Question

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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 questions right away. It's more like creating 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:** Revise that question you're interested in so that it is more focused.


## 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 hardest?



## 5. FOCUS THE QUESTION

who? what?  
where? when?



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<https://opentextbooks.uregina.ca/choosingsources/?p=46>

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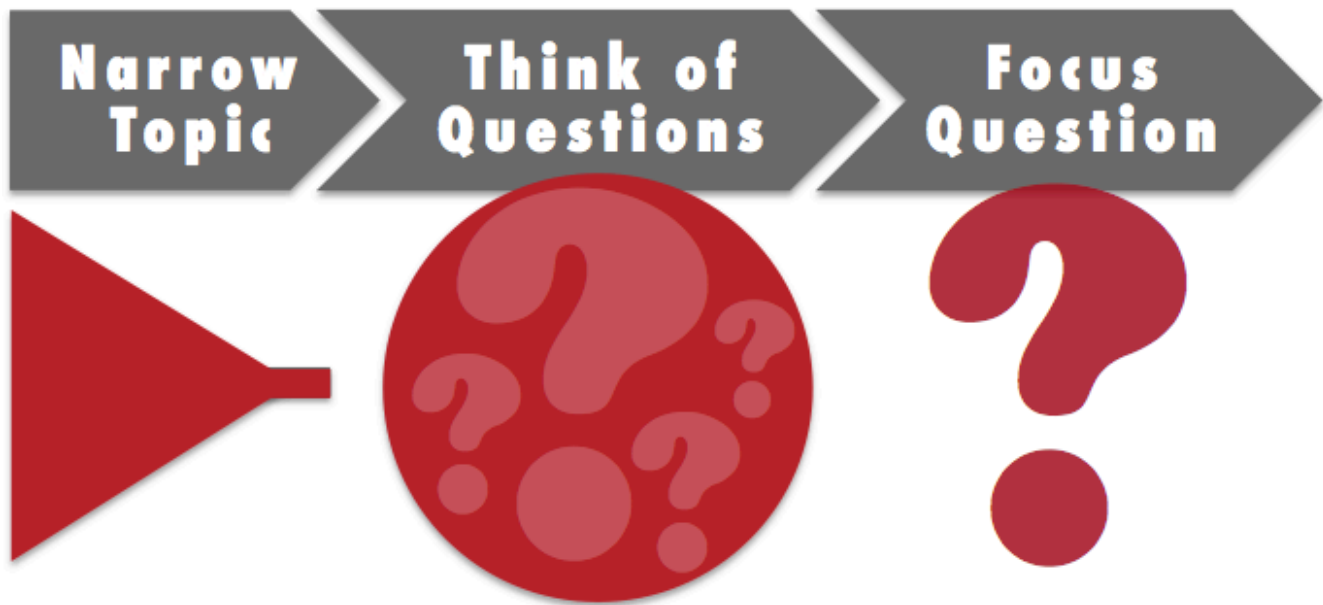
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### Practice

Once you know the steps and their order, the following work is 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*



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<https://opentextbooks.uregina.ca/choosingsources/?p=46#h5p-5>

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:

- Canadian investors' attitudes about sustainability
- University 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. Why do many first-time elections soon after a country overthrows a dictator result in very conservative elected leaders?
4. 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 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 Indigenous artists connected to Indigenous history?

Vagueness: What kinds of music? Any particular performers and composers? When?

## PART II

# 2-TYPES OF SOURCES



## 7. 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 art works
- 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 rather 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 it 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.

## 8. Quantitative or Qualitative

One of the most obvious ways to categorize information 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 information as something like what's in a table or spreadsheet of numbers and words. But information can be conveyed in more ways than just textually or numerically.

**Quantitative Information** – Involves a measurable quantity—numbers are used. Some examples are length, mass, temperature, and time. Quantitative information is often called data, but can also be things other than numbers.

**Qualitative Information** – 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 example, 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.



*Information can be quantitative or qualitative.*

*Example: Data Table with Quantitative and Qualitative Data*

Last Name	First Name	Age	Rank	Major	Gender	Current GPA
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

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

- 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 colours, which include an image of the actual colour. Such a list is extremely helpful, especially when there are A LOT of colour 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 Canada with provinces 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?

## 9. Fact or Opinion

Thinking about the reason an author produced a source can be helpful to you because that reason was what dictated the kind of information they 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 their purpose to include information that was subjective and therefore less factual and analytical. The author's reason for producing the source also determined whether they included more than one perspective or just their own.

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

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



*An author's purpose can influence the kind of information they chose to include.*

---

### Combined Purposes

Sometimes authors have a combination of purposes, as when a marketer decides she can sell more smart phones 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, they are likely to have used:

- Facts where possible.
- Multiple perspectives instead of just their own.
- Little subjective information.
- Seemingly unbiased, objective language that cites where they got the information.

The reason you want that kind of resource when trying to answer your research question or explaining that answer is because 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 will notice and not 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 country of Canada was established in 1867.
- The pH levels in acids are lower than pH levels in alkalines.
- Beethoven was a composer and 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.
- 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 the last quote would read: “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.

### Activity: Fact, Opinion, Objective, or Subjective?

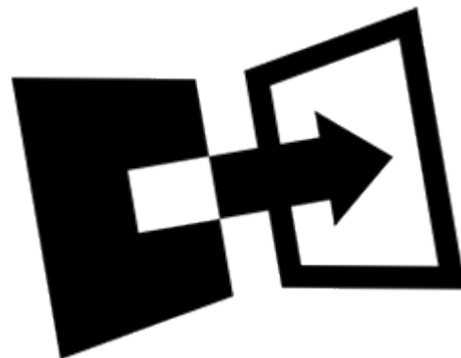


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<https://opentextbooks.uregina.ca/choosingsources/?p=57#h5p-6>

## 10. Primary, Secondary & Tertiary Sources

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

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



The three labels for information sources in this category are, respectively, primary sources, secondary sources, and tertiary sources. Here are examples to illustrate the first-handedness, second-handedness, and third-handedness of information:

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

---

### Primary Source

(Original, Firsthand Information)

J.D. Salinger's novel *Catcher in the Rye*.

### Secondary Source

(Secondhand Information)

A book review of *Catcher in the Rye*, even if the reviewer has a different opinion than anyone else has ever published book- he or she is still just reviewing the original work and all the information about the book here is secondary.

### Tertiary Source

(Third-hand Information)

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 university, 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.

**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:

- 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 sections of articles about the new research, plus their data).

**Secondary Source** – These sources are translated, repackaged, restated, analyzed, or interpreted original information that is 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 web site 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 because 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 “third-hand.” 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.
- 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 you, not another author, to do with information in your research projects.

## Activity: Which Kind of Source?



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<https://opentextbooks.uregina.ca/choosingsources/?p=60#h5p-7>

**The Details Are Tricky**— A few things about 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 example: A diary about his flying missions kept by a Canadian pilot in World War II is a primary source when 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 Canadian public's reaction to the war because it does not contain information relevant to that study.

- Primary sources, even eyewitness accounts, are not necessarily accurate. Their accuracy has 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. So some disciplines consider the *data* to be the primary source, and the journal article that describes and analyzes them is considered 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, 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.

### *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!

- a. A marriage license.
- b. Poet W.H. Auden's elegy for Y.S. Yeats.
- c. An arrowhead made by (Florida) Seminole Native Americans but found at Flint Ridge outside Columbus, Ohio.
- d. E-mail between the Canadian ambassador to the United States, Kirsten Hillman, and her staff about the North American Free Trade Agreement (NAFTA).

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.

What are 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 writing about the life of a person who claimed to have married several times, and you need more than just her statements about when those marriages took place and to whom.
- b. Your research project is about the Auden-Yeats relationship.
- c. Your research project is about trade among 19th century Indigenous peoples east of the Mississippi River.
- d. Your research project is on how Ambassador Hillman conveyed a decision about NAFTA negotiations to her staff.

## II. Popular, Professional, & Scholarly

We can also categorize information by the expertise of its intended audience. Considering the intended audience—how expert one has to be to understand the information—can indicate whether the source has sufficient credibility and thoroughness to meet your need.

There are varying degrees of expertise:

**Popular** – Popular newspaper and magazine articles (such as articles from *The Globe & Mail*, the *National Post*, and *Maclean's*) are meant for a large general audience, are generally affordable, and are easy to purchase or available for free. They are written by staff writers or reporters for the general public.

Additionally, they are:

- About news, opinions, background information, and entertainment.
- More attractive than scholarly journals, with catchy titles, attractive artwork, and many advertisements but no footnotes or references.
- Published by commercial publishers.
- Published after approval from an editor.
- 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** – Professional magazine articles (such as *Plastic Surgical Nursing* and *Music Teacher*) 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** – Scholarly journal articles (such as *Plant Science* and *Education and Child Psychology*) are meant for scholars, students, and the general public who want a deep understanding of a problem or issue. 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.

## Activity: Popular, Professional, or Scholarly?



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<https://opentextbooks.uregina.ca/choosingsources/?p=63#h5p-8>

## 12. 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 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 the 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. 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 led to their tragic actions.

