

# LIBR 318: LIBRARY RESEARCH AND INFORMATION LITERACY



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3LIBR 318B: Library Research and  
Information Literacy (Buchanan-Cello)

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## Licensing

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## CHAPTER OVERVIEW

### 1: What is Information Literacy and why does it matter?

- 1.1: Identify- Understanding Your Information Need
- 1.2: SWK- Social Justice and Information Access(Video)
- 1.3: The Miseducation of Dylann Roof

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## 1.1: Identify- Understanding Your Information Need

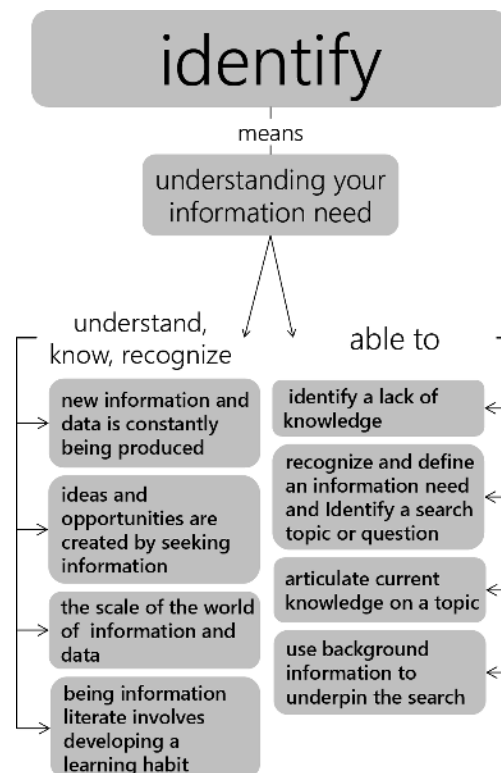
In this chapter, you will learn about the first pillar of information literacy. While the pillars are normally presented in a certain order, it is important to remember that they are not intended to be a step-by-step guide to be followed in a strict order. In most research projects, you will find that you move back and forth between the different pillars as you discover more information and come up with more questions about your topic. In this chapter you will learn how to identify your information need so that you can begin your research, but it is likely that you will also revisit some of the ideas in this chapter to make sure you are actually meeting that need with your research findings.

A person proficient in the Identify pillar is expected to be able to identify a personal need for information. They understand

- That new information and data is constantly being produced and that there is always more to learn
- That being information literate involves developing a learning habit so new information is being actively sought all the time
- That ideas and opportunities are created by investigating/seeking information
- The scale of the world of published and unpublished information and data

They are able to

- Identify a lack of knowledge in a subject area
- Identify a search topic/question and define it using simple terminology
- Articulate current knowledge on a topic
- Recognize a need for information and data to achieve a specific end and define limits to the information need
- Use background information to underpin the search
- Take personal responsibility for an information search
- Manage time effectively to complete a search



Proficiencies in the Identify pillar

### Scenario

Norm Allknow was having trouble. He had been using computers since he was five years old and thought he knew all there was to know about them. So, when he was given an assignment to write about the impact of the Internet on society, he thought it would be

a breeze. He would just write what he knew, and in no time the paper would be finished. In fact, Norm thought the paper would probably be much longer than the required ten pages. He spent a few minutes imagining how impressed his teacher was going to be, and then sat down to start writing.

He wrote about how the Internet had helped him to play online games with his friends, and to keep in touch with distant relatives, and even to do some homework once in a while. Soon he leaned back in his chair and looked over what he had written. It was just half a page long and he was out of ideas.

## Identifying a Personal Need for Information

One of the first things you need to do when beginning any information-based project is to identify your personal need for information. This may seem obvious, but it is something many of us take for granted. We may mistakenly assume, as Norm did in the above example, that we already know enough to proceed. Such an assumption can lead us to waste valuable time working with incomplete or outdated information. Information literacy addresses a number of abilities and concepts that can help us to determine exactly what our information needs are in various circumstances. These are discussed below, and are followed by exercises to help develop your fluency in this area.

## Understanding the Context of an Information Need

When you realize that you have an information need it may be because you thought you knew more than you actually do, or it may be that there is simply new information you were not aware of. One of the most important things you can do when starting to research a topic is to scan the existing information landscape to find out what is already out there. We'll get into more specific strategies for accessing different types of information later in the book, particularly in the Gather chapter, but for now it pays to think more broadly about the information environment in which you are operating.

For instance, any topic you need information about is constantly evolving as new information is added to what is known about the topic. Trained experts, informed amateurs, and opinionated laypeople are publishing in traditional and emerging formats; there is always something new to find out. The scale of information available varies according to topic, but in general it's safe to say that there is more information accessible now than ever before.

Due to the extensive amount of information available, part of becoming more information literate is developing habits of mind and of practice that enable you to continually seek new information and to adapt your understanding of topics according to what you find. Because of the widely varying quality of new information, evaluation is also a key element of information literacy, and will be addressed in the Evaluate chapter of this book.

Finally, while you are busy searching for information on your current topic, be sure to keep your mind open for new avenues or angles of research that you haven't yet considered. Often the information you found for your initial need will turn out to be the pathway to a rich vein of information that can serve as raw material for many subsequent projects.

When you understand the information environment where your information need is situated, you can begin to define the topic more clearly and you can begin to understand where your research fits in with related work that precedes it. Your information literacy skills will develop against this changing background as you use the same underlying principles to do research on a variety of topics.

## From Information Need to Research Question

Norm was abruptly confronted by his lack of knowledge when he realized that he had nothing left to say on his topic after writing half a page. Now that he is aware of that shortcoming, he can take steps to rectify it.

Your own lack of knowledge may become apparent in other ways. When reading an article or textbook, you may notice that something the author refers to is completely new to you. You might realize while out walking that you can't identify any of the trees around your house. You may be assigned a topic you have never heard of.

### Exercise: Identifying What You Don't Know

Wherever you are, look around you. Find one thing in your immediate field of view that you can't explain.

What is it that you don't understand about that thing?

What is it that you need to find out so that you can understand it?

How can you express what you need to find out?

For example: You can't explain why your coat repels water. You know that it's plastic, and that it's designed to repel water, but can't explain why this happens. You need to find out what kind of plastic the coat is made of and the chemistry or physics of that plastic and of water that makes the water run off instead of soaking through. (The terminology in your first explanation would get more specific once you did some research.)

All of us lack knowledge in countless areas, but this isn't a bad thing. Once we step back and acknowledge that we don't know something, it opens up the possibility that we can find out all sorts of interesting things, and that's when the searching begins.

Taking your lack of knowledge and turning it into a search topic or research question starts with being able to state what your lack of knowledge is. Part of this is to state what you already know. It's rare that you'll start a search from absolute zero. Most of the time you've at least heard something about the topic, even if it is just a brief reference in a lecture or reading. Taking stock of what you already know can help you to identify any erroneous assumptions you might be making based on incomplete or biased information. If you think you know something, make sure you find at least a couple of reliable sources to confirm that knowledge before taking it for granted. Use the following exercise to see if there is anything that needs to be supported with background research before proceeding.

#### Exercise: Taking Stock of What you Already Know

As discussed above, part of identifying your own information need is giving yourself credit for what you already know about your topic. Construct a chart using the following format to list whatever you already know about the topic.

Name your topic at the top.

In the first column, list what you know about your topic.

In the second column, briefly explain how you know this (heard it from the professor, read it in the textbook, saw it on a blog, etc.).

In the last column, rate your confidence in that knowledge. Are you 100% sure of this bit of knowledge, or did you just hear it somewhere and assume it was right?

When you've looked at everything you think you know about the topic and why, step back and look at the chart as a whole. How much do you know about the topic, and how confident are you about it? You may be surprised at how little or how much you already know, but either way you will be aware of your own background on the topic. This self-awareness is key to becoming more information literate.

This exercise gives you a simple way to gauge your starting point, and may help you identify specific gaps in your knowledge of your topic that you will need to fill as you proceed with your research. It can also be useful to revisit the chart as you work on your project to see how far you've progressed, as well as to double check that you haven't forgotten an area of weakness.

Once you've clearly stated what you do know, it should be easier to state what you don't know. Keep in mind that you are not attempting to state *everything* you don't know. You are only stating what you don't know in terms of your current information need. This is where you define the limits of what you are searching for. These limits enable you to meet both size requirements and time deadlines for a project. If you state them clearly, they can help to keep you on track as you proceed with your research. You can learn more about this in the Scope chapter of this book.

One useful way to keep your research on track is with a "KWHL" chart. This type of chart enables you to state both what you know and what you want to know, as well as providing space where you can track your planning, searching and evaluation progress. For now, just fill out the first column, but start thinking about the gaps in your knowledge and how they might inform your research questions. You will learn more about developing these questions and the research activities that follow from them as you work through this book.

Defining a research question can be more difficult than it seems. Your initial questions may be too broad or too narrow. You may not be familiar with specialized terminology used in the field you are researching. You may not know if your question is worth investigating at all.

These problems can often be solved by a preliminary investigation of existing published information on the topic. As previously discussed, gaining a general understanding of the information environment helps you to situate your information need in the

relevant context and can also make you aware of possible alternative directions for your research. On a more practical note, however, reading through some of the existing information can also provide you with commonly used terminology, which you can then use to state your own research question, as well as in searches for additional information. Don't try to reinvent the wheel, but rely on the experts who have laid the groundwork for you to build upon.

Once you have identified your own lack of knowledge, investigated the existing information on the topic, and set some limits on your research based on your current information need, write out your research question or state your thesis. The next exercise will help you transform the question you have into an actual thesis statement. You'll find that it's not uncommon to revise your question or thesis statement several times in the course of a research project. As you become more and more knowledgeable about the topic, you will be able to state your ideas more clearly and precisely, until they almost perfectly reflect the information you have found.

#### Exercise: Research Question/Thesis Statement/Search Terms

Since this chapter is all about determining and expressing your information need, let's follow up on thinking about that with a practical exercise. Follow these steps to get a better grasp of exactly what you are trying to find out, and to identify some initial search terms to get you started.

1. Whatever project you are currently working on, there should be some question you are trying to answer. Write your current version of that question here.
2. Now write your proposed answer to your question. This may be the first draft of your thesis statement which you will attempt to support with your research, or in some cases, the first draft of a hypothesis that you will go on to test experimentally. It doesn't have to be perfect at this point, but based on your current understanding of your topic and what you expect or hope to find is the answer to the question you asked.
3. Look at your question and your thesis/hypothesis, and make a list of the terms common to both lists (excluding "the", "and", "a", etc.). These common terms are likely the important concepts that you will need to research to support your thesis/hypothesis. They may be the most useful search terms overall or they may only be a starting point.

If none of the terms from your question and thesis/hypothesis lists overlap at all, you might want to take a closer look and see if your thesis/hypothesis really answers your research question. If not, you may have arrived at your first opportunity for revision. Does your question really ask what you're trying to find out? Does your proposed answer really answer that question? You may find that you need to change one or both, or to add something to one or both to really get at what you're interested in. This is part of the process, and you will likely discover that as you gather more information about your topic, you will find other ways that you want to change your question or thesis to align with the facts, even if they are different from what you hoped.

### A Wider View

While the identification of an information need is presented in this chapter as the first step in the research process, many times the information need you initially identified will change as you discover new information and connections. Other chapters in this book deal with finding, evaluating, and managing information in a variety of ways and formats. As you become more skilled in using different information resources, you will likely find that the line between the various information literacy skills becomes increasingly blurred, and that you will revisit your initial ideas about your topic in response to both the information you're finding and what you're doing with what that information.

Continually think about your relationship to the information you find. Why are you doing things the way you are? Is it really the best way for your current situation? What other options are there? Keeping an open mind about your use of information will help you to ensure that you take responsibility for the results of that use, and will help you to be more successful in any information-intensive endeavor.

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## 1.2: SWK- Social Justice and Information Access(Video)

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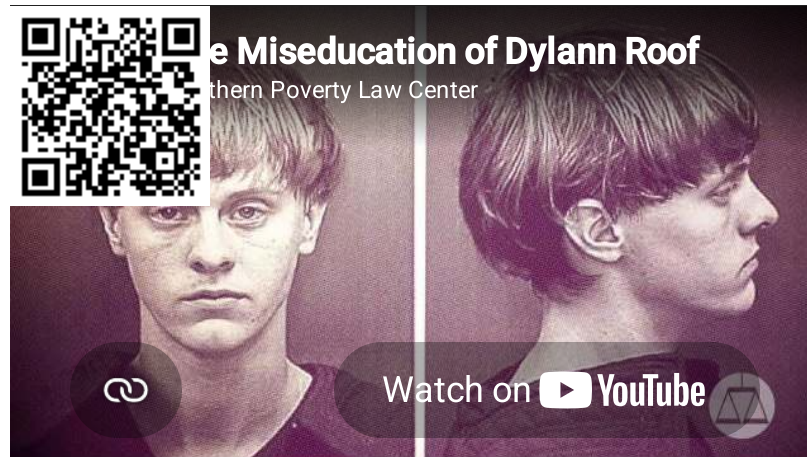
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### 1.3: The Miseducation of Dylann Roof

Throughout this course, we'll be using a mixture of both weighty and trivial examples. Sometimes it may seem there's not much downside to being misinformed: who really cares if the "Alexa Voice-Activated Toilet" is real or Monster Brand Caffeinated Ham is fake?