## 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.

### The information life cycle.

UNIV | UNIVERSITY  
LIBRARIES

A Vimeo element has been excluded from this version of the text. You can view it online here:  
<https://opentextbooks.uregina.ca/choosingsources/?p=67>

[View Text Version](#)

## Activity: The Information Lifecycle

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### 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.

**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 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.

**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 are available for downloading, often by subscription.

## Activity: Best Format for Your Need

Open activity in a web browser.

## 13. 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 insure 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 summaries of multiple research studies done in the past on particular subjects of current interest. That makes those articles very helpful secondary sources.

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### 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.

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### 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*

[iframe src="https://www.youtube.com/embed/videoseries?list=PLZ8I40xeogUQk5OzzrSUSJdeJjaWG6Dht" width="560" height="315" allowfullscreen="allowfullscreen"]

[View playlist](#)

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

#### *Activity: Parts of a Scholarly Article*

Open activity in a web browser.

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## 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](#).

## 14. 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 reactions, opinions, and prevailing attitudes around the time of an event.

**So whether news sources are good for your assignment depends on what your research question is.** (You'll find other relevant information at Sources and Information Needs.)

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.

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 Publication Formats and the Information Lifecycle for more information.

### **When Are News Sources Helpful?**

- 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.
- You want to keep up with what is going in the world today.

### **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

Open activity in a web browser.

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## Mainline and Non-Mainline News Sources

Mainline American news outlets stick with the tradition of trying to report the news as objectively as possible. That doesn't mean their reports are perfectly objective, but they are more objective than the non-mainline 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, Gawker, Reddit.

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## Types of News Sources

**Press Services**—News outlets (print, broadcast, and online) get a lot of their news from these services, such as Reuters or Associated Press (AP), which make it unnecessary for individual outlets to send their own reporters everywhere. 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 web sites. However, not all of their articles are provided by their own reporters: some originate from the press services, Reuters and AP. Here are some examples of broadcast news sites:

- ABC News
- BBC
- CNN
- NPR News

- NBC Learns (OSU only)

## Activity: One-Minute World News from the BBC

Visit BBC's Video area and watch their One-minute World News to get 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

### *Movie: What is an RSS Feed?*

[iframe src="https://www.youtube.com/embed/80E3SWa7hvg" width="560" height="315" allowfullscreen="allowfullscreen"]

[View video](#)

### Activity: RSS Feeds from Reuters

Visit Reuters News RSS Feeds to see a list of general and very specific topic areas for which you can sign up for alerts. What topic interests you? Consider signing up for one (or more).

*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.

## 15. 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 that your answer is correct. (Data often give you evidence that your answer to your research question is correct or at least a reasonable answer.)
- 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*

[iframe src="https://www.youtube.com/embed/Y54ABqSOScQ" width="560" height="315" allowfullscreen="allowfullscreen"]  
View video | View Text Version

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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>

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.

#### **TIP: From the Latin**

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

Sometimes data is actually necessary to answer research questions, particularly in the social sciences and 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 drugs 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 2015 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 really strengthen your argument for your argument for your answer to your research question. At other times, even if data is 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 *Making an Argument*)

For example, for a term paper about the research question “Why is there a gap in the number of people who qualify for food from foodbanks and the number of people who use foodbanks?,” you could find data on the website of Feeding America, the nation’s largest network of foodbanks. Some of that data may be the number of people who get food from a foodbank annually, with the number of seniors and children broken out. Those data won’t answer your research question, but they will help you describe the situation around that question and help your audience develop a fuller understanding.

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 has 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 another source— such as books; journal, newspaper, and 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 at *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. See Data Visualization later in this section.)

If the data you find in a book, article, or web page is 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 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 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 foodbanks. But with that research question (“Why is there a gap in the number of people who qualify for food from foodbanks and the number of people who 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 web sites that you’ve found. But that doesn’t mean that it hasn’t been collected and packaged in a useable 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 if a depository that could contain data in your discipline? Check out a data directory such as [re3data.org](http://re3data.org)

### *Activity: Where to Find Data*

Open activity in a web browser.

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## Evaluating Data as Sources

Evaluating data for relevance and credibility is just as important as evaluating any other source. Another thing that is the same with data is that there is never a 100% perfect source. So just as is pointed out in Evaluating Sources, you'll have to make educated guesses (inferences) about whether the data are good enough for your purpose.

Critical thinking as you evaluate sources is something your professors will expect. But you'll benefit in other ways, too, because you'll be practicing a skill necessary for the rest of your life, both in the workplace and in your personal life. It's those skills that will keep you from being duped by fake news and taken advantage by posts that are ignorant or, sometimes, simply scams.

To evaluate data, you'll need to find out how the data were collected. If the data are in another source, such as a book; web page; or newspaper, magazine, or research journal article, evaluate *that* source in the usual way (see Evaluating Sources). If the book or newspaper, magazine, or web page got the data from somewhere else, do the same evaluation of the source from which the book or article got the data. The article, book, or web page should cite where the data came from. If it doesn't, then that is a black mark against using that data. (The data in a research journal article are often the work of the authors of the article. But you'll want to be sure they provide information about how they collected the data.)

In addition, if the data are in a **research journal article**, read the entire article, including the section called Methodology, which tells how the data were collected. Then determine the data's **relevance** to your research question by considering such questions as:

- Were the data collected recently enough?
- Is the data cross-sectional (based on information from people at any one time) or longitudinal (based on information from the same people over time)? If one is more appropriate for your research question than the other, is there information that you can still logically infer from this data?
- Were the types of people from whom the data were collected the same type of people your research question addresses? The more representative the study's sample is of the group your research question addresses, the more confident you can be in using the data to make your argument in your final product.
- Was the data analysis done at the right level for your research question? For instance, it may have been done at the individual, family, business, state, or zip code level. But if that doesn't relate to your research question, can you still logically make inferences that will help your argument? Here's an example: Imagine that your research question asks whether participation in high school sports in Columbus City Schools is positively associated with enrolling in college. But the data you are evaluating is analyzed at the state level. So you have data about the whole state of Ohio's schools and not Columbus in particular. In this case, ask yourself whether there is still any inference you can make from the data.

Research articles are sometimes difficult to read until you get used to them. Here's a helpful PDF: <https://violentmetaphors.files.wordpress.com/2018/01/how-to-read-and-understand-a-scientific-article.pdf> To evaluate the **credibility** of the data in a research journal article you have already read, take the steps recommended in Evaluating Sources, plus consider these questions:

- Is the article in a peer reviewed journal? (Look at the journal's instructions for authors, which are often located on the journal's website, to see if it talks about peers reviewing the article and asking for changes [revisions] before publishing.) If it is a peer reviewed journal, consider that a plus for the article's credibility. Being peer reviewed doesn't mean it's perfect; just more likely to be credible.
- Do the authors discuss causation or correlation? Be wary of claims of causation; it is very difficult to determine a

causal effect. While research studies often find relationships (correlation) between various variables in the data, this does not equal causation. For instance, let's return to our example above: If the study of Ohio high schools students' sports participation showed a positive correlation between sports participation and college enrollment, the researcher cannot say that participation *caused* college enrollment. If it were designed to show cause and effect, the study would not have resulted in a correlation. Instead, it would have had to have been designed as an experiment or quasi-experiment, used different statistical analyses, and would have supported or not supported its hypotheses.

### *ACTIVITY: Evaluating Data as Sources*

Open activity in a web browser.

## Data Visualization

Modern software can help you display your data in ways that are striking and often even beautiful. But the best criterion for judging whatever display you use is whether it helps you and your audience *understand* your data better than only text, maybe even noticing points that you would have otherwise missed.

Specific kinds of charts and graphs accomplish different things, which is important to keep in mind as you evaluate data and data sources. For instance:

- Line charts are usually used to show trends, comparing data over time.
- Scatter plots show the distribution of data points.
- Bar graphs usually compare categories of data.
- Pie charts show proportions of a whole.

It's important to decide what you want a display to *do* before making your final choice. Studying your data first so you know what you have will help you make that decision. Also, it may also be conventional in your discipline to display your data in certain ways. Examining the sources you were assigned to read in your course or asking your professor will help you learn what's considered conventional.

Your professors will be examining your visual display to make sure you did not misrepresent the data. For example, the proportions of slices in a pie chart all have to add up to 100%. If yours don't, you've done something wrong.

It's easy to get overwhelmed by all the choices to be made between potential displays and what each can do: Here are two sites to help you sort them out **once you know your data**:

<http://datavizproject.com/>

<https://datavizcatalogue.com/>

If you aren't ready yet to use some of the specialized tools for display, make it a point to learn how to use the data display capabilities in Microsoft Word and/or Excel. You can find helpful tutorials on the Web. Good search statements to find those tutorials are:

- "Microsoft Word" (charts OR graphs)
- "Microsoft Excel" (charts OR graphs).

If you are OSU staff, students, or faculty, OSU Libraries' Research Commons can help you choose a display, recommend a tool to accomplish it, and check out your finished data visualization before you have to turn it in. Contact the data visualization specialist.

If you are interested in displaying geospatial data on a map, consider how the Research Commons also helps OSU students, staff, and faculty find geospatial data and choose tools to display them.

## Citing Data

Data is not copyrightable, but the expression of data is. So as with any other information source, you should cite any data you use from a source, whether it appeared in an article or you downloaded the data from a repository on the Web.

Unfortunately, data citation standards do not exist in many disciplines, although the DataCite initiative is working on them. Current workarounds include:

- Citing a “data paper,” where available.
- Citing a journal article that describes the dataset.
- Citing a book that includes the data.
- Citing the dataset as a website, where possible.

### *Examples: Citing Data*

Data from a research database:

- APA: Department of Agriculture (USDA) (2008). “Crops Harvested”, Crop Production [data file]. Data Planet, (09/15/2009).
- MLA: “Crops Harvested”, Department of Agriculture (USDA) [data file] (2008). Data Planet, (09/15/2009).

Data from a file found on the open Web:

- APA: Center for Health Statistics, Washington State Department of Health. (2012, November). Mortality Table D1. Age-Adjusted Rates for Leading Causes of Cancer for Residents, 2002-2011. [Microsoft Excel file]. Washington State Department of Health. Retrieved from <http://www.doh.wa.gov/>
- MLA: Center for Health Statistics, Washington State Department of Health. Mortality Table D1. Age-Adjusted Rates for Leading Causes of Cancer for Residents, 2002-2011. Washington State Department of Health, Nov. 2012. Microsoft Excel file. Retrieved from <http://www.doh.wa.gov/>

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## Proper Use of Data

Once you have your data, you can examine them and make an interpretation. Sometimes, you can do so easily. But not always.

*What if...*

*...you had a lot of information?* Sometimes data can be very complicated and may include thousands (or millions...or billions...or more!) of data points. Suppose you only have a date and the high temperature for Columbus – but you have this for 20 years’ worth of days. Do you want to calculate the average highs for each month based upon 20 years’ worth of data by hand or even with a calculator?

*...you want to be able to prove a relationship?* Perhaps your theory is that social sciences students do better in a certain

class than arts and humanities or life and physical science students. You may have a huge spreadsheet of data from 20 years' worth of this course's sections and would need to use statistical methods to see if a relationship between major and course grade exist.

You may find yourself using special software, such as Excel, SAS, and SPSS, in such situations.

Many people may have a tendency to look for data to prove their hypothesis or idea, as opposed to really answering their research questions. However, you may find that the opposite happens: the data may actually disprove your hypothesis. You should never try to manipulate data so that it gives credence to your desired outcome. While it may not be the answer you wanted to find, it is the answer that exists. You may, of course, look for other sources of data – perhaps there are multiple sources of data for the same topic with differing results. Inconclusive or conflicting findings do happen and can be the answer (even if it's not the one you wanted!).

Conflicting results on the same topic are common. This is the reality of research because, after all, the questions researchers are studying are complicated. When you have conflicting results you can't just ignore the differences—you'll have to do your best to explain why the differences occurred.

## 16. People as Sources

People don't just create the sources we use. They are actually sources them-selves. Most of us use people as sources all the time in our private lives, such 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 to 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 source 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 Ph.D.s 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, 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 an historical event).

For instance, people who have had firsthand experience living or working with a situation (say, a survivor of 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 beat. 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

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 foodbanks 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 on the phone, in email, with Skype, 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. For instance, in APA style, interviews, e-mail, and other personal communication should not appear in the reference list but should be in your main text only like this: (A. Authorslastname, personal communication, July 29, 2018).

See Purdue Online Writing Lab (OWL) for information on how to handle interviews and other communication with people in other styles.

### *ACTIVITY: People as Sources*

Open activity in a Web browser

## 17. Traditional Knowledge



PART III

## 3-SOURCES AND INFORMATION NEEDS



## 18. Sources and Information Needs



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

This section and the section on Types of Sources work together. That's because knowing the kinds of information in each category of sources will help you choose the right kind of information to meet each of your information needs. **And some of those needs are very particular.**

**Information needs are why you need sources. Meeting those needs is what you're going to do with sources as you complete your research project.**

Here are those needs:

- To learn more background information.
- To answer your research question(s).
- 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.

### Tip:

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

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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, answer, convince, describe, and report. But you won't be doing any of that alone.

Your sources will give you information with which to reason. 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.

## Needs and Final Products

Background information may seldom appear directly in any final product. But meeting each of the other information needs will result in written sections of a term paper. For final products other than term papers, you'll have the same needs and will use sources to meet them. But not all needs will result in a section of your final product.

### *Posters & 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 mean you do not report what others have said about your question. But that doesn't mean you didn't meet those needs and others as you carried out your research—unlike a term paper or journal article, the poster format in which you reported it just had more limited space.

For instance, in order to justify doing the research to yourself and your professor, you probably started by meeting the information need to describe the situation and why it is important. Your instructor may have you turn in that justification. And in order to do research based on what has already been found out, you will have studied what others have already reported. You also had to do that in order to make your answer to your research question more believable. But that doesn't mean you had room on your poster to say you met those needs.

### *Activity: Sources and Information Needs*

Open activity in a web browser.

## 19. Sources to Meet Needs

Because there are several categories of sources (see Types of Sources), the options you have to meet your information needs can seem complex.

**Our best advice is to pay attention to when only primary and secondary sources are required to meet a need and to when only professional and scholarly sources will work.** If your research project is in the arts, also pay attention to when you must use popular sources, because popular sources are often primary sources in the arts.

These descriptions and summaries of when to use what kind of source should help.

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### To Learn Background Information

When you first get a research assignment and perhaps for a considerable time afterward, you will almost always have to learn some background information as you develop your research question and explore how to answer it.

Sources from any category and from any subgroup within a category – except journal articles – can meet students' need to learn background information and understand a variety of perspectives. Journal articles, are usually too specific to be background. From easy-to-understand to more complex sources, read and/or view those that advance your knowledge and understanding.

For instance, especially while you are getting started, secondary sources that synthesize an event or work of art and tertiary sources such as guidebooks can be a big help. Wikipedia is a good tertiary source of background information.

Sources you use for background information don't have to be sources that you cite in your final report, although some may be.



*Get a good look at your topic through background reading.*

### Sources to Learn Background Information

- **Quantitative or Qualitative:** Either—whatever advances your knowledge.
- **Fact or Opinion:** Any—whatever advances your knowledge.
- **Scholarly, Professional, or Popular:** Any—whatever advances your knowledge.
- **Primary, Secondary, or Tertiary:** Any—whatever advances your knowledge.
- **Publication Format:** Any—whatever advances your knowledge.

One important reason for finding background information is to learn the language that professionals and scholars have used when writing about your research question. That language will help you 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:

- Glossary neuroscience
- Glossary "social media marketing"

(Putting a phrase in quotes in most search boxes insures that the phrase will be searched rather than individual words.)

---

## To Answer Your Research Question

You have to be much pickier with sources to meet this need because only certain choices can do the job. Whether you can use quantitative or qualitative data depends on what your research question itself calls for.

Only primary and secondary sources (from the category called publication mode) can be used to answer your research question and, in addition, those need to be professional and/or scholarly sources for most disciplines (humanities, social sciences, and sciences). But the arts often require popular sources as primary or secondary sources to answer research questions. Also, the author's purpose for most disciplines should be to educate and inform or, for the arts, to entertain and perhaps even to sell. (As you may remember, primary sources are those created at the same time as an event you are researching or that offer something original, such as an original performance or a journal article reporting original research. Secondary sources analyze or otherwise react to secondary 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.)



*Your research question may call for qualitative or quantitative sources.*

### *Example: Quantitative or Qualitative Data*

Suppose your research question is “How did a particular king of Saudi Arabia, King Abdullah, work to modernize his country?”

That question may lend itself to qualitative descriptive judgments—about what are considered the components of modernization, including, for instance, what were his thoughts about the place of women in society.

But it may also be helped by some quantitative data, such as those that would let you compare the numbers of women attending higher education when Abdullah became king and those attending at the time of his death or, for instance, whether manufacturing increased while he reigned.

So looking for sources that provide both quantitative and qualitative information (not necessarily in the same resource) is usually a good idea.

If it is not clear to you from the formats of sources you are assigned to read for your course, ask your professor which formats are acceptable to your discipline for answering your research question.

### Sources to Answer Your Research Question

- **Quantitative or Qualitative:** Will be determined by the question itself.
- **Fact or Opinion:** Professional and scholarly for most disciplines; the arts often use popular, as well.
- **Scholarly, Professional, or Popular:** Professional and scholarly for most disciplines; the arts often use popular, as well.
- **Primary, Secondary, or Tertiary:** Primary and secondary.
- **Publication Format:** Those acceptable to your discipline.

---

## To Convince Your Audience

Convincing your audience is similar to convincing yourself and takes the same kinds of sources—as long as your audience is made up of people like you and your professor, which is often true in academic writing. That means using many of those sources you used to answer your research question.