But there are serious social implications to people not paying attention to where their information is coming from.

The video below primarily makes a point about Google. But given the facts presented here, is there a way that a lack of web literacy also played a role?



One of the patterns we see in online radicalization — from Nazism to ISIS — is that people often begin their journey by discovering information on the web from extremists that shocks them. Usually they are unaware — initially — of the source of the information, and if they were aware of the source they might be more skeptical of the information presented. By the time they understand who is supplying the information and what their motives are, they are already aligned with those organizations' viewpoints.

Once a person starts down the conspiracy spiral, it's very hard to get back out. There is such a gap between what they see in "respected" sources and what they see from extremist sites that they come to believe the respected sites must be in on the conspiracy. And while in the past many people might hold one or two conspiracy theories, the hyper-connected, algorithmic nature of the internet creates a situation where believing in one conspiracy theory may lead to your exposure to more and more radical conspiracy theories.

#### Questions for reflection

- Do you think media literacy could help some people avoid processes of radicalization? Or are the social drivers too strong?
- Are all conspiracy theories bad? Are all wrong? What do you think makes a conspiracy theory harmful? Do you hold beliefs that others would dismiss as conspiracy theory?
- Do you know anyone that has gone down the conspiracy rabbit hole on an issue? What have you learned from that experience about what drives conspiracy thinking?

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## CHAPTER OVERVIEW

### 2: Ethical use of Information

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

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

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### Why we cite

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

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

Citation also allows you to avoid plagiarism. Most every educational institution has some sort of academic integrity policy that outlines a student's responsibilities as a researcher.

These policies may vary slightly from institution to institution, but typically warn against two behaviors:

1. **Committing plagiarism.** Plagiarism is when we use the ideas or research of others and fail to attribute those ideas or research to the original authors. This is a form of theft easily remedied by extensive use of citation. Did you get an idea from a book, article, or website? Cite it as specifically as possible. Did you find a terrific graph or image online that you want to include in your paper? Cite it. Using a quote from any source? Cite.
2. **Self-plagiarizing.** This happens when you submit work you completed in one class for a different class. Most syllabi expressly forbid this. If you are considering using your previous work for a current project, be sure to cite yourself and to note how extensively you are reusing the work. Also be sure to talk to your instructor. What constitutes self-plagiarism may seem murky to you, but your instructor may have bright red lines over what is and isn't allowed in a particular class.

### Why are there so many citation styles?

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

### How we cite

Most databases and many library discovery tools will include a citation feature, providing student researchers with an auto-generated citation of the article or book they are viewing. While no auto-generated citation builder is perfect, these tools can be helpful for creating a references or works cited page, or an annotated bibliography. Even Google Scholar includes a citation tool for creating citations in multiple styles.

More serious student researchers may want to consider using bibliographic management software for their research-based projects. Products such as RefWorks, EndNote, Zotero, and Mendeley allow researchers to easily save citations to articles and books as they conduct their research. Whether a student is using a library database, Google Scholar, or their library's discovery service, useful citations can be quickly exported to the bibliographic management tool and saved for use later. Many of these tools also allow users to store copies of the articles themselves and can even generate bibliographies. Some of the more robust bibliographic management tools can create citations in hundreds of different citation styles, greatly reducing the amount of time and effort required to create high-quality reference or works cited pages. Citations can also be organized by project, allowing researchers to easily share their

citations with colleagues and collaborators. Contact your library to see what bibliographic management software your campus supports. Many of these products are free, but some require a subscription.

Also consider asking a professor in your field what software is used most frequently in your field.

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## CHAPTER OVERVIEW

### 3: Strategy for Exploring

3.1: Plan- Developing Research Strategies

3.2: Wikipedia

3.3: Wikipedia- Below the Surface (Video-Duckett, et al.)

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### 3.1: Plan- Developing Research Strategies

#### Scenario

Sarah's art history professor just assigned the course project and Sarah is delighted that it isn't the typical research paper. Rather, it involves putting together a website to help readers understand a topic. It will certainly help Sarah get a grasp on the topic herself! Learning by attempting to teach others, she agrees, might be a good idea. The professor wants the web site to be written for people who are interested in the topic and with backgrounds similar to the students in the course. Sarah likes that a target audience is defined, and since she has a good idea of what her friends might understand and what they would need more help with, she thinks it will be easier to know what to include in her site. Well, at least easier than writing a paper for an expert like her professor.

An interesting feature of this course is that the professor has formed the students into teams. Sarah wasn't sure she liked this idea at the beginning, but it seems to be working out okay. Sarah's team has decided that their topic for this website will be 19th century women painters. But her teammate Chris seems concerned, "Isn't that an awfully big topic?" The team checks with the professor, who agrees they would be taking on far more than they could successfully explain on their website. He suggests they develop a draft thesis statement to help them focus, and after several false starts, they come up with:

The involvement of women painters in the Impressionist movement had an effect upon the subjects portrayed.

They decide this sounds more manageable. Because Sarah doesn't feel comfortable with the technical aspects of setting up the website, she offers to start locating resources that will help them to develop the site's content.

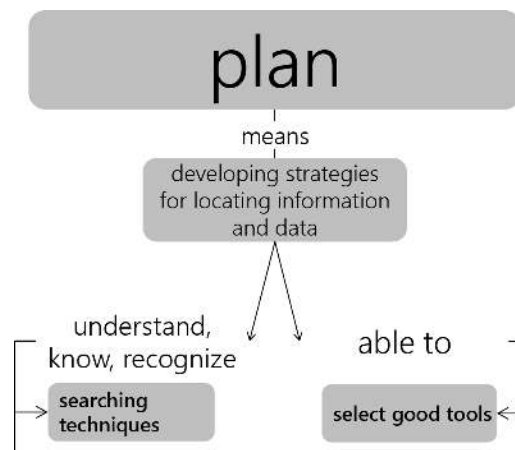
Before we learn more about what happens with Sarah and her team, let's look at the components of the Plan pillar. The overall ability is: "Can construct strategies for locating information and data." That is a fairly short sentence, but a great deal is packed into it. It includes

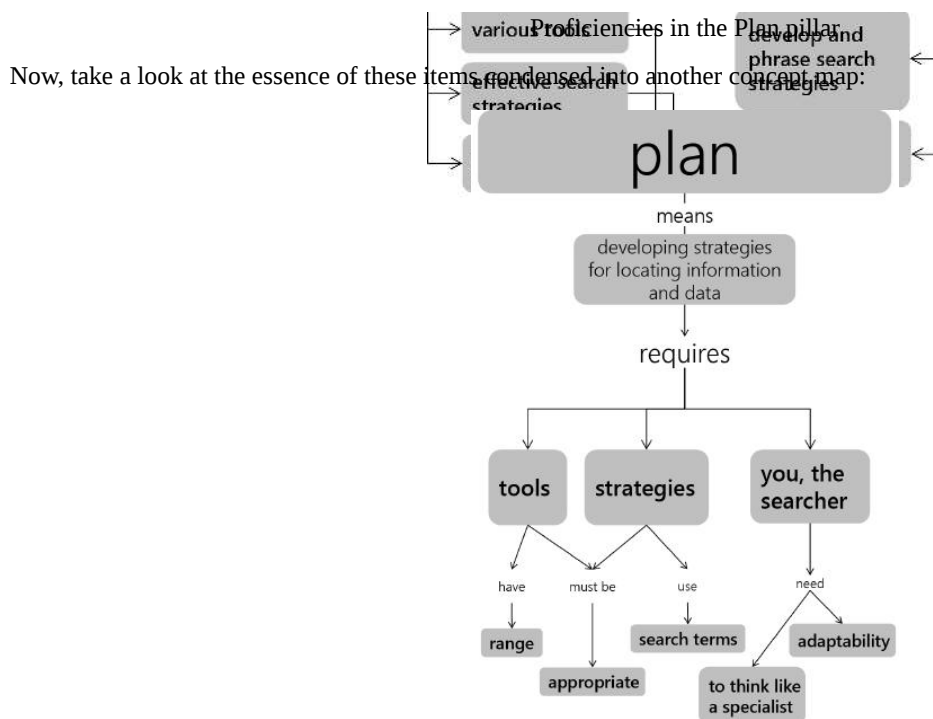
- Understanding a range of searching techniques
- Understanding the various tools and how they differ
- Knowing how to create effective search strategies
- Being open to searching out the most appropriate tools
- Understanding that revising your search as you proceed is important
- Recognizing that subject terms are of value

And these are just the items to understand! There are also the things you need to be able to do:

- Clearly phrase your search question.
- Develop an appropriate search strategy, using key techniques.
- Selecting good search tools, including specialized ones.
- Use the terms and techniques that are best suited to your search.

Here is a visual representation of these components:





Proficiencies in the Plan pillar simplified

The second concept map is simplified. The focus is on the key elements: the tools and strategies that you use and the mindset that will help you as you plan your research. This may seem a bit daunting, so let's see how Sarah tackles the project. She sometimes falters, but that happens even to experienced researchers. As you read through Sarah's quest for good information, think about the range and appropriateness of the strategies she uses. What would you do differently? What approaches seem to be good ones? (While there is some mention of particular research tools and resources in this chapter, they will be discussed in depth in the Gather chapter, and also in the Scope chapter.)

As you read about Sarah's quest for information, and reflect on your own information searches in the past, remember particularly the bullet within the Plan pillar that emphasizes the need to revise your search as you work. It is very important to do this, and to build time into the process so you are able to revise. As you learn more about your topic, or the terms used in conjunction with its concepts, or key scholars in the field, it is only natural that you will need to shift focus, and, perhaps, change course. This is a natural part of the research process and indicates that your efforts are bearing fruit. Let's return to Sarah...

The next time the class meets, Sarah tells her teammates what she has done so far:

"I thought I'd start with some scholarly sources, since they should be helpful, right? I put a search into the online catalog for the library, but nothing came up! The library should have books on this topic, shouldn't it? I typed the search in exactly as we have it in our thesis statement. That was so frustrating. Since that didn't work, I tried Google, and put in the search. I got over 8 million results, but when I looked over the ones on the first page, they didn't seem very useful. One was about the feminist art movement in the 1960s, not during the Impressionist period. The results all seemed to have the words I typed highlighted, but most really weren't useful. I am sorry I don't have much to show you. Do you think we should change our topic?"

Alisha suggests that Sarah talk with a reference librarian. She mentions that a librarian came to talk to another of her classes about doing research, and it was really helpful. Alisha thinks that maybe Sarah shouldn't have entered the entire thesis statement as the search, and maybe she should have tried databases to find articles. The team decides to brainstorm all the search tools and resources they can think of.

Here's what they came up with:

| Search Tools and Resources |
|----------------------------|
| <b>Wikipedia</b>           |
| <b>Professor</b>           |
| <b>Google search</b>       |
| <b>JSTOR database</b>      |
|                            |
|                            |
|                            |
|                            |

Based on your experience, do you see anything you would add?

Sarah and her team think that their list is pretty good. They decide to take it further and list the advantages and limitations of each search tool, at least as far as they can determine.

| Search Tools and Resources |                                          |                                                                             |
|----------------------------|------------------------------------------|-----------------------------------------------------------------------------|
| Search Tool                | Advantages                               | Limitations                                                                 |
| <b>Wikipedia</b>           | <b>Easy access, list of references</b>   | <b>Professors don't seem to like it, possibly misinformation</b>            |
| <b>Professor</b>           | <b>The expert!</b>                       | <b>Not sure we can get to office hours; we want to appear self-directed</b> |
| <b>Google search</b>       | <b>Lots of results</b>                   | <b>We need a better search term</b>                                         |
| <b>JSTOR database</b>      | <b>Authoritative, scholarly articles</b> | <b>None that we know of</b>                                                 |

Alisha suggests that Sarah should show the worksheet to a librarian and volunteers to go with her. The librarian, Mr. Harrison, says they have made a really good start, but he can fill them in on some other search strategies that will help them to focus on their topic. Would Sarah and Alisha like to learn more?

Let's step back from this case study again, and think about the elements that someone doing research should plan before starting to enter search terms in Google, Wikipedia, or even a scholarly database. There is some preparation you can do to make things go much more smoothly than they have for Sarah.

### Self-Reflection

As you work through your own research quests, it is very important to be self-reflective. The first couple of items in this list have been considered in the Identify chapter:

- What do you really need to find?

- Do you need to learn more about the general subject before you can identify the focus of your search?
- How thoroughly did you develop your search strategy?
- Did you spend enough time finding the best tools to search?
- What is going really well, so well that you'll want to remember to do it in the future?

Another term for what you are doing is metacognition, or thinking about your thinking. Reflect on what Sarah is going through as you read this chapter. Does some of it sound familiar based on your own experiences? You may already know some of the strategies presented here. Do you do them the same way? How does it work? What pieces are new to you? When might you follow this advice? Don't just let the words flow over you, rather think carefully about the explanation of the process. You may disagree with some of what you read. If you do, follow though and test both methods to see which provides better results.

## Selecting Search Tools

After you have thought the planning process through more thoroughly, start to think about where you can look for information. Part of planning to do research is determining which search tools will be the best ones to use. This applies whether you are doing scholarly research or trying to answer a question in your everyday life, such as what would be the best place to go on vacation. "Search tools" might be a bit misleading, since a person might be the source of the information you need. Or it might be a web search engine, a specialized database, an association—the possibilities are endless. Often people automatically search Google first, regardless of what they are looking for. Choosing the wrong search tool may just waste your time and provide only mediocre information, whereas other sources might provide really spot-on information and quickly, too. In some cases, a carefully constructed search on Google, particularly using the advanced search option, will provide the necessary information, but other times it won't. This is true of all sources: make an informed choice about which ones to use for a specific need.

So, how do you identify search tools? Let's begin with a first-rate method. For academic research, talking with a librarian or your professor is a great start. They will direct you to those specialized tools that will provide access to what you need. If you ask a librarian for help, she or he may also show you some tips about searching in the resources. This chapter will cover some of the generic strategies that will work in many search tools, but a librarian can show you very specific ways to focus your search and retrieve the most useful items.

If neither your professor nor a librarian is available when you need help, check your school's library website to see what guidance is provided. There will often be subject-related guides or lists of the best resources to assist researchers. There may be a directory of the databases the library subscribes to and the subjects they cover. Take advantage of the expertise of librarians by using such guides. Novice researchers usually don't think of looking for this type of help, and, as a consequence, often waste time.

When you are looking for non-academic material, consider who cares about this type of information. Who works with it? Who produces it or help guides for it? Some sources are really obvious, and you are already using them—for example, if you need information about the weather in London three days from now, you might check [Weather.com](https://www.weather.com) for London's forecast. You don't go to a library (in person or online), and you don't do a research database search. For other information you need, think the same way. Are you looking for anecdotal information on old railroads? Find out if there is an organization of railroad buffs. You can search on the web for this kind of information, or, if you know about and have access to it, you could check the Encyclopedia of Associations. This source provides entries for all U.S. membership organizations, which can quickly lead you to a potentially wonderful source of information. Librarians can point you to tools like these.

As you consider the information presented in this chapter, keep the scope of the information you are looking for in mind. In the previous chapter we examined the topic of scope in detail. The breadth and depth of the information you require will have an impact as you plan.

## Consider Asking an Expert

Have you thought about using people, not just inanimate sources, as a way to obtain information? This might be particularly appropriate if you are working on an emerging topic or a topic with local connections. There are a variety of reasons that talking with someone will add to your research.

For personal interactions, there are other specific things you can do to obtain better results. Do some background work on the topic before contacting the person you hope to interview. The more familiarity you have with your topic and its terminology, the easier it

will be to ask focused questions. Focused questions are important if you want to get into the meat of what you need. Asking general questions because you think the specifics might be too detailed rarely leads to the best information. Acknowledge the time and effort someone is taking to answer your questions, but also realize that people who are passionate about subjects enjoy sharing what they know. Take the opportunity to ask experts about sources they would recommend.

## Determining Search Concepts and Keywords

Once you've selected some good resources for your topic, and possibly talked with an expert, it is time to move on to identify words you will use to search for information on your topic in various databases and search engines. This is sometimes referred to as building a search query. When deciding what terms to use in a search, break down your topic into its main concepts. Don't enter an entire sentence, or a full question. Different databases and search engines process such queries in different ways, but many look for the entire phrase you enter as a complete unit, rather than the component words. While some will focus on just the important words, such as Sarah's Google search that you read about earlier in this chapter, the results are often still unsatisfactory. The best thing to do is to use the key concepts involved with your topic. In addition, think of synonyms or related terms for each concept. If you do this, you will have more flexibility when searching in case your first search term doesn't produce any or enough results. This may sound strange, since if you are looking for information using a Web search engine, you almost always get too many results. Databases, however, contain fewer items, and having alternative search terms may lead you to useful sources. Even in a search engine like Google, having terms you can combine thoughtfully will yield better results.

The following worksheet is an example of a process you can use to come up with search terms. It illustrates how you might think about the topic of violence in high schools. Notice that this exact phrase is not what will be used for the search. Rather, it is a starting point for identifying the terms that will eventually be used.

|                                  |                         |
|----------------------------------|-------------------------|
| >TOPIC: Violence in high schools |                         |
| >CONCEPTS:                       |                         |
| Violence                         | High School             |
| <b>violence</b>                  | <b>high school</b>      |
| OR                               | OR                      |
| <b>bullying</b>                  | <b>secondary school</b> |
| OR                               | OR                      |
| <b>guns</b>                      | <b>12th grade</b>       |
| OR                               | OR                      |
| <b>knives</b>                    |                         |
| OR                               | OR                      |
| <b>gangs</b>                     |                         |

Now, use a clean copy of the same worksheet to think about the topic Sarah's team is working on. How might you divide their topic into concepts and then search terms? Keep in mind that the number of concepts will depend on what you are searching for. And that the search terms may be synonyms or narrower terms. Occasionally, you may be searching for something very specific, and in those cases, you may need to use broader terms as well. Jot down your ideas then compare what you have written to the information on the second, completed worksheet and identify 3 differences.

### >TOPIC:

The involvement of women painters in the Impressionist movement had an effect upon the subjects portrayed.

### >CONCEPTS:

| Women                |   | Painters             |   | Impressionist Movement |   | Subjects             |
|----------------------|---|----------------------|---|------------------------|---|----------------------|
| <input type="text"/> | & | <input type="text"/> | & | <input type="text"/>   | & | <input type="text"/> |
| OR                   |   | OR                   |   | OR                     |   | OR                   |
| <input type="text"/> |   | <input type="text"/> |   | <input type="text"/>   |   | <input type="text"/> |
| OR                   |   | OR                   |   | OR                     |   | OR                   |
| <input type="text"/> |   | <input type="text"/> |   | <input type="text"/>   |   | <input type="text"/> |
| OR                   |   | OR                   |   | OR                     |   | OR                   |
| <input type="text"/> |   | <input type="text"/> |   | <input type="text"/>   |   | <input type="text"/> |
| OR                   |   | OR                   |   | OR                     |   | OR                   |
| <input type="text"/> |   | <input type="text"/> |   | <input type="text"/>   |   | <input type="text"/> |
| OR                   |   | OR                   |   | OR                     |   | OR                   |
| <input type="text"/> |   | <input type="text"/> |   | <input type="text"/>   |   | <input type="text"/> |
| OR                   |   | OR                   |   | OR                     |   | OR                   |
| <input type="text"/> |   | <input type="text"/> |   | <input type="text"/>   |   | <input type="text"/> |
| OR                   |   | OR                   |   | OR                     |   | OR                   |
| <input type="text"/> |   | <input type="text"/> |   | <input type="text"/>   |   | <input type="text"/> |

**> TOPIC:**  
The involvement of women painters in the Impressionist movement had an effect upon the subjects portrayed.

**> CONCEPTS:**

| Women                              |              | Painters        |              | Impressionist Movement        |              | Subjects          |
|------------------------------------|--------------|-----------------|--------------|-------------------------------|--------------|-------------------|
| <b>women</b>                       | <b>&amp;</b> | <b>painters</b> | <b>&amp;</b> | <b>Impressionist Movement</b> | <b>&amp;</b> | <b>subjects</b>   |
| OR                                 |              | OR              |              | OR                            |              | OR                |
| <b>woman</b>                       |              | <b>painter</b>  |              | <b>Impressionism</b>          |              | <b>figure</b>     |
| OR                                 |              | OR              |              | OR                            |              | OR                |
| <b>female</b>                      |              | <b>artist</b>   |              | <b>Impressionists</b>         |              | <b>still life</b> |
| OR                                 |              | OR              |              | OR                            |              | OR                |
| <b>females</b>                     |              | <b>artists</b>  |              |                               |              | <b>cityscape</b>  |
| OR                                 |              | OR              |              | OR                            |              | OR                |
| <b>mother</b>                      |              |                 |              |                               |              |                   |
| OR                                 |              | OR              |              | OR                            |              | OR                |
| <b>mothers</b>                     |              |                 |              |                               |              |                   |
| OR                                 |              | OR              |              | OR                            |              | OR                |
| <b>Berthe Morisot</b>              |              |                 |              |                               |              |                   |
| OR                                 |              | OR              |              | OR                            |              | OR                |
| <b>Mary Cassatt</b><br>(see below) |              |                 |              |                               |              |                   |

Note: These are just two of the better known women Impressionists. Other names could be added or substituted.

## Boolean Operators

Once you have the concepts you want to search, you need to think about how you will enter them into the search box. Often, but not always, Boolean operators will help you. You may be familiar with Boolean operators. They provide a way to link terms. Boolean operators are also discussed in the Scope chapter. The information in the two chapters complements each other and reading about this important topic again provides a review for the topics that overlap.

We will start by capturing the ideas of the women creating the art. We will use *women painters* and *women artists* as the first step in our sample search. You could do two separate searches by typing one or the other of the terms into the search box of whatever tool you are using:

women painters

women artists

You would end up with two separate result lists and have the added headache of trying to identify unique items from the lists. You could also search on the phrase

women painters and women artists

But once you understand Boolean operators, that last strategy won't make as much sense as it seems to.

There are three Boolean operators: *and*, *or*, and *not*.

*And* is used to get the intersection of all the terms you wish to include in your search. With this example

women painters and women artists

you are asking that the items you retrieve have both of those terms. If an item only has one term, it won't show up in the results. This is not what the searcher had in mind—she is interested in both artists and painters, because she doesn't know which term might be used. She doesn't intend that both terms have to be used. Let's go on to the next Boolean operator, which will help us out with this problem.

*Or* is used when you want at least one of the terms to show up in the search results. If both do, that's fine, but it isn't a condition of the search. So *or* makes a lot more sense for this search:

women painters or women artists

Now, if you want to get fancy with this search, you could use both *and* as well as *or*:

women and (painters or artists)

The parentheses mean that these two concepts, painters and artists, should be searched as a unit, and the search results should include all items that use one word or the other. The results will then be limited to those items that contain the word *women*. If you decide to use parentheses for appropriate searches, make sure that the items contained within them are related in some way. With *or*, as in our example, it means either of the terms will work. With *and*, it means that both terms will appear in the document.

Type both of these searches in Google Scholar ([scholar.google.com](https://scholar.google.com)) and compare the results. Were they the same? If not, can you determine what happened? Which result list looked better?

Here is another example of a search string, using both parentheses and two Boolean operators:

entrepreneurship and (adolescents or teens)

In this search, you are looking for entrepreneurial initiatives connected with people in their teens. Because there are so many ways to categorize this age group, it makes sense to indicate that either of these terms should appear in the results, along with entrepreneurship.

However, this search string isn't perfect. Can you pick out two problems with the search terms?

The third Boolean operator, *not*, can be problematic. *Not* is used to exclude items from your search. If you have decided, based on the scope of the results you are getting, to focus only on a specific aspect of a topic, use *not*, but be aware that items are being lost in this search. For example, if you entered

entrepreneurship and (adolescents or teens) not adults

you might lose some good results. Why? If you would like to see graphical representations of the effects of Boolean operators, take a look at the Scope chapter in this book.

There is a good overview of Boolean operator use at <http://libguides.mit.edu/content.php?pid=36863&sid=271372>

## Other Helpful Search Techniques

Using Boolean operators isn't the only way you can create more useful searches. In this section, we will review several others.

### Truncation

In this search:

*Entrepreneurs and (adolescents or teens)* you might think that the items that are retrieved from the search can refer to entrepreneurs plural or entrepreneur singular. If you did, you spotted a problem. Because computers are very literal, they usually look for the exact terms you enter. While it is true that some search functions are moving beyond this model, you want to think about alternatives, just to be safe. In this case, using the singular as well as the plural form of the word might help you to find useful sources. Truncation, or searching on the root of a word and whatever follows, lets you do this.