When your audience isn't very much like you and your professor, you can adjust your choice of sources to meet this need. Perhaps you will include more that are secondary sources rather than primary, some that are popular or professional rather than scholarly, and some whose author intent may not be to educate and inform.



*Sources that meet the approval of your audience will be more convincing.*

### Sources to Convince Your Audience

- **Quantitative or Qualitative Data:** Same as what you used to answer your research question if your audience is like you and your professor. (If you have a different audience, use what is convincing to them.)
- **Fact or Opinion:** Those with the purpose(s) you used to answer your research question if your audience is like you and your professor. (If you have a different audience, you may be better off including some sources intended to entertain or sell.)
- **Scholarly, Professional or Popular:** Those with the same expertise level as you used to answer the question if your audience is like you and your professor. (If you have a different audience, you may be better off including some popular.)
- **Publication Mode:** Primary and secondary sources if your audience is like you and your professor. If you have a different audience, you may be better off including more secondary sources than primary.
- **Publication Format:** Those acceptable to your discipline, if your audience is like you and your professor.

---

## To Describe the Situation

Choosing what kinds of sources you'll need to meet this need is pretty simple—you should almost always use what's going to be clear and compelling to your audience. Nonetheless, sources intended to educate and inform may play an out-sized role here.

But even then, they don't always have to educate and inform *formally*, which opens the door to using sources such as fiction or the other arts and formats that you might not use with some other information needs.



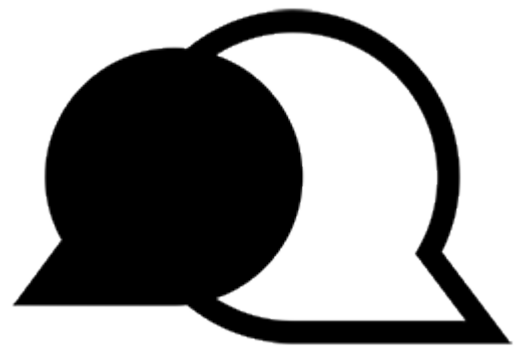
### Sources to Describe the Situation

*Use sources to frame the situation.*

- **Quantitative or Qualitative:** Whatever you think will make the description most clear and compelling and your question important to your audience.
  - **Fact or Opinion:** Often to educate and inform, but sources don't have to do that *formally* here, so they can also be to entertain or sell.
  - **Scholarly, Professional, or Popular:** Whatever you think will make the description most clear and compelling and your question important to your audience.
  - **Primary, Secondary or Tertiary:** Whatever you think will make the description most clear and compelling and your question important to your audience. Some disciplines will not accept tertiary for this need.
  - **Publication Format:** Whatever you think will make the description most clear and compelling and your question important to your audience. Some discipline will accept only particular formats, so check for your discipline.
- 

## To Report What Others Have Said

The choices here about kinds of sources are easy: just use the same or similar sources that you used to answer your research question that you also think will be the most convincing to your audience.



### Sources to Report What Others Have Said

- **Quantitative or Qualitative:** Those sources that you used to answer your research question that you think will be most convincing to your audience.
- **Fact or Opinion:** Those sources that you used to answer your research question that you think will be most convincing to your audience.
- **Scholarly, Professional, or Popular:** Those sources that you used to answer your research question that you think will be most convincing to your audience.
- **Primary, Secondary, or Tertiary:** Those sources that you used to answer your research question that you think will be most convincing to your audience.
- **Publication Format:** Those sources that you used to answer your research question that you think will be most convincing to your audience.

*Look for sources about how others have treated your research question.*

### *Activity: Meeting Your Information Needs*

Open activity in a web browser.

## 20. Planning Your Sources

Okay, so once you know what kinds of sources you need to meet your information needs, where should you look for them? Once more, thinking about categories can help.

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 just plain old Google, and an academic library has more scholarly sources than a public library.) Source Locator can help you see where sources of every audience expertise level (popular, professional, and scholarly) are located. Check it out.

Even if you are not using our planning table, Bbefore you start looking, try the Plan for Sources table below along with the suggestions made in this section to think through what sources you'll need for your own research project. (There's also an example plan for sources filled in for a term paper.) Having your Plan for Sources always at your side while you search for sources will guide where you look and what you're willing to accept. It will help you keep track of whether you have found the right resources.

Also take a look at our Source Locator, whose link is below.

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>.

You can download the table at <http://go.osu.edu/planforsources>, then fill it out with the help of our Source Locator. Using this table doesn't mean you can't change your mind if you later find another kind of source that looks too good to pass up. But making a plan first will insure that you don't just grab any source you come across. The few minutes you take to complete the table will save you time later. And it's nice to have a plan all in one place that you can put into action!

### Example: Sample "Plan for Sources" Table

PLAN FOR SOURCES				
Course: <b>ARTS &amp; SCIENCES 3200</b>		Due Date: <b>2/15/16</b>	Type of Final Product: <b>term paper</b>	
Research Question: <b>in what ways has the checklist movement affected surgery patient outcomes in U.S. hospitals?</b>				
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.





PART IV

## 4-PRECISION SEARCHING



## 21. 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*

## 22. 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).

## 23. 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](http://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](http://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.

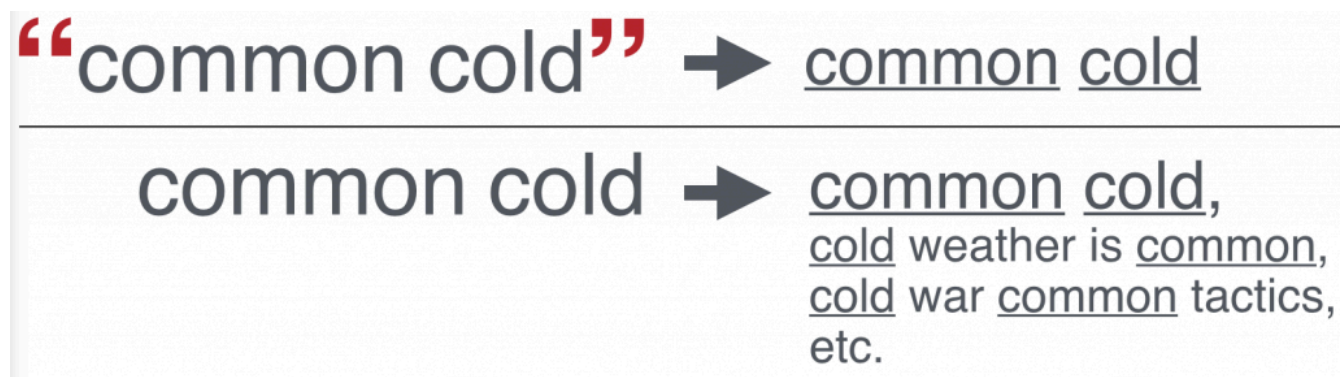
## 24. Search Statements

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.

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### 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 mathematic\* finds mathematics, mathematically, mathematician, etc.

wom?n → woman & women

mathemat\* → mathematician,  
mathematics,  
etc.

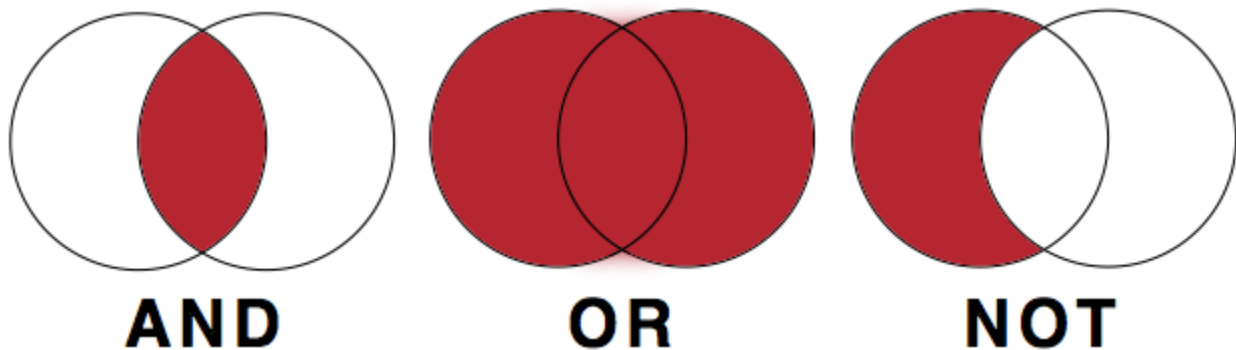
Using wildcard characters allows you to find variations of a word.

### 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.

**(cat or dog) and (“white house” and president)**

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.



PART VI

6-EVALUATING SOURCES



## 25. Thinking Critically About Sources



*Evaluating sources often involves piecing together clues.*

This section teaches how to identify relevant and credible sources that you have most likely turned up on the Web and on your results pages of the library catalog, Google Scholar, and specialized databases. Relevant, credible sources will meet the information needs of your of your research project.