So, if you search on

Entrepreneur\* and (adolescents or teens)

You will get items that refer either to the singular or plural version of the word *entrepreneur*, but also *entrepreneurship*.

Look at these examples:

adolescen\*

educat\*

Think of two or three words you might retrieve when searching on these roots. It is important to consider the results you might get and alter the root if need be. An example of this is *polic\**. Would it be a good idea to use this root if you wanted to search on *policy* or *policies*? Why or why not?

In some cases, a symbol other than an asterisk is used. To determine what symbol to use, check the help section in whatever resource you are using. The topic should show up under the truncation or stemming headings.

Here is the same search terms worksheet you saw earlier, but with truncation acknowledged:

**>TOPIC:**  
The involvement of women painters in the Impressionist movement had an effect upon the subjects portrayed.

**>CONCEPTS:**

| Women                                             |   | Painters        |   | Impressionist Movement |   | Subjects          |
|---------------------------------------------------|---|-----------------|---|------------------------|---|-------------------|
| <b>wom*n</b><br><small>(see below)</small>        | & | <b>painter*</b> | & | <b>Impressionis*</b>   | & | <b>subject*</b>   |
| OR                                                |   | OR              |   | OR                     |   | OR                |
| <b>female*</b>                                    |   | <b>artist*</b>  |   |                        |   | <b>figure*</b>    |
| OR                                                |   | OR              |   | OR                     |   | OR                |
| <b>mother*</b>                                    |   |                 |   |                        |   | <b>still life</b> |
| OR                                                |   | OR              |   | OR                     |   | OR                |
| <b>Berthe Morisot</b>                             |   |                 |   |                        |   | <b>cityscape</b>  |
| OR                                                |   | OR              |   | OR                     |   | OR                |
| <b>Mary Cassatt</b><br><small>(see below)</small> |   |                 |   |                        |   |                   |
| OR                                                |   | OR              |   | OR                     |   | OR                |
|                                                   |   |                 |   |                        |   |                   |
| OR                                                |   | OR              |   | OR                     |   | OR                |
|                                                   |   |                 |   |                        |   |                   |
| OR                                                |   | OR              |   | OR                     |   | OR                |
|                                                   |   |                 |   |                        |   |                   |

Note: Some systems use a different symbol for internal truncation, which might be called a wildcard. It might be a question mark, wom?n, but it is best to check the help files.

Note: These are just two of the better known women Impressionists. Other names could be added or substituted.

## Phrase Searches

Phrase searches are particularly useful when searching the web. If you put the exact phrase you want to search in quotation marks, you will only get items with those words as a phrase and not items where the words appear separately in a document, website, or other resource. Your results will usually be fewer, although surprisingly, this is not always the case. Try these two searches in the search engine of your choice:

“essay exam”

essay exam

Was there a difference in the quality and quantity of results? If you would like to find out if the database or search engine you are using allows phrase searching and the conventions for doing so, search the help section. These help tools can be very, well, helpful!

### Advanced Searches

Advanced searching allows you to refine your search query and prompts you for ways to do this. Consider the basic [Google.com](https://www.google.com) search box. It is very minimalistic, but that minimalism is deceptive. It gives the impression that searching is easy and encourages you to just enter your topic, without much thought, to get results. You certainly do get many results. But are they really good results? Simple search boxes do many searchers a disfavor. There is a better way to enter searches.

Advanced search screens show you many of the options available to you to refine your search, and, therefore, get more manageable numbers of better items. Many web search engines include advanced search screens, as do databases for searching research materials. Advanced search screens will vary from resource to resource and from web search engine to research database, but they often let you search using

- Implied Boolean operators (for example, the “all the words” option is the same as using the Boolean *and*)
- Limiters for date, domain (.edu, for example), type of resource (articles, book reviews, patents)
- Field (a field is a standard element, such as title of publication or author’s name)
- Phrase (rather than entering quote marks)

Let’s see how this works in practice.

Exercise: Google Searches

Go to the advanced search option in Google. You can find it at [http://www.google.com/advanced\\_search](http://www.google.com/advanced_search)

Take a look at the options Google provides to refine your search. Compare this to the basic Google search box. One of the best ways you can become a better searcher for information is to use the power of advanced searches, either by using these more complex search screens or by remembering to use Boolean operators, phrase searches, truncation, and other options available to you in most search engines and databases.

While many of the text boxes at the top of the Google Advanced Search page mirror concepts already covered in this chapter (for example, “this exact word or phrase” allows you to omit the quotes in a phrase search), the options for narrowing your results can be powerful. You can limit your search to a particular domain (such as .edu for items from educational institutions) or you can search for items you can reuse legally (with attribution, of course!) by making use of the “usage rights” option. However, be careful with some of the options, as they may excessively limit your results. If you aren’t certain about a particular option, try your search with and without using it and compare the results. If you use a search engine other than Google, check to see if it offers an advanced search option: many do.

### Subject Headings

In the section in this chapter on advanced searches, you read about field searching. To explain further, if you know that the last name of the author whose work you are seeking is Wood, and that he worked on forestry-related topics, you can do a far better search using the author field. Just think what you would get in the way of results if you entered a basic search such as *forestry and wood*. It is great to use the appropriate Boolean operator, but oh, the results you will get! But what if you specified that *wood* had to show up as part of the author’s name? This would limit your results quite a bit.

So what about *forestry*? Is there a way to handle that using a field search? The answer is yes (why else bring it up?). Subject headings are terms that are assigned to items to group them. An example is cars—you could also call them autos, automobiles, or even more specific labels like SUVs or vans. You might use the Boolean operator *or* and string these all together. But if you found out that the sources you are searching use *automobiles* as the subject heading, you wouldn’t have to worry about all these related terms, and could confidently use their subject heading and get all the results, even if the author of the piece uses *cars* and not *automobiles*.

How does this work? In many databases, a person called an indexer or cataloger scrutinizes and enters each item. This person performs helpful, behind-the-scenes tasks such as assigning subject headings, age levels, or other indicators that make it easier to search very precisely. An analogy is tagging, although indexing is more structured than tagging. If you have tagged items online, you know that you can use any terms you like and that they may be very different from someone else’s tags. With indexing, the

indexer chooses from a set group of terms. Obviously, this precise indexing isn't available for web search engines—it would be impossible to index everything on the web. But if you are searching in a database, make sure you use these features to make your searches more precise and your result lists more relevant. You also will definitely save time.

You may be thinking that this sounds good. Saving time when doing research is a great idea. But how will you know what subject headings exist, so you can use them? Here is a trick that librarians use. Even librarians don't know what terms are used in all the databases or online catalogs that they use. So a librarian's starting point isn't very far from yours. But they do know to use whatever features a database provides to do an effective search. They find out about them by acting like a detective.

You've already thought about the possible search terms for your information need. Enter the best search strategy you developed, which might use Boolean operators or truncation. Scan the results to see if they seem to be on topic. If they aren't, figure out what results you are getting that just aren't right, and revise your search. Terms you have searched on often show up in bold face type, so they are easy to pick out. Besides checking the titles of the results, read the abstracts (or summaries), if there are any. You may get some ideas for other terms to use. But if your results are fairly good, scan them with the intent to find one or two items that seem to be precisely what you need. Get to the full record (or entry), where you can see all the details entered by the indexers. Here is an example from the University at Albany's Minerva catalog, but keep in mind that the catalog or database you are using may have entries that look very different.

|                |                                                                                                       |
|----------------|-------------------------------------------------------------------------------------------------------|
|                | 001567898                                                                                             |
| Title          | Web of deceit : misinformation and manipulation in the age of social media / edited by Anne P. Mintz. |
| Added Author   | Mintz, Anne P.                                                                                        |
| Subject        | Internet fraud.                                                                                       |
|                | Electronic information resource literacy.                                                             |
|                | Computer network resources — Evaluation.                                                              |
|                | Internet searching.                                                                                   |
| ISBN           | 9780910965910                                                                                         |
|                | 0910965919                                                                                            |
| Publisher/Date | Medford, N.J.: CyberAge Books, c2012.                                                                 |

Once you have the “full” record (which does not refer to the full text of the item, but rather the full descriptive details about the book, including author, subjects, date, and place of publication, and so on), look at the subject headings (they may be called descriptors or some other term, but they should be recognizable as subjects) and see what words are used. They may be identical to the terms you entered, but if not, revise your search using the subject heading words. The results list should now contain items that are relevant for your need.

This chapter presents a strategy for developing a successful search. This figure reviews the key points:

It is tempting to think that once you have gone through all the processes around the circle, as seen in this diagram, your information search is done and you can start writing. However, research is a recursive process. You don't start at the beginning and continue straight through until you end at the end. Once you have followed this planning model, you will often find that you need to alter or refine your topic and start the process again, as seen here:

This revision process may happen at any time, before or during the preparation of your paper or other final product. The researchers who are most successful do this, so don't ignore opportunities to revise.

So let's return to Sarah and her search for information to help her team's project. Sarah realized she needed to make a number of changes in the search strategy she was using. She had several insights that definitely led her to some good sources of information for this particular research topic. Can you identify the good ideas she implemented?

## Exercise: Reviewing Search Strategies

[Take this quiz online!](#)

1. Now that the team has a draft thesis statement, the next step would be to:
  1. Enter the thesis statement into a database, rather than the catalog
  2. Select keywords and enter them into Google
  3. Dissect the thesis statement to determine key terms, related terms, and Boolean operators or other searching techniques
2. If you are interested in the use of social media such as Twitter by college students for research purposes, which of the following is the best general search strategy:
  1. (social media and Twitter) and research and college students
  2. Social media and college students and research purposes
  3. (social media or Twitter or Facebook) and research and college student\*
3. The best place to start the search online is:
  1. An online guide on the library's website
  2. Google
  3. The library's catalog
4. When searching a subject-specific database, it is especially important to...
  1. Use any search refinements they provide that make sense
  2. Check for the best subject headings to use
  3. Both a. and b.
5. Sarah realized that the order for doing the best research most often includes these steps
  1. Select topic, select keywords, do search, read and understand results, create product
  2. Select topic, select keywords, do search, read and understand results, revise search and return to the process as needed, create product
  3. Check for online assistance on the library's website, do the search, revise the search as needed, create product

## Contributors and Attributions

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## 3.2: Wikipedia

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Wikipedia is broadly misunderstood by faculty and students alike. While Wikipedia must be approached with caution, especially with articles that are covering contentious subjects or evolving events, it is often the best source to get a consensus viewpoint on a subject. Because the Wikipedia community has strict rules about sourcing facts to reliable sources, and because authors must adopt a neutral point of view, articles are often the best available introduction to a subject on the web.

The focus on sourcing all claims has another beneficial effect. If you can find a claim expressed in a Wikipedia article, you can almost always follow the footnote on the claim to a reliable source. Scholars, reporters, and students all can benefit from using Wikipedia to quickly find authoritative sources for claims.

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### 3.3: Wikipedia- Below the Surface (Video-Duckett, et al.)



#### Wikipedia- Below the Surface Video Transcript

00:00 Wikipedia has quickly become the world's largest encyclopedia

00:03 and one of the most visited websites.

00:05 But how does information get into Wikipedia in the first place?

00:09 There's a lot to discover when you scratch beneath the surface.

00:12 Wikipedia is a wiki, a special kind of website

00:15 that allows many people to contribute to the content.

00:18 The word wiki means "quick" in Hawaiian.

00:22 The name comes from the fact that on the most basic level a wiki is a quick way

00:25 to make a web page.

00:27 Wikis help people collaborate online.

00:29 This means that a group of people can contribute information to a wiki

00:33 without seeing each other face to face.

00:35 Although Wikipedia is the most well-known and ambitious wiki,

00:38 there are plenty of other specialized wikis that exist for collaborative research and just

00:42 about anything else you can imagine.

00:44 Many wikis are limited to specific groups of people, but Wikipedia allows anyone in the world

00:50 to create an account, sign in, and then contribute to the information on a topic.

00:55 That includes you.

00:56 A Wikipedia page is set up with several sections: the Article,

01:01 Discussion, Edit, and History tabs.

01:04 The information you read in Wikipedia is on the "Article" tab.  
01:08 This is where the voices of many different volunteer authors merge together  
01:11 into an overview of the subject that anyone in the world can read.  
01:15 On a Wikipedia page - like this page on Gun Politics - the authors work together  
01:20 to present background information on the topic.  
01:23 A good page will also include references to other information sources so readers know  
01:27 where the knowledge is coming from.  
01:29 These references point people to information that's been published in books,  
01:33 newspapers, journals, and on websites.  
01:37 Wikipedia has some key guidelines to help the volunteer authors.  
01:40 The first is "No Original Research."  
01:43 Unlike books and journal articles where researchers publish their original ideas,  
01:47 experiments, and theories, Wikipedia provides background information gathered  
01:52 from information sources published elsewhere.  
01:55 Additionally, Wikipedia's guidelines emphasize  
01:58 that all content should present a "Neutral Point of View."  
02:01 This is always a challenge, especially for controversial topics and many pages  
02:06 in Wikipedia have warning messages indicating that the content is biased.  
02:10 One of the most important aspects of Wikipedia is that the content can evolve over time.  
02:16 When there are many different authors creating, updating, and deleting content,  
02:20 the information might be in flux.  
02:22 But one benefit of the shifting nature of Wikipedia is that people from all  
02:26 over the world can contribute to what is known and understood about a topic.  
02:30 In fact information can be developed in Wikipedia more quickly for an event  
02:33 as it is happening than newspapers can publish it.  
02:37 At the same time, since Wikipedia's content can be in flux, authors might change the information  
02:43 to reflect their personal views and introduce bias.  
02:46 As a result, it can be challenging to keep a neutral point of view  
02:49 when many people are offering their ideas to the content.  
02:52 It's clear that authors will bring their opinions  
02:55 to a Wikipedia page whether they intend to or not.  
02:58 In the Discussion tab of a Wikipedia page you will often find lively debate about the content.  
03:08 Authors leave notes for each other about the changes they've made to the content  
03:11 and they debate about how the information should be presented.  
03:14 This is where you do see individual voices and, many times,  
03:18 they've got definite opinions to share.  
03:20 So unlike the main article page, the Discussion page is the for personal opinion.

03:25 By looking through the Discussion, you can sometimes learn just as much  
03:28 about the sensitive areas of a topic as you could by checking the main content.  
03:32 In the History tab, you can see every change that's been made to a Wikipedia page  
03:37 and some indication of who made it.  
03:39 Sometimes it's a user name.  
03:41 At other times you just see the IP address of the person's computer.  
03:46 But who are they?  
03:47 There are more than 75,000 active contributors to Wikipedia  
03:53 and the number is growing all the time.  
03:56 Additionally, Wikipedia has a few administrators who have higher editing powers.  
04:01 These administrators can delete pages if the topic isn't considered important enough.  
04:06 They can also flag pages with notes about the quality of the content.  
04:10 One of the controversial aspects of Wikipedia is that it's impossible to tell anything  
04:16 about the authors, including their level of expertise on a topic.  
04:19 Someone might be the world's leading expert on a topic  
04:22 or they might be your next-door neighbor who just has a strong opinion.  
04:26 Wikipedia challenges the way some people define "expert" and it equalizes the opportunity  
04:30 for all people to share what they know.  
04:33 For some people loosening up the concept of who's an "expert" is a good thing.  
04:37 For others, it's a threat to the accuracy and validity of information.  
04:41 The fact that Wikipedia authors are anonymous makes the content different from books,  
04:46 journals, magazines, and newspapers.  
04:48 In these publications the author's name is on the line in terms  
04:51 of the quality and the accuracy of their work.  
04:54 These sources have gone through formal editing and peer review process  
04:57 to assure the quality and accuracy of the information.  
05:00 Wikipedia doesn't have this same kind of formal review process.  
05:03 Instead, it relies on anonymous authors to keep each other in check so the content is presented  
05:08 in a fair, neutral, and balanced way.  
05:10 Sometimes it succeeds and sometimes it fails.  
05:13 But how accurate is Wikipedia?  
05:19 Well, in 2006 the journal Nature, an important science research journal, conducted a study.  
05:25 It showed that the Encyclopaedia Britannica is only slightly more reliable  
05:28 than Wikipedia when it comes to science topics.  
05:31 When expert scientists reviewed fifty different topics,  
05:34 Wikipedia averaged about four errors per entry.  
05:36 Britannica averaged three.

05:38 But at the same time, other critics point  
05:41 out that Wikipedia pages often point to insufficient references.  
05:45 And Wikipedia itself cautions users that Wikipedia articles aren't complete  
05:50 when they're first started, and they may contain false or debatable information.  
05:54 In fact, some pages start out pretty biased before the volunteer authors can work towards  
05:58 consensus and a neutral point of view.  
06:01 So keep in mind that Wikipedia is an evolving information resource.  
06:07 The information shifts and changes.  
06:09 Beneath the surface is a thriving community of people who work together  
06:13 to make information available on a topic, but it's impossible  
06:16 to determine if they are experts.  
06:19 Wikipedia is a jumping off point into other sources - like books,  
06:22 articles, newspaper articles and websites.  
06:26 Use it for background information, but dig deeper...and search wider too.

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## CHAPTER OVERVIEW

### 4: Identify Different Sources and Purpose

4.1: The Information Landscape- An Overview of Information types and when they appear in Publication

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## 4.1: The Information Landscape- An Overview of Information types and when they appear in Publication

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

Before starting on a research assignment, students may not have thought much about these different kinds of sources and why each exists. Some formats will be relevant to one research question but not others. Which are likely to be most useful to you will depend on both your assignment requirements and the nature of your research question. Let's look briefly at the major formats you are likely to encounter.

### Scholarly Journals

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

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

Because scholarship builds on earlier scholarship, it is essential to the community of researchers and scholars that their literature is as correct and rigorous as possible.

To ensure that only quality articles are published, scholars use the process of peer-review.

Let's walk through an example:

Jim Schultz is a professor of sociology. He recently completed a study of student groups on campus, and has written an article. Because scholarly journals can be very narrowly focused on highly specialized fields of study, Jim's first step is to identify a journal that publishes the kind of research he has conducted. He may consult with a librarian or with colleagues in order to identify promising journals.

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

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

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

The peer-review process is the most rigorous process we have for ensuring quality; it is also a major requirement for most forms of faculty tenure. For both these reasons expect scholarly journals to loom large in your future research in college.

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

### Trade and Popular Publications

Many of us grew up reading magazines like Time or Newsweek. Whether at the grocery store or the newsstand, the overwhelming majority of the magazines we encounter are considered *popular* publications. This includes titles ranging from *Popular Science* to *Rolling Stone*. What makes these titles *popular*? Briefly put, the business model of these publications depends on advertising dol

ars; how much the publications can charge for advertising space depends in large part on the number of readers (i.e., how popular the title is with readers.)

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

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

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

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

The real difference between popular and trade publications is audience. Most popular titles are written for general audiences. This means that the language is at a relatively low reading level and few technical terms are included.

The publications presume their readers know little about the content area. With trade publications, the audience is a particular industry or job field.

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

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

### Newspapers

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

### Monographs

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

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

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

### Grey literature

Sometimes important information for a project comes not from books or articles, but from a thesis or dissertation, or from the proceedings of a conference. Grey literature is a catch-all term for these types of sources. Other examples of grey literature include

technical documents and formatted reports, such as those produced by industry and various think tanks.

Grey literature has traditionally been more difficult to track down for student researchers, but a great deal of grey literature is now available in databases. Organizational websites and think tank websites also create and distribute grey literature.

### **Social media, blogs, vlogs**

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

### **The Information Timeline**

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

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

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

The following day stories are published in newspapers.

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

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

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

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

### **Contributors and Attributions**

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## CHAPTER OVERVIEW

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5.5: Fact-checking Sites

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## 5.1: Building a Fact-Checking Habit by Checking Your Emotions

In addition to our strategies we'll introduce one more word of advice: *Check your emotions*.

This isn't quite a strategy (like "go upstream") or a tactic (like using date filters to find the origin of a fact). For lack of a better word we are calling it a habit.

The habit is simple. When you feel strong emotion — happiness, anger, pride, vindication — and that emotion pushes you to share a "fact" with others, STOP. Above all, it's these things that you must fact-check.

Why? Because you're already likely to check things you know are important to get right, and you're predisposed to analyze things that put you in an intellectual frame of mind. But things that make you angry or overjoyed, well... our record as humans are not good with these things.

As an example, we might cite this tweet which recently crossed my Twitter feed:



You don't need to know that much of the background here to see the emotionally charged nature of this. President Trump had insulted Chuck Schumer, a Democratic Senator from New York, saying tears that Schumer shed during a statement about refugees were "fake tears". This tweet reminds us that that Senator Schumer's great grandmother died at the hands of the Nazis, which could explain Schumer's emotional connection to the issue of refugees.

Or does it? Do we actually know that Schumer's great-grandmother died at the hands of the Nazis? And if we are not sure this is true, should we really be retweeting it?

Our normal inclination is to ignore verification needs when we strongly react to content, and researchers have found that content that causes strong emotions (both positive and negative) spreads the fastest through our social networks.<sup>[1]</sup> Savvy activists and advocates utilize this flaw of ours, getting past our filters by posting material that goes straight to our heart.

Building new habits requires that we identify "pegs" on which to hang those habits. So use your emotions as a reminder — as a trigger for your fact-checking habit. If every time content you want to share makes you feel rage, or laughter, or ridicule, or, sorry to say, a heartwarming buzz — spend 30 seconds fact-checking you'll do pretty well.

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1. See [What Emotion Goes Viral the Fastest?](#) by Matthew Shaer. ←

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## SECTION OVERVIEW

### 5.2: Evaluating Sources

#### 5.2.1: Thinking Critically About Sources

#### 5.2.2: Evaluating for Relevancy

#### 5.2.3: Evaluating for Credibility

#### 5.2.4: A Source's Neighborhood

#### 5.2.5: Author and Publisher

#### 5.2.6: Degree of Bias

#### 5.2.7: Recognition from Others

#### 5.2.8: Thoroughness

#### 5.2.9: Combining the Factors

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## 5.2.1: Thinking Critically About Sources

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### 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. So 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 take a closer read to determine what 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 college—the opportunity to evaluate sources is one of the big reasons your professors assign research projects. And your future employers will expect you to have learned how to do it. For the rest of your professional and personal life, you will be using the critical thinking skills that make choosing the right sources possible. So learning those skills is a good investment.

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

#### ACTIVITY: Evaluation Basics

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

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

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

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

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## 5.2.2: Evaluating for Relevancy

### 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 biosciences, 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. Bioscience 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.

### 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?

|                       | <i>Currency Okay</i> | <i>Group Diversity</i> | <i>Critical Thinking</i> |
|-----------------------|----------------------|------------------------|--------------------------|
| <i>Source A title</i> | X                    | X                      |                          |
| <i>Source B title</i> | X                    |                        |                          |
| <i>Source C title</i> | 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.

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## 5.2.3: Evaluating for Credibility

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### 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.

---

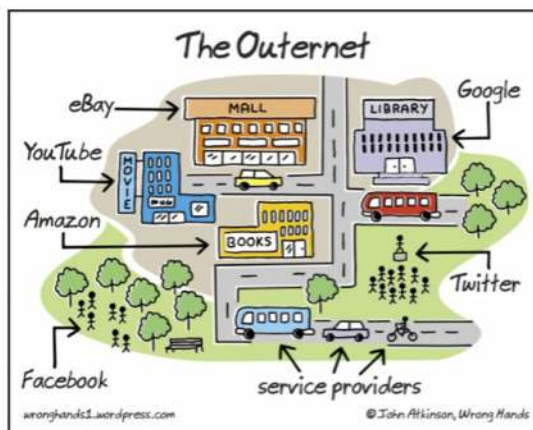
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## 5.2.4: A Source's Neighborhood

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)

An interactive or media element has been excluded from this version of the text. You can view it online here: <https://ohiostate.pressbooks.pub/choosingsources/?p=872>

[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://rvthospital.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.

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## 5.2.5: Author and Publisher



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

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.

### 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: [www.XYZuniversity.edu/~jones/page.html](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.

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## 5.2.6: 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.



Look for evidence of bias in your sources.

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.

### 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.

| Coverage                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Unbiased:</b> 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. | <b>Biased:</b> 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                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Unbiased:</b> The source links to any earlier news or documents it refers to.                                                                                                                                                                       | <b>Biased:</b> The source refers to earlier news or documents, but does not link to the news report or document itself.                                                                                                                                                                                                                                                       |
| Evidence                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Unbiased:</b> Statements are supported by evidence and documentation.                                                                                                                                                                               | <b>Biased:</b> There is little evidence and documentation presented, just assertions that seem intended to persuade by themselves.                                                                                                                                                                                                                                            |

| Vested Interest                                                                                                                    |                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Unbiased:</b> There is no overt evidence that the author will benefit from whichever way the topic is decided.                  | <b>Biased:</b> 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                                                                                                                |                                                                                                                                                                                                                                                                                                                            |
| <b>Unbiased:</b> Statements are made without strong emphasis and without provocative twists. There aren’t many exclamation points. | <b>Biased:</b> There are many strongly worded assertions. There are a lot of exclamation points.                                                                                                                                                                                                                           |
| Multiple Viewpoints                                                                                                                |                                                                                                                                                                                                                                                                                                                            |
| <b>Unbiased:</b> Both pro and con viewpoints are provided about controversial issues.                                              | <b>Biased:</b> Only one version of <i>the truth</i> 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.