In order to evaluate a source, you have to answer two questions about it:

- Is this source relevant to my research question?
- Is this a credible source– a source my audience and I should be able to believe?

**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.**

### 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 articles from a particular database, so make sure you have identified enough of the kind of sources your professor has requested.

You might already be worrying about how long evaluating sources is going to take. Let's say right off that you won't have to read all of a source to decide whether it is relevant and credible. (Later, of course, it will require a closer read to determine which direct quotes, paraphrases, and summaries you may want to use from the sources you have selected.)

Nonetheless, our advice is to not begrudge the time you spend evaluating sources. It's one of the most important things to learn at university—the opportunity to evaluate sources is one of the key reasons your professors assign research projects. 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 learning those skills is a good investment.

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

**ACTIVITY:** Evaluation Basics

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## 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, **most of the time it is inferences – educated guesses from available clues** – that you have to make about whether to use information from particular sources.

Your information needs 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, though there's a lot to be said for always having accurate information, regardless of the consequences of using inaccurate information.
- 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 term paper.

For your research assignments or a health problem, the consequences may be great if you use information that is not relevant or not credible.

### *Activity: Quick Check*

**Instructions:** Select one answer to each question.

Open activity in a web browser.

## 26. Evaluating for Relevancy

Relevant sources are those that pertain to your research question. You'll be able to figure that out 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, or a source's currency, should have on deciding whether a source is relevant. **Your research question will determine that.**

For instance, if your research question is about the life sciences, you probably should consider only the most recent sources relevant 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 aim for sources no more than 5 years old. (An example discipline that calls for even newer sources is computer security.)

But 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 example research questions 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 those research questions.
- Primary sources might be considered especially relevant to all three research questions. Life science journal articles that provide research findings for the first time count as primary sources. And primary sources (such as Scott's diaries and expedition photographs, as well as paintings, literature, clothing, and household items from the Edo Period) go a long way to explain faraway people and times. (See Primary, Secondary, & Tertiary Sources.)

### EXAMPLE: 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.

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

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## Time-Saving Tips

Instead of thinking you have to read all of every source in order to figure out whether it is 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.

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.)

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 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 the 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 currency is important to your research question. So it's wise 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?

	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 three kinds of sources' relevancy to your research question. **Whatever you do, don't stop evaluating a source after looking only 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, 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. 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. Page creation or revision dates that you find can also help.

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 an **article**, think about the title. Does it have anything 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 within your parameters? Also skim the abstract 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 in that time period?

Look at the abstract and section headings in the 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 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 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 bibliography contains keywords related to your research question. Do the sources cited by the bibliography pertain to your research question?

For a **book**, check whether the title indicates the book could be about your research question. Consider whether time should have an impact on what sources can be considered relevant. If so, 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 is just right. Also skim some of the preface and introduction to see whether the book works with the time considerations you need.

For help answering 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. Do they also 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*

Open activity in a Web browser.

### *ACTIVITY: Connecting the Dots beyond the Title*

Open activity in a Web browser.

#### **Connecting the Dots beyond the Title**

**Instructions:** Now you can practice evaluating for relevance beyond the title. In the previous activity, you evaluated for currency and relevance the titles of three sources for the research question: How does "prospect theory" in behavioral economics help explain medical doctors' decisions to favor surgery or radiation to cure cancer in patients?

Judging by the title, the most relevant source for that research question seemed to be a journal article called "**Cancer Treatment Prescription—Advancing Prospect Theory beyond Economics,**" in *Journal of The American Medical Association Oncology*, June, 2016.

Read the abstract of the article below. Then decide whether this source is relevant to your research questions above. That is, might the article help you meet any of your project's information needs about the research questions? If there is at least one need it can help meet, then you should judge the article relevant.

Answer the question below the abstract to indicate the source is relevant. Then compare your answer with our feedback.

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 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, 2016** (Note to students: This article and abstract are fictitious.)

**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 2014 and 2015, which documented patient conditions and the way oncologists framed their recommendations regarding surgery or chemotherapy. Thus, a quasi-experimental 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, to 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.

## 27. Evaluating for Credibility

Next, you'll be evaluating each of the sources that you deemed relevant.

What are the clues for inferring a source's credibility? Let's start with evaluating websites, since we all do so much of our research online. But we'll also include where to find clues relevant to sources in other formats when they differ from what's good to use with websites. Looking at specific places in the sources will mean you don't have to read all of every resource to determine its worth to you.

And remember, the more you take these steps, the faster it goes because always examining your sources becomes second nature.

---

### What Used to Help

It used to be easier to draw conclusions about an information source's credibility, depending on whether it was a print source or a web source. We knew we had to be more careful about information on the web—simply because all the filters that promoted accuracy involved in the print publishing process were absent from most web publishing. After all, it takes very little money, skill, and responsible intent to put content on the web, compared with what has to be done to convince print publishers that your content is accurate and that they will make money by printing it.

However, many publishers who once provided only print materials have now turned to the web and have brought along their rigorous standards for accuracy. Among them are the publishers of government, university, and scholarly (peer-reviewed) journal websites. Sites for U.S. mainline news organizations also strive for accuracy rather than persuasion—because they know their readers have traditionally expected it. All in all, more websites now take appropriate care for accuracy than what used to be true on the web.

Nonetheless, it still remains very easy and inexpensive to publish on the web without any of the filters associated with print. So we all still need the critical thinking skills you'll learn here to determine whether websites' information is credible enough to suit your purpose.

---

### 5 Factors to Consider

Evaluating a website for credibility means considering the five factors below in relation to your purpose for the information. These factors are what you should gather clues about and use to decide whether a site is right for your purpose.

- The source's neighborhood on the web.
- Author and/or publisher's background.
- The degree of bias.
- Recognition from others.
- Thoroughness of the content.

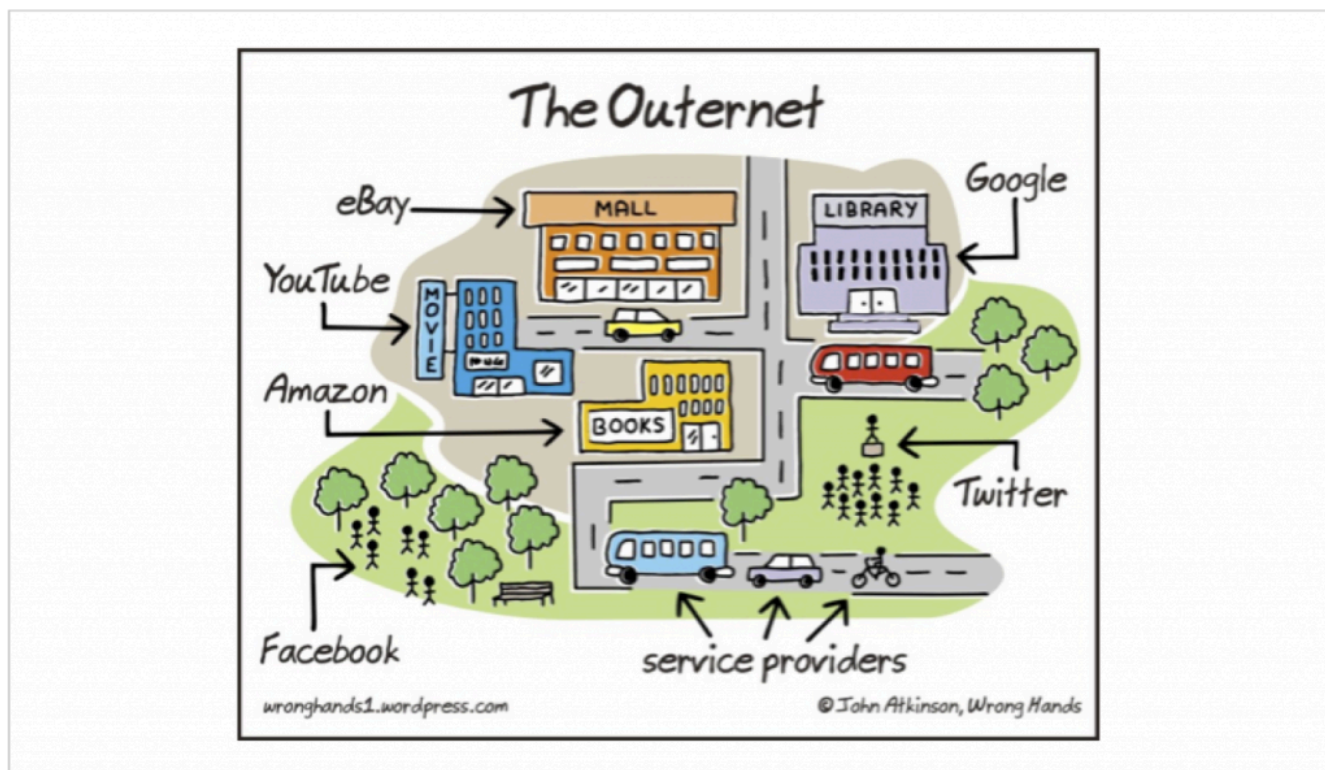
How many factors you consider at any one time depends on your purpose when seeking information. In other words,

you'll consider all five factors when you're looking for information for a research project or other high-stakes situation where making mistakes have serious consequences. But you might consider only the first three factors at other times.