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## 5.2.7: 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.

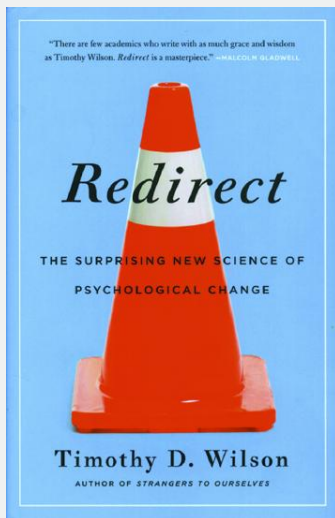
Don't let an absence of links, tags, citations, ratings, and comments damn the site in your evaluation. Perhaps it's just not well-known to other authors. The lack of them should just mean this factor can't add any positive or negative weight to your eventual decision to use the site—it's a neutral.

### 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](http://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](http://www.deathpenaltyinfo.org) [site:edu](http://www.deathpenaltyinfo.org) 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.

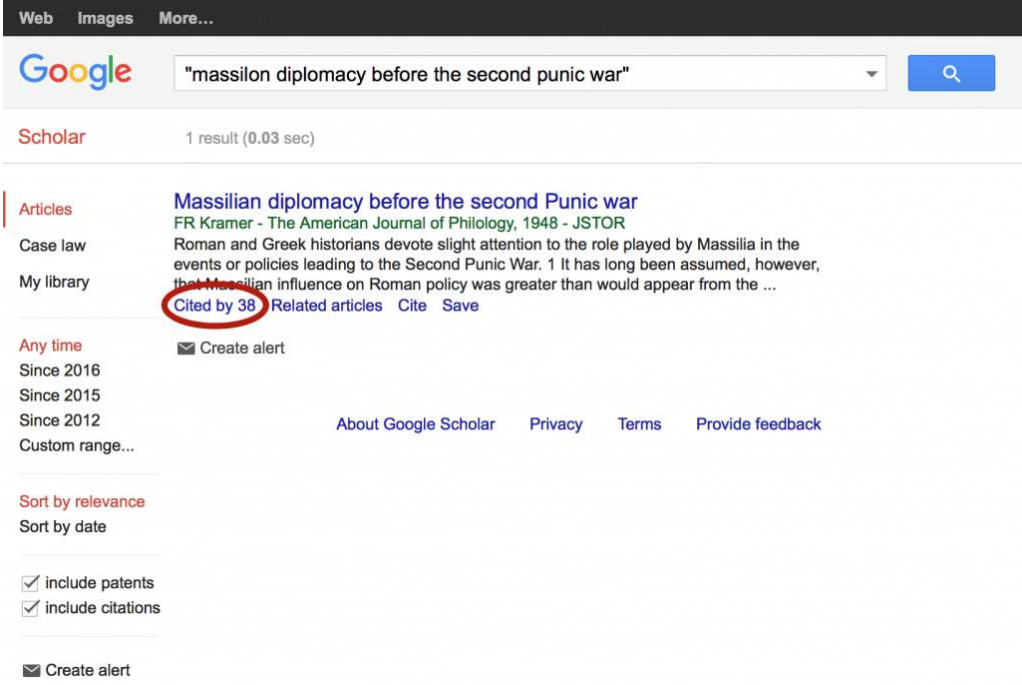
#### Activity: Inferences

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.)



The screenshot shows a Google Scholar search interface. At the top, there's a search bar with the text "massilion diplomacy before the second punic war" and a search button. Below the search bar, it says "Scholar" and "1 result (0.03 sec)". The main result is an article titled "Massilian diplomacy before the second Punic war" by FR Kramer, published in The American Journal of Philology, 1948, on JSTOR. The abstract mentions that Roman and Greek historians devote slight attention to the role played by Massilia in the events or policies leading to the Second Punic War. The citation count "Cited by 38" is circled in red. There are links for "Related articles", "Cite", and "Save". On the left sidebar, there are filters for "Articles", "Case law", and "My library". At the bottom, there are options to "Sort by relevance" or "Sort by date", and checkboxes for "include patents" and "include citations".

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.

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## 5.2.8: Thoroughness



Consider how well a source covers your topic.

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.

### 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](https://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.

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## 5.2.9: Combining the Factors

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### 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.

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## 5.3: The Big Picture (Infographic)

The world of information has been transformed in unexpected ways in the past decade. These changes can be explained, in part, by the impact of algorithms. Figure 1 summarizes some of the factors driving these changes.

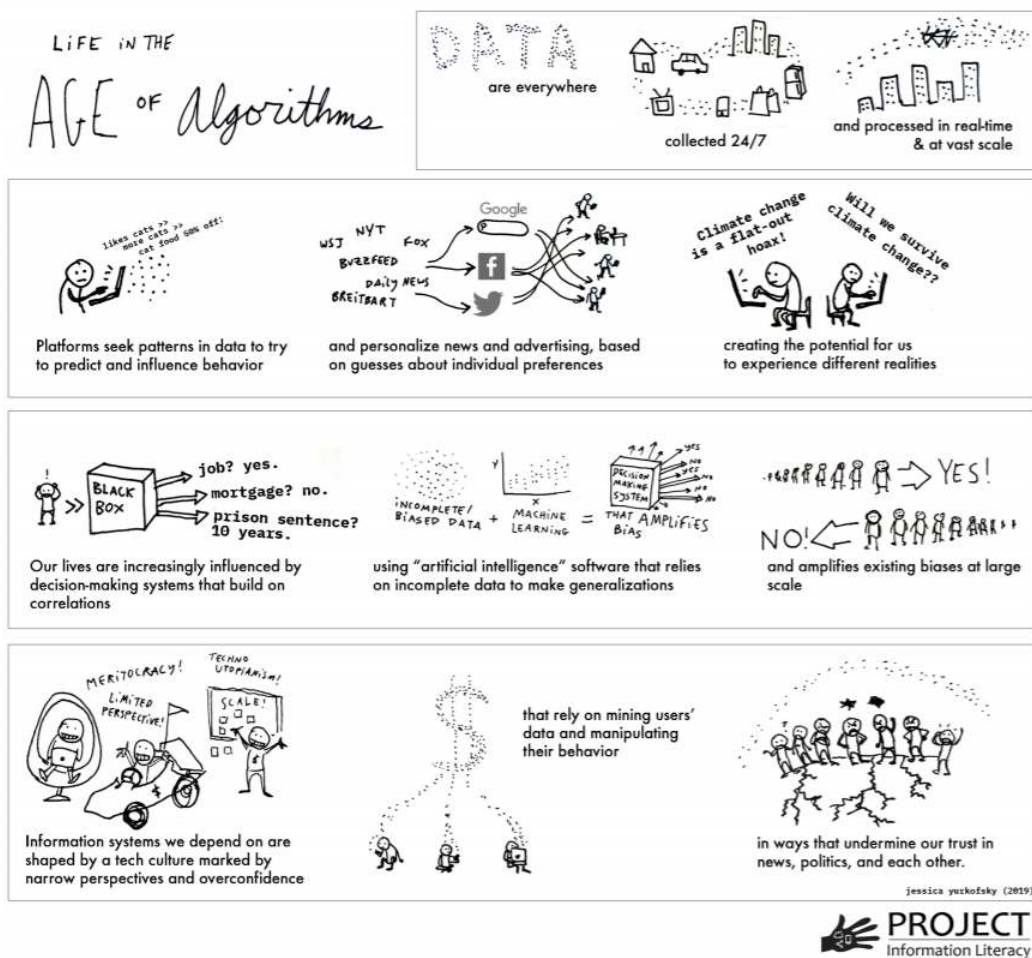


Figure 1: Life in the age of algorithms: A conceptualization

The impact of several convergent technologies and social trends helps explain how and why the world of information has changed so dramatically. A list of some of the most significant of these technological trends shows how these changes affect society.

1. Data collection is happening invisibly and constantly. We carry computers in our pockets that gather and share information about our daily lives, including where we go, who we associate with, what news catches our attention, and what questions we ask. These data streams may be combined with information from data brokers<sup>29</sup> and harvested from our cars and household gadgets, like baby monitors, internet connected thermostats, refrigerators, vacuums, and voice-activated assistants such as Alexa, Siri, and Google Home.<sup>30</sup>
2. Advances in data science allow technologists and systems to collect and process data in real time, rapidly and on a vast scale (a development often called “big data”).<sup>31</sup> This computational ability to quickly correlate enormous amounts of fine-grained, exhaustive data collected from numerous sources has opened up opportunities for companies and researchers — but also many Pandora’s boxes.
3. Automated decision-making systems are being applied to social institutions<sup>32</sup> and processes<sup>33</sup> that, for better or worse, determine all kinds of things: who gets a job, a mortgage, or a loan, access to social services, admission to school or educational services.
4. Machine learning (ML) and artificial intelligence (AI), increasingly used in software products that make very significant decisions, often rely on biased or incomplete data sets. AI systems are “trained”<sup>34</sup> using existing, often human-edited<sup>35</sup> datasets,

which means they can learn and amplify bias. This has implications such as teaching autonomous cars to avoid pedestrians<sup>36</sup> or recommending a prison sentence based on data from a criminal justice system that has a history of racial discrimination.<sup>37</sup>

5. The disaggregation of published information and its redistribution through search and social media platforms makes evaluation of what used to be distinct sources, like articles published in an academic journal or stories in a local newspaper, all the more difficult. This disaggregation leads to an individualized presentation of information that sorts results based on inferences drawn from personal data trails. We do not all see the same information when we search and with original context missing, it is not obvious where it came from.
6. There has been a rise of the “attention economy” or “surveillance capitalism”: profitable industries gather “data exhaust” from our interaction with computers to personalize results, predict and drive behavior, target advertising, political persuasion, and social behavior at a large scale.
7. These industries appear to have difficulty anticipating or responding to unintended consequences. This may be because companies are influenced by Silicon Valley cultural values<sup>38</sup> that, among other things, consist of a belief in meritocracy, indifference to or ignorance of perspectives different from those of affluent White males,<sup>39</sup> a global reach coupled with a lack of cultural competence,<sup>40</sup> and magical thinking about the preeminent goodness of individualism and free speech.<sup>41</sup>
8. Decades of media consolidation, deregulation, and economic trends combined with the rise of social media platforms that are designed for persuasion but have no ethical duty of care, have contributed to engineered distrust of established knowledge traditions such as journalism and scholarship, and the global destabilization of political and social institutions.

The technical infrastructure that influences how we acquire information and shapes our knowledge and beliefs has changed dramatically in ways that are largely invisible to the public — by design. We are facing a lack of public knowledge<sup>42</sup> about who holds power over information systems and how that power is wielded, a gap in understanding that educators need to begin to address.<sup>43</sup> Given this sea change, questions about what it means for students to be information literate today, and whether they know how information works in the age of algorithms, are of paramount importance.

#### What exactly is information literacy?



The term “information literacy” is sometimes mistakenly conflated with “library instruction,” but its meaning is really much broader. Information literacy is a collective effort of librarians, media specialists, technologists, and educators across the educational spectrum. It incorporates elements of media literacy, digital literacy, news literacy, and critical thinking.

Taken together, information literacy is an integrated set of skills, knowledge, practices, and dispositions that prepares students to discover, interpret, and create information ethically while gaining a critical understanding of how information systems interact to produce and circulate news, information, and knowledge.\*

\* The Association of College and Research Libraries (11 January 2016) has developed a “Framework for information literacy for higher education” that offers a discussion of the phrase and outlines core concepts for college-level students, <http://www.ala.org/acrl/standards/ilframework>

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## SECTION OVERVIEW

### 5.4: Trace Claims, Quotes, and Media to Their Original Context

Most stuff you see on the web is not original reporting or research. Instead, it is often commentary on the re-reporting of re-reporting on some original story or piece of research. And that's a problem.

Now, in some cases stories or findings get better as they pass through intermediaries. If I tell a reporter a piece of gossip I heard, and they go out and verify it by talking to eyewitnesses and experts, their report on my piece of gossip is probably more accurate than my gossip. If a scientist gets a result and another scientist with a talent for explaining things blogs it, maybe the second explanation is better than the first. Research also shows that as gossip gets passed around, sometimes important details that were missed become more prominent.

But in most cases, the more a story is passed around, the more it starts to become a bit warped. That's due to a bunch of reasons. Human nature is to exaggerate stories for effect. Desire of websites to get advertising dollars can result in them printing the most shocking version of something. And there are bad actors: people who will take a story that has some nuance to it and remove the details that provide that nuance, or invent details that didn't exist.