## 28. A Source's Neighborhood

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.

Thinking about what neighborhood a source is in on the web can help you decide whether the site is credible and suits your purpose.



Visualize the web as a community. (Image source: John Atkinson, Wrong Hands)

### 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, the next activity will show you how to apply the concept.

[Listen to Audio](#) | [View Text Version](#)

### Tip: Author's Purpose for Print

Rather than examine print sources for their web neighborhood, examine them for their author's purpose. Read the introduction and conclusion and look at the table of contents to discern the author's purpose.

For instance, did the author intend to use the book or magazine article to inform/educate, persuade, sell, or entertain?

And is the author's purpose suitable for your purpose? For instance, does the fact that a resource was intended to

persuade mean it can't help you answer your research question? (As you know from Sources and Information Needs, yes.)

### *Activity: Self-Check*

Why might you want to read information on an advocacy site (from the neighborhood of sites that promote particular ideas and behavior)—even when you're writing a term paper and it's not acceptable to cite that source because it persuades instead of educates and is not objective? See the bottom of the page for the answer.

---

## Clues About a Website's Neighborhood

Watch the Understanding Google Search Results movie to better understand how you can quickly determine what kind of information you've turned up in a Google search.

### *Movie: Understanding Google Search Results (no audio)*

[iframe src="https://www.youtube.com/embed/mw1sYYGS\_PU?rel=0" width="560" height="315" allowfullscreen="allowfullscreen"]

[View Video](#) | [View Text Version](#)

On a website, check pages labeled About Us, About This Site, Mission, Site Index, and Site Map, if available. (If such pages or similarly labeled ones don't exist, it may be a sign that the site may be less trustworthy.)

Ask yourself these questions to gather clues that will help you decide what neighborhood you're in:

- **Is the site selling products and/or services (even if there are articles and other useful information, too)?**  
Perhaps it's a retail, service center, or corporate site.
- **Are there membership applications and requests for contributions of money or time anywhere on the site?**  
They're usually a sign that you're on a site that promotes particular ideas or behavior – in other words, they're in the advocacy neighborhood.
- **Do postings, articles, reports, and/or policy papers give a one-sided view or multiple views on issues, people, and events?** If they're one-sided, the site is probably a commercial site or in the advocacy group neighborhood. If the information is even-handed and includes different sides of an issue, the site is more likely to be on the library/museum, school, or mainline U.S. news side of town. Sites there usually provide information designed to educate rather than persuade. Newspapers online or in print usually do have editorial pages, however. But labeling opinions as such helps keep mainline U.S. news sources in the newsstand neighborhood and out of the advocacy neighborhood.

### *Activity: Neighborhoods on the Web*

Work through the three activities below to practice the concept of neighborhoods on the web.

**Matching Site to Neighborhood** – Open activity in a web browser.

**Matching Neighborhood to Purpose** – Open activity in a web browser.

**Which Neighborhood?** – Open activity in a web browser.

**Example:** Check Them Out

Think we're making a mountain out of a molehill about being careful about web sources? Please click the links below to look at three websites. Is there an inference(s) you can make that applies to all three? Perhaps that whether a website looks professionally done is not enough to insure that it is credible.

- RYT Hospital: Dwayne Medical Center – <http://rythospital.com>
  - Dog Island – <http://www.thedogisland.com>
  - The Manhattan Airport Foundation – <http://manhattanairport.org>
- 

## Making the Inference

Consider the clues. Then decide the extent that the site's neighborhood is acceptable for your purpose. It might help to grade the extent that this factor contributes to the site being suitable on a scale like this one:

- A – Very Acceptable
- B – Good, but could be better
- C – OK in a pinch
- D – Marginal
- F – Unacceptable

You'll want to make a note of the resource's grade for neighborhood so you can combine it later with the grades you give the other factors.

---

### *Answer to Activity: Self-Check*

The answer to the "Self-Check" Activity above is:

Advocacy sites are useful to learn about a particular viewpoint. They may provide a wealth of information—you just have to keep in mind that it's just one side's view and then also seek out the other side's view.

## 29. Author and Publisher

You'll always want to know who's providing the information for a website or other source. Do they have the education, training, or other experience that make you think they are authorities on the subject covered? Or do they just have opinions?

The more you know about the author and/or publisher, the more confidence you can have in your decision for or against using content from that source.

Authors and publishers can be individuals or organizations, including companies. (Web masters 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.)

Sites that do not identify an author or publisher are generally considered less credible for many purposes, including for term papers and other high-stakes projects. The same is true for sources in other formats.



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

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### Clues About an Author's and/or Publisher's Background

**If they're available, first take a look at pages called such things as About This Site, About Us, or Our Team first.** But you may need to browse around a site further to determine its author. Look for a link labeled with anything that seems like it would lead you to the author. Other sources, like books, usually have a few sentences about the author on the back cover or on the flap inside the back cover.

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.

**Sometimes it helps to look for whether a site 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.

In a similar manner, a tilde symbol (~) preceding a directory name in the site address indicates that the page is in a "personal" directory on the server and is not an official publication of that organization. For example, you could tell that Jones' web page was not an official publication of XYZ University if his site's address was: <http://www.XYZuniversity.edu/~jones/page.html>. The tilde indicates it's just a personal web page—in the Residences, not Schools, neighborhood of the web.

Unless you find information about the author to the contrary, such blogs and sites should not automatically be considered to have as much authority as content that is officially part of the university's site. Or you may 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 Schools neighborhood.

Learning what they have published before can also help you decide whether that organization or individual should be considered credible on the topic. Listed below are sources to use to look for what the organization or individual may have published and what has been published about them.

*Tip: Find Out What the Author (Person or Organization) Has Published*

**Library Catalogs** – Search in a large library catalog to find books written by the author.

For example:

- OSU Library Catalog Link
- OhioLINK
- WorldCat@OSU

**Web Article Database** – Use a free web article database to search for articles by the author. Note: While you can search for free, you may not be able to retrieve articles unless searching through a library.

For example:

- Google Scholar
- MagPortal.com

**Specialized Database** – Locate articles written by the author by using a specialized database that covers the same topical area as information on the website. Check your library's website to find databases that you can use for this purpose. (Such databases are also called periodical indexes.)

For example:

- Use ERIC (OSU users only) to locate any articles published by the author of an education website.

*Tip: Find Out What Has Been Written About The Author*

**Web Search Engine** – Use a search engine to find web pages where the author's name is mentioned. (Be sure to search for the name as a phrase, as in "Jane Doe")

For example:

- Google
- Yippy

**Full-Text Article Database** – Use a database that searches the full-text of articles (not just descriptive information about the article) to find those that mention people and organizations.

For example:

- Academic Search Complete (OSU only)
- LexisNexis Academic (OSU only)

**Specialized Biographical Sources** – Use directories and indexes provided by your library to find backgrounds of people.

For example:

- Biography Reference Bank (OSU only)

## *Activity: Identifying Authors*

Open activity in a web browser.

---

### Making the Inference

Consider the clues. Then decide the extent that the source's author and/or publisher is acceptable for your purpose. It might help to grade the extent that this factor contributes to the site being suitable on a scale like this one:

- A – Very Acceptable
- B – Good, but could be better
- C – OK in a pinch
- D – Marginal
- F – Unacceptable

You'll want to make a note of the source's grade for author and/or publisher so you can combine it later with the grades you give the other factors.

## 30. Degree of Bias

Most of us have biases, and we can easily fool ourselves if we don't make a conscious effort to keep our minds open to new information. Psychologists have shown over and over again that humans naturally tend to accept any information that supports what they already believe, even if the information isn't very reliable. And humans also naturally tend to reject information that conflicts with those beliefs, even if the information is solid. These predilections are powerful. Unless we make an active effort to listen to all sides we can become trapped into believing something that isn't so, and won't even know it.

— A Process for Avoiding Deception, Annenberg Classroom

Probably all sources exhibit some bias, simply because it's impossible for their authors to avoid letting their life experience and education have an effect on their decisions about what is relevant to put on the site and what to say about it.

But that kind of unavoidable bias is very different from a wholesale effort to shape the message so the site (or other source) amounts to a persuasive advertisement for something important to the author.

Even if the effort is not as strong as a wholesale effort, authors can find many—sometimes subtle—ways to shape communication until it loses its integrity. Such communication is too persuasive, meaning the author has sacrificed its value as information in order to persuade.

While sifting through all the web messages for the ones that suit your purpose, you'll have to pay attention to both what's on the sites and in your own mind.

That's because one of the things that gets in the way of identifying evidence of bias on websites is our own biases. Sometimes the things that look most correct to us are the ones that play to our own biases.



*Look for evidence of bias in your sources.*

---

### Clues About Bias

Review the website or other source and look for evidence that the site exhibits more or less bias. The factors below provide some clues.

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## Coverage

**Unbiased:** This source's information is not drastically different from coverage of the topic elsewhere. Information and opinion about the topic don't seem to come out of nowhere. It doesn't seem as though information has been shaped to fit.

**Biased:** Compared to what you've found in other sources covering the same topic, this content seems to omit a lot of information about the topic, emphasize vastly different aspects of it, and/or contain stereotypes or overly simplified information. Everything seems to fit the site's theme, even though you know there are various ways to look at the issue(s).

## Citing Sources

**Unbiased:** The source links to any earlier news or documents it refers to.

**Biased:** The source refers to earlier news or documents, but does not link to the news report or document itself.

## Evidence

**Unbiased:** Statements are supported by evidence and documentation.

**Biased:** There is little evidence and documentation presented, just assertions that seem intended to persuade by themselves.

## Vested Interest

**Unbiased:** There is no overt evidence that the author will benefit from whichever way the topic is decided.

**Biased:** The author seems to have a "vested interest" in the topic. For instance, if the site asks for contributions, the author probably will benefit if contributions are made. Or, perhaps the author may get to continue his or her job if the topic that the website promotes gets decided in a particular way.

## Imperative Language

**Unbiased:** Statements are made without strong emphasis and without provocative twists. There aren't many exclamation points.

**Biased:** There are many strongly worded assertions. There are a lot of exclamation points.

## Multiple Viewpoints

**Unbiased:** Both pro and con viewpoints are provided about controversial issues.

**Biased:** Only one version of *the truth* is presented about controversial issues.

---

## Examples: Bias

- The Cigarette Papers – Sources of information are documented for each chapter.
  - The U.S. Immigration Debate – Shows where it gets its facts; the Council on Foreign Relations is nonpartisan.
  - White Poison: The Horrors of Milk – Claims are not supported by documentation.
- 

## Making the Inference

Consider the clues. Then decide the extent that the bias you detected on the source is acceptable for your purpose. It might help to grade the extent that this factor contributes to the site being suitable on a scale like this one:

- A – Very Acceptable
- B – Good, but could be better
- C – OK in a pinch
- D – Marginal
- F – Unacceptable

You'll want to make a note of the source's grade for bias so you can combine it later with the grades you give the other factors.

## 31. Recognition from Others

Checking to see whether others have linked to a website or tagged or cited it lets you know who else on the web recognizes the value of the site's content. Reader comments and ratings can also be informative about some sites you may be evaluating, such as blogs.

If your source is a print book, the blurbs on the front or back cover give you information from authors, experts, or other well-known people who were willing to praise the book and/or author. The same kind of “mini-reviews” may be available on the publisher's website. You can also look for reviews of the book or other source by using Google and Google Scholar.

Those links, tags, bookmarks, citations, and positive reader comments and ratings are evidence that other authors consider the site exemplary. Book reviews, of course, may be either positive or negative.



*Ratings and positive comments and review are evidence that others find a source valuable.*

Exactly which individuals and organizations are doing the linking, tagging, citing, rating, and commenting may also be important to you. There may be some company you'd rather your site not keep! Or, maybe the sites that link to the one you're evaluating may help solidify your positive feelings about the site.

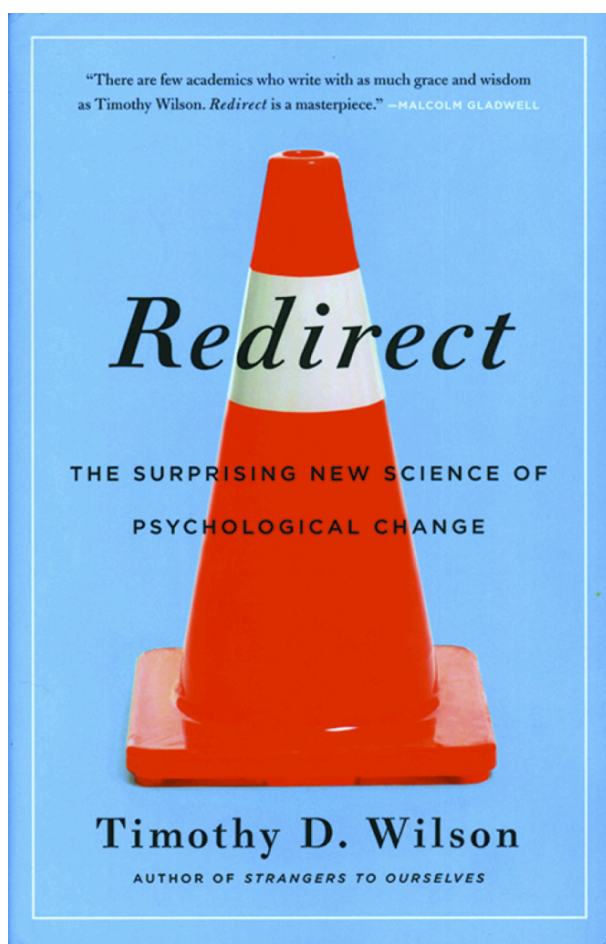
Don't let an absence of links, tags, citations, ratings, and comments damn the site in your evaluation. Perhaps it's just not well-known to other authors. The lack of them should just mean this factor can't add any positive or negative weight to your eventual decision to use the site—it's a neutral.

### *Tip: Peer Review and Citation as Recognition*

The peer review most articles undergo before publication in a scholarly journal lets you know they're considered by other scholars to be worth publishing. You might also be interested to see to what extent other researchers have used an article after it was published. (That use is what necessitates their citation.) But keep in mind that there may not be any citations for very new popular magazines, blogs, or scholarly journal articles.

### **Activity:** Influence You?

Would the blurb on the front cover of *Redirect* by psychologist Timothy Wilson influence you positively or negatively in your evaluation of the book?



The blurb says: "There are few academics who write with as much grace and wisdom as Timothy Wilson. *Redirect* is a masterpiece. – Malcolm Gladwell"

---

## Clues about Recognition

**Use Bing to find sites that link to a particular URL.** (Google does not adequately support this.) Enter inbody:[URL of known site] in the Bing search box.

For example: inbody:www.deathpenaltyinfo.org

As you look over the results page, always pay attention to more than the number of sites linking to the site about which you're seeking information. Also consider the kind of sites that do that linking. Are they the kind of sites you are pleased to see associated with the site you're interested in? If you are doing academic writing, you should want them to be professional, scholarly, and/or mainline news sources—not, for instance, something from the entertainment neighborhood.

If you prefer recognition from a particular neighborhood, you can ask Bing to look specifically for links from that neighborhood. Suppose, for instance, you wonder whether scholarly sources link to the site above but don't want to look for them among all that you turned up before. You should type in the Bing search box inbody:www.deathpenaltyinfo.org site:edu in order to see whether any scholarly sources link to that site.

**Find citations of an article.** Although there is no simple way to find every source that cites an article in a popular magazine, a blog, or a scholarly journal, there are some ways to look for these connections.

**For articles published in popular magazines or blogs,** enter the title of the article in quotes in the search box of a search engine like Google. The resulting list should show you the original article you're evaluating, plus other sites that have mentioned it in some way. Click on those that you want to know more about.

### *Example: Finding Mentions*

Here's an example using Google to find mentions for a blog article called Help Wanted: 11 million college grads by Bill Gates.

### *Activity: Inferences*

Use Bing to determine how many scholarly sites have made links to these sites. Copy each search statement below and put it in the Bing search box to make your searches.

- inbody:www.DOAJ.org site:edu
- inbody:www.nvic.org site:edu

Sometimes you'll even have to take a look at the linking organization's document in order to figure out *why* it's linking. For instance, is it linking to a bad example that it wants to show? Like usual with source evaluation, you'll have to make inferences.

**For articles published in scholarly journals,** use Google Scholar to enter the title of the article in quotes. In the results list, find the article you're evaluating. (Many articles have similar titles.) Look for the number of citations in the lower left of the listing for your article. If you want more information on the authors who have done the citing, click on the citation number for a clickable list of articles or papers and get the names of authors to look up at the end of the articles or with a search engine. (This is a good way to discover more articles about your topic, too.)

Web Images More...

Google "massilion diplomacy before the second punic war" 🔍

Scholar 1 result (0.03 sec)

**Articles**

Case law

My library

**Massilian diplomacy before the second Punic war**  
 FR Kramer - The American Journal of Philology, 1948 - JSTOR  
 Roman and Greek historians devote slight attention to the role played by Massilia in the events or policies leading to the Second Punic War. 1 It has long been assumed, however, that Massilian influence on Roman policy was greater than would appear from the ...

**Cited by 38** Related articles Cite Save

Any time

Since 2016

Since 2015

Since 2012

Custom range...

✉ Create alert

About Google Scholar Privacy Terms Provide feedback

Sort by relevance

Sort by date

☒ include patents

☒ include citations

✉ Create alert

Google Scholar shows how many articles have cited a given article.  
 View the live example.

**You can also use specialized citation databases**, such as Web of Science and Scopus (both OSU only), to find where an article or author has been cited.