Very often by the time a story finds you on the web it has been altered so much that it presents a radically wrong version of an event or a piece of research. The person you are reading usually did no original reporting, made no phone calls to check facts, and often barely skimmed the original story before writing up their blog post, thinkpiece, hot take, or re-reported news item. And so they either get things wrong by mistake, or, in some cases, intentionally mislead.

#### Trace It to the Original

Fortunately, there is a solution to this problem. Usually, the original reporting, research, or photo is available on the web. By going to the original reporting or research source (or finding a high quality secondary source that did the hard work of verification) you can get a story that is more complete, or a research finding that is more accurate. This two minute video shows you how going to the source can be as easy as clicking through a link:



#### Leveling, Sharpening, and Assimilation

Early studies of rumors suggested that as rumors traveled further from the source they were altered in predictable ways. They were "leveled" — as they traveled, details are stripped out. They are also "sharpened" — certain small details are added or emphasized to give the story more "punch". And both of these processes happened in the context of "assimilation" — the details that were omitted and the details that were added or emphasized are chosen because they either fit what the speaker thinks is the main theme of the story, or what the speaker thinks the listener will be most interested in.

Later research called into question the particular nature of these processes, but these three actions are a helpful way of thinking about the sorts of alterations people can make to claims, quotes, and media as they pass them along.

These processes are not necessarily bad. It means that as a story travels it often becomes more concise, more engaging, and more geared toward the interest of its audience. Think of a long-winded story full of details that someone has told you which you have then retold. Assuming you have a credible take on what the story is about, you'll probably forget the irrelevant details, and remember the most memorable ones. So when you retell it, you'll provide a shorter more engaging version customized to your audience. And that's good! One reason many people enjoy getting news from social media is it can be much more *efficient* than a longer news story, calling out the pieces that really matter to you in particular.

But the same way that these processes can provide value in the hands of careful storytellers, they can be damaging in the hands of those who are careless, are guided by strong bias, or are motivated to distort the truth for their own benefit.

Consider this tweet from our old friend John D'oh:



John is tweeting his takeaway from this article on sunscreen (or at least his takeaway from the article headline):



But the article doesn't say to ditch your sunscreen. And it doesn't even say that the FDA is warning people about the chemicals. The study merely concluded that given the levels of the chemicals in the bloodstream — from applying sunscreen four times a day — that additional regulation might be warranted:

They found that these 24 participants had higher than what is recommended of these chemicals in their blood. This amount is based on what the FDA's says is how much of these active ingredient can be in someone's bloodstream before it needs to be tested for safety concerns...

This article isn't from a reliable source, and is in fact pulling all its quotes from another article. It's reporting on reporting. If you click through to the link (supposedly to the research article) it links to a CNN story.

And in that story you notice the re-reporters left something out:

So, should you stop using sunscreen? Absolutely not, experts say.

"Studies need to be performed to evaluate this finding and determine whether there are true medical implications to absorption of certain ingredients," said Yale School of Medicine dermatologist Dr. David Leffell, a spokesman for the American Academy of Dermatology. He added that in the meantime, people should "continue to be aggressive about sun protection."

The original story *actually says the opposite* of what the tweeter proposed.

You could trace it back even further, but we can stop there. A story came out that mentioned the research, but made it clear that there is not any known danger yet, and that people should continue to use the sunscreen they are using in the meantime. That gets rewritten, with that detail omitted or downplayed (leveled). It then gets summarized by John D'oh — who "sharpens" the advice, and ends up stating the exact opposite of what the original story said.

When looking at information of this sort, figure out what the original reporting source was, and go take a look. Some publications can add value, particularly if reporters are experienced and knowledgeable in the field they are reporting in. But if it's clear the thing your looking at is just re-reporting of reporting, go up to the source and once at the source do your normal (I)nvestigate the Source moves.

## Beware the Sourceless Story

Consider this post by John D'oh:



If you go to that story you'll find references to a "NASA study" — however, when you click on the link it's not to the study (which was apparently from 1968) but rather to a summary of the study in an information technology magazine from the 2005. The study itself appears to never have been published directly or reported on contemporaneously. You can keep digging, and what you'll eventually find is what citations that exist to the study are not to the 1968 study, but a 1992 book Land wrote with his wife which told the story of the study he had done over 20 years before. Importantly the study wasn't even a NASA study: it was a study he did privately using a test that he had developed for NASA. It's unclear what NASA's take was on the test, since, again, the only account we have of it is from 1992.

This is not to doubt Land's honesty. But the perceived authority of the study for many readers comes from the idea it was conducted by NASA and was substantial research at the time. When you attempt to trace the claim to the original context you find that the trail ends in 1992, it was not published at the time, and was not conducted by NASA. That changes how you might view the claim.

[5.4.1: Beer Tax \(Prompt\)](#)

[5.4.2: Beer Tax \(Discussion\)](#)

[5.4.3: Biggie and Cobain \(prompt\)](#)

[5.4.4: Biggie and Cobain \(discussion\)](#)

[5.4.5: Guns in Schools \(prompt\)](#)

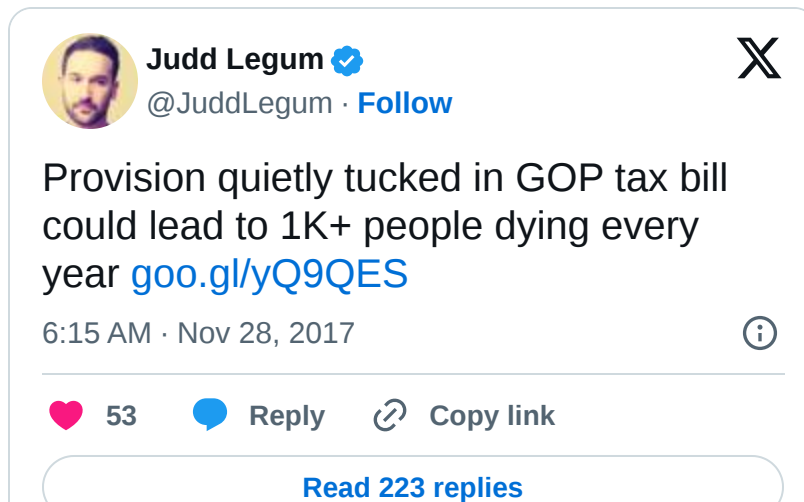
[5.4.6: Guns in Schools \(discussion\)](#)

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### 5.4.1: Beer Tax (Prompt)

Take a look at the tweet below.



You see multiple sources here, but what's the *original* research source? Click through until you find the original report.

Once you find the original report answer two questions in your fact-checking notebook:

- What is the reputation of the organization or person producing the report? How credible are they on this claim?
- What's the 1,000 people dying about? How does an alcohol tax affect that?

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## 5.4.2: Beer Tax (Discussion)

To solve this, we click to the page linked in the tweet, and scan it for links to the original report (or the original summary of the report). We find one such link:

As alcohol-linked deaths continue to rise, the Senate is expected to vote on a tax bill this week that would exacerbate this public health problem. Tucked away in the Senate's tax bill is the "Craft Beverage Modernization" provision, which would cut federal excise taxes on alcohol producers, particularly small brewers. A recent Brookings Institution report estimates that this legislation would "result in between 281 and 659 additional motor vehicle fatalities... (relative to a baseline of 37,461 deaths [in 2016]) and 1,550 additional alcohol-related deaths" per year.

A segment of the page with the phrase "report estimates that" highlighted. "Estimates" is linked.

That report seems to be the source of the claim, so we click through and find a summary of the finding from Adam Looney at the Brookings institution. And he has a link that shows his math.

 **Measuring the loss of life from the Senate's tax cuts for alcohol producers**



Based on empirical studies measuring the link between alcohol taxes and alcohol-related injuries, I estimate the legislation will cause between 280 and 660 additional motor vehicle deaths a year and approximately 1,550 total alcohol-related deaths annually from all causes. [\(Read more here on how I arrived at this estimate.\)](#) Of course, the economic costs associated with alcohol extend well beyond deaths and include alcohol-related injuries, crime, domestic violence, alcohol-related disease, and associated costs to families and local law-enforcement and health-providers.

Despite being billed as tax cuts for "Craft Beverage" producers, the benefits

A segment of the page with the phrase "how I arrived at this estimate" highlighted. The phrase is linked.

The truth is we're not (most of us) risk researchers or even working economists. We're not going to be able to judge whether he is being fair about the math, whether he's citing consensus risk models or fringe stuff. We only have his reputation to go by.

It's a contentious issue, with a lot of complexity, so our goal here is not figuring out whether he is right. Our goal is to figure out how seriously to take that estimate. Is it junk, or is it worth considering? Do we keep reading, or do we go somewhere else?

So our second move, now that we *know* the original source, is to *investigate* the source.



 brookings 

Google Search

I'm Feeling Lucky

In this case, a search for Brookings on Wikipedia shows that Brookings is a well respected think-tank that conducts this sort of policy analysis regularly, has a high marks for credibility, and seems to be centrist in political leanings, and not explicitly partisan.

### Your Research Shopping Cart

The search above gave you a good result on Brookings — good enough for you to take the analysis seriously, in any case. Good enough for you to share this with others if that's what you want to do.

But I cannot stress enough that it doesn't mean you have to agree with the analysis. In fact, if you want to form an informed opinion on this question, you probably want to move to that (F) in SIFT, and find other trusted coverage on this issue of alcohol taxes and death rates. See what others say.

Students (and even teachers, sometimes) often want these things to resolve one way or another. Is this person right, or are they wrong? True or false? With some questions there's that sort of clarity, and we shouldn't hesitate to make simple judgments when simple judgments are merited.

For something like this, however, I like to think of it like food shopping. Maybe you're interested in this question of alcohol taxes. You go around the information supermarket, and you look at the (metaphorical) nutrition labels, and the question is not "Is this the only thing I will eat?" The question "Is this healthy enough to go in the shopping cart?"

The above analysis is healthy enough to go in the cart, and healthy enough to share with others. But if you have questions or concerns you should keep shopping! Just make sure that for the additional sources you consume you check those nutrition labels too.

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### 5.4.3: Biggie and Cobain (prompt)

OK, I'm going to break it to you gently. Legendary rapper The Notorious B.I.G. and Nirvana frontman Kurt Cobain never hung out. This picture is fake.



But rather than arguing about what elements of this picture either do or don't look photoshopped, I want you to [go to the photo](#), then find the original two photos which were used to create this.

When you've found them, enter the URLs of them in your fact-checking notebook, with a sentence or two about how you tracked them down.

#### Contributors and Attributions

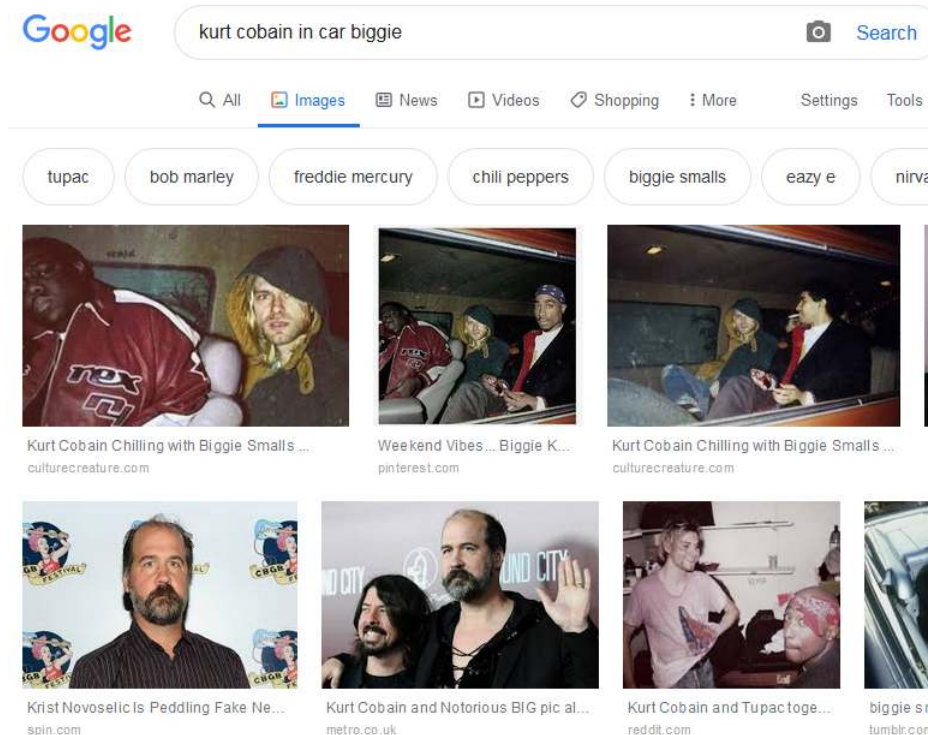
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### 5.4.4: Biggie and Cobain (discussion)

One wrong impression people have of how fact-checkers go about verifying photos is that they start with a pixel-level analysis, looking for signs of alteration. And sure, sometimes it comes to that.