## Making the Inference

Consider the clues. Then decide the extent that the source's recognition from others is acceptable for your purpose. It might help to grade the extent that this factor contributes to the site being suitable on a scale like this one:

- A – Very Acceptable
- B – Good, but could be better
- C – OK in a pinch
- D – Marginal
- F – Unacceptable

You'll want to make a note of the source's grade for recognition so you can combine it later with the grades you give the other factors.

## 32. Thoroughness

Figuring out whether a website or other source is suitable for your purpose also means looking at how thoroughly it covers your topic

You can evaluate thoroughness in relation to other sources on the same topic. Compare your source to how other sources cover the material, checking for missing topics or perspectives.



*Consider how well a source covers your topic.*

---

### Clues About Thoroughness

Click around a site to get some idea of how thoroughly it covers the topic. If the source you are evaluating is a print resource, read the introduction and conclusion and also the table of contents to get a glimpse of what it covers. Look at the index to see what subject is covered with the most pages. Is it thorough enough to meet your information need?

#### *Tip: Related Sites*

Use Google to find other sites on the same topic by entering **related:[the URL of the site you know]** in the search box.

For example: `related:guides.osu.edu`

Use this technique to browse other sites Google turns up. Do other sites cover aspects of the topic that are missing from the site you are evaluating? Or does your site stack up pretty well against the competition?

#### *Activity: Comparing Websites*

Open activity in a web browser.

## Making the Inference

Consider the clues. Then decide the extent that the source's thoroughness is acceptable for your purpose. It might help to grade the extent that this factor contributes to the source being suitable on a scale like this one:

- A – Very Acceptable
- B – Good, but could be better
- C – OK in a pinch
- D – Marginal
- F – Unacceptable

You'll want to make a note of the source's grade for thoroughness so you can combine it later with the grades you give the other factors.

## 33. Combining the Factors

Once you've considered each factor used in evaluating a source, it's important to take a look at the inferences you made about them. Now is the time to look at those grades all together—to average them if you've been assigning grades—and to make one more inference.

Taking the grade on each factor into account, can you infer that the source is credible enough for your purpose? If it isn't, this is one source that can't be helpful in your project. If it is relevant and credible enough, you can use information from that resource with confidence.

---

### Making the Final Inference

Assume you're writing a term paper and are considering using information from Site XYZ. You ran through the evaluation process as you looked over the site, and you made notes about the grades you assigned.

The grades you gave individual factors are:

- Neighborhood: A
- Author/publisher's background: B
- Degree of bias: A
- Recognition from others: No Evidence
- Thoroughness: C
- Currency of the content: A

You average the grades (A=4, B=3, C=2, D=1, F=0), remembering not to include the factor on which you gave no grade. The score was 3.4, about a B, which is a "Good, but could be better" score on the scale we used in this tutorial. You decide to use information from this site in your project.

- A – Very Acceptable
- B – Good, but could be better
- C – OK in a pinch
- D – Marginal
- F – Unacceptable

### When Should You Stop?

Research shows that students often don't know when they should stop trying to find and evaluate sources for a particular project. How many sources are enough? It's hard to say, exactly. But you'll need enough to meet the information needs of your project and to meet the requirements your professor told you about.

Furthermore, you may change your mind as you continue working on your project. There is probably not a researcher alive who hasn't thought he or she had enough relevant and sources, only to change their mind later when they were actually writing the final product.

The Sources Checklist here may help you decide what you have enough of and to keep track of needs yet to be met. If you need to, you can use it multiple times as you work on the same project.



PART VII

7-ETHICAL USE OF SOURCES



## 34. Ethical Use and Citing Sources



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

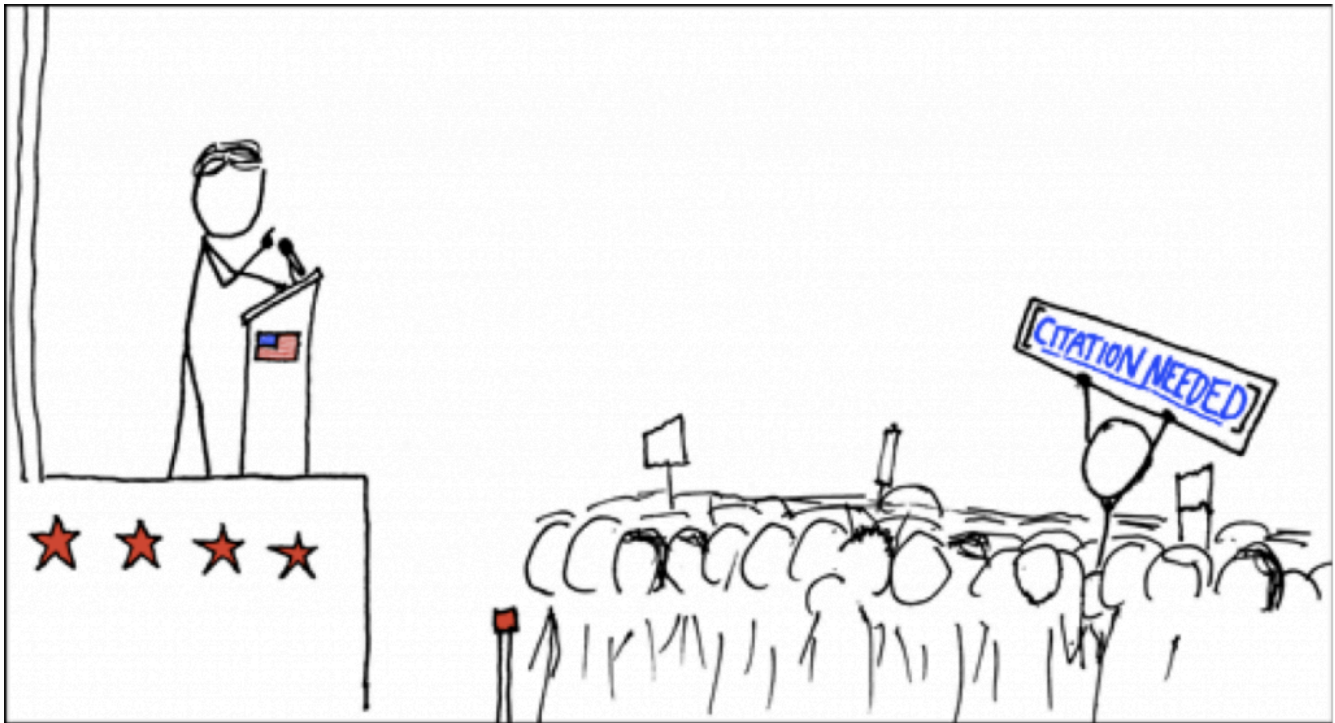
You likely know that research projects always need a reference or a works cited page (also called a bibliography). But have you ever wondered why?

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.

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## 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.

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## 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

## 35. 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.

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## 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!

## 36. 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.

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### 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.

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### 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.

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## 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.

PART VIII

8-HOW TO CITE SOURCES



## 37. 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**.

#### APA:

Rosenhan, D. L. (1973). On Being Sane in Insane Places. *Science*, 179(4070), 250-258. doi:10.1126/science.179.4070.250

#### Chicago:

Rosenhan, D. L. "On Being Sane in Insane Places." *Science* 179, no. 4070 (1973): 250-58. doi:10.1126/science.179.4070.250.

#### MLA:

Rosenhan, David L. "On Being Sane in Insane Places." *Science* 179.4070 (1973): 250-258. Web. 4 May 2016.

#### AMA:

Rosenhan DL. On being sane in insane places. *Science*. 1973;179(4070):250-258. doi:10.1126/science.179.4070.250

*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.

# 38. Steps for Citing

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

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## 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

```
[iframe src="https://www.youtube.com/embed/OJtIWdSHfdE" width="560" height="315" allowfullscreen="allowfullscreen"]
```

[View video](#)

**Movie:** Finding the Information You Need: Citing Information for Web and Online Multimedia Sources

```
[iframe src="https://www.youtube.com/embed/MBuGA4fjN5E" width="560" height="315" allowfullscreen="allowfullscreen"]
```

[View video](#)

**Tip:** *Citation Software*

If you like, you can use citation generator software to arrange the information needed for your citation according to the style guide you chose. Learn more later in this section.

**ACTIVITY:** Deciphering Citations

[Open activity in a web browser.](#)

## 39. 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.

Zotero, Thompson Reuters EndNote, and RefWorks product logos

*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.**

## 40. 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.

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### 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 labour 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.

### *Activity: To Cite or Not to Cite?*

Open activity in a web browser.



**WIKIPEDIA**  
*The Free Encyclopedia*

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



**Current version published July 2018**  
Contact us: [choosingsources@osu.edu](mailto:choosingsources@osu.edu)

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Chapter 11: Copyright Basics	<a href="#">View</a>	<a href="#">Download</a>
Chapter 12: Fair Use	<a href="#">View</a>	<a href="#">Download</a>
Chapter 13: Roles of Research Sources	<a href="#">View</a>	<a href="#">Download</a>

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