The first and easiest check, however is to see if there are earlier photos on the web from which the photo was made. Sometimes you can do that by reverse image searching either the photo or a portion of the photo — e.g. crop out the Cobain or Notorious B.I.G. half and search on that. But we're about the quick checks here, so we're going to just do a Google Image search for the phrase `kurt cobain in car biggie`.



When we scan the photos we're looking for a potentially earlier photograph. And since it's far more likely that Notorious B.I.G. was added to the photo than removed we're going to guess the photo to look at is this one:



We click through and find the original photo with some commentary on the fake one:

carseat (which look to be of an entirely different make and model) were Photoshopped into this photo and 2) the pack of cigarettes belongs to Nirvana guitarist Pat Smear.



Some things are just too good to be true.

So that's photo one. And that's really enough to debunk this thing. But let's find the other one too. For some reason our initial search isn't working, so we STOP (remember that move?) and reformulate it to be a bit simpler: biggie notorious cobain.

Once we do that, we find the original Notorious B.I.G photo too.



Notorious ...



kurt cobain tupac shak...  
pinterest.com



Kurt Cobain &  
dailydeets.com

## Finding the Original Helps — Even When It's Real

One of the reasons we've developed the moves the way that we have is to make sure that the actions you take can be useful no matter what the underlying story is. Consider this photo:



Photo is titled "life of a national geographic photographer" as the photographer stands on cooling lava with his camera stand and sneakers on fire.

We could spend a whole lot of time trying to figure out whether that fire has been photoshopped on or not. But instead we try to find the original — and particularly the original context in which it appeared.



In this case we do a right-click reverse image search (available in Chrome desktop). But we could just as easily search on `photographer shoes fire lava`. In either case, we find a bunch of pages that contain the photo, from a variety of sites. One of the sites returned is Reddit. Reddit is a site that is famous for sharing these sorts of photos, but it also has a reputation for having a user base that is very good at spotting fake photos.

Visually similar images



Report images

Pages that include matching images

**In the heat of the moment : pics - Reddit**  
[https://www.reddit.com/r/pics/comments/.../in\\_the\\_heat\\_of\\_the\\_moment/](https://www.reddit.com/r/pics/comments/.../in_the_heat_of_the_moment/)  
1600 x 1066 - Jan 28, 2014 - A place to share photographs and pictures. Feel free to post your own, but please read the rules first (see below), and note that we are not a ...

**Mind Blowing Images of the Planet With Live On - Page 2 of 2 ...**  
<https://www.outdoorrevival.com/news/mind-blowing-images-of-the-.../2>  
640 x 425 - Aug 26, 2015 - IN THE HEAT OF THE MOMENT. kawika-singson-standing-on-lava-shoes-tripod-on-. Photograph of KAWIKA SINGSON | Taken by Chris Hirata.

**similar image search for post: When you want the perfect shot. [PIC ...**  
[karmadecay.com/r/woahdude/.../when\\_you\\_want\\_the\\_perfect\\_shot\\_pic/](http://karmadecay.com/r/woahdude/.../when_you_want_the_perfect_shot_pic/)

**Moment.. - YohYoh.com Showcase online and Promote**  
[www.yohyoh.com/tags/moment..](http://www.yohyoh.com/tags/moment..)  
481 x 320 - An Extremely Dedicated Photographer In The Heat Of The Moment.. Tag it. Add your own tag. Login, click on the image in inner page, fill the form and save.

When we go to the Reddit page we find there is an argument there over whether the photo is fake or not. It's no help — we need to go further upstream. Reddit has the link to the original article the photo appeared in so we head there:

## Hot Lava Sets Adventurous Photographer's Feet on Fire

By Katie Hosmer on July 15, 2013

LIKE MY MODERN MET ON FACEBOOK  Like 1.6M

 GET OUR WEEKLY NEWSLETTER



Of course, by now you know that you can't always trust the headlines, right? So we scan the article, at the bottom we find an update:

The photo is real, but the flames are not the result of spontaneous combustion. “The flames on the tripod and my shoes did not start because of the lava” Singson freely admits. “It’s like if you put your shoe in a hot frying pan, it will not catch fire

right away”. Singson used an accelerant to start the flames then had his buddy snap the shot. The reason? “It’s just something I wanted for my Facebook cover photo”.

Many times you’ll start out trying to find the source of a photo, story, or statistic to figure out if it is real. In doing so you may discover it is real, but a bit more complex than you first thought.

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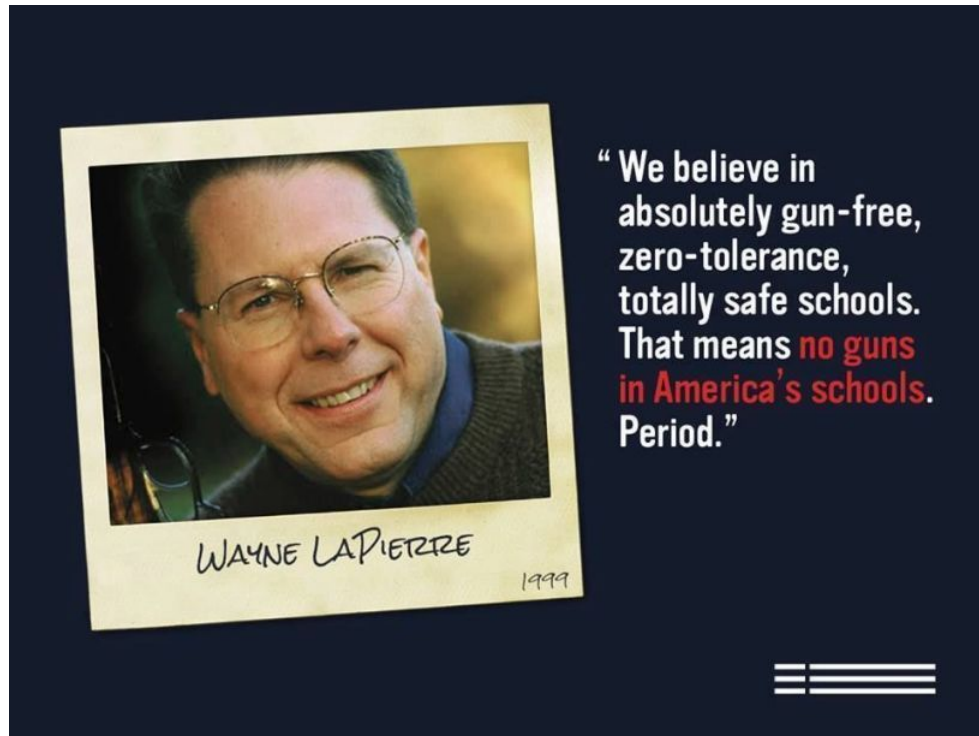
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### 5.4.5: Guns in Schools (prompt)

The NRA — a political advocacy organization — currently argues that the correct response to school shootings is arming teachers and school personnel. In light of that position, a pro-gun control organization called Everytown circulated the following graphic:



"We believe in absolutely gun-free, zero tolerance, totally safe schools. That means no guns in America's schools period." - Wayne LaPierre

If NRA CEO Wayne LaPierre said that in 1999, it looks like a dramatic change in approach.

Find the source of the quote, and read it in it's original context. For this one, do not stop at a fact-checker, but track the quote all the way to the transcript of the C-Span video where he said it.

Do you feel this portrayal of a major shift in policy is fair? Why or why not?

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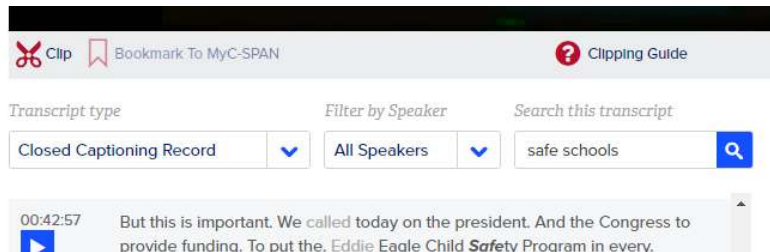
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### 5.4.6: Guns in Schools (discussion)

There are numerous fact-checks of this out there, but we asked you to look at the source of the quote itself in this instance. To do that you can either find it directly through search, or be lazy like me: go to a fact-checking page and click through to the video linked in it. Most fact-checkers link to the C-SPAN video:

#### [National Rifle Association Convention](#)

If you go there you'll find there's a little box that allows you to search the text of the speech.



We search for safe school, and find the text.



People may have different opinions on whether the Everytown graphic is accurate. It's certainly the case that he seems to be primarily talking about *students* not having guns. On the other hand, the "rare exception" language seems to indicate that the 1999 version of Wayne LaPierre would not have dreamed of saying *teachers* should carry weapons. As with so many of our examples, the truth is a bit more nuanced than it appears at first. And while knowing the nuance may not change your opinion on the issue, understanding what is genuinely new here will help better focus your efforts on the things you care about, no matter which side of the issue you find yourself on.

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## 5.5: Fact-checking Sites

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### Some Reputable Fact-Checking Organizations

The following organizations are generally regarded as reputable fact-checking organizations focused on U.S. national news:

- [PolitiFact](#)
- [Factcheck.org](#)
- [Washington Post Fact Checker](#)
- [Snopes](#)
- [Truth be Told](#)
- [NPR Fact-Check](#)
- [Lie Detector](#) (Univision, Spanish language)
- [Hoax Slayer](#)

Respected specialty sites cover niche areas such as climate or celebrities. Here's a few examples:

- [Climate Feedback](#)
- [SciCheck](#)
- [Quote Investigator](#)

There are many fact-checking sites outside the U.S. Here is a small sample.

- [FactsCan](#) (Canada)
- [TrudeauMetre](#) (Canada)
- [El Polígrafo](#) (Mexico)
- [The Hound](#) (Mexico)
- [Guardian Reality Check](#) (UK)
- [BBC Reality Check](#) (UK)
- [Channel 4 Fact Check](#)
- [Full Fact](#) (UK)

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## CHAPTER OVERVIEW

### 6: Put it all together

#### 6.1: Present- Sharing What You've Learned

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## 6.1: Present- Sharing What You've Learned

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### Presenting the Results of Your Research

In earlier chapters we discussed how to identify a research topic and how to focus in on specific questions that we hoped to answer. Then we discussed ways to search for, organize, and evaluate information that would help to answer those questions. Now it's time to think about the best way (or ways) to present the information.

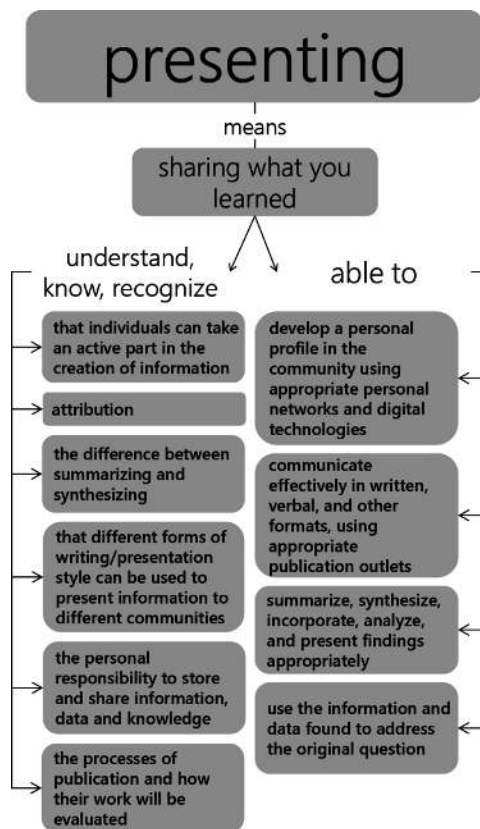
Individuals adept at the Present pillar can apply the knowledge they have gained. They can present the results of their research, synthesize new and old information and data to create new knowledge, and disseminate their work in a variety of ways.

They understand

- The difference between summarizing and synthesizing
- That different forms of writing/presentation style can be used to present information to different communities
- That data can be presented in different ways
- Their personal responsibility to store and share information and data
- Their personal responsibility to disseminate information & knowledge
- How their work will be evaluated
- The processes of publication
- The concept of attribution
- That individuals can take an active part in the creation of information through traditional publishing and digital technologies (e.g. blogs, wikis)

They are able to

- Use the information and data found to address the original question
- Summarize documents and reports verbally and in writing
- Incorporate new information into the context of existing knowledge
- Analyze and present data appropriately
- Synthesize and appraise new and complex information from different sources
- Communicate effectively using appropriate writing styles in a variety of formats
- Communicate effectively verbally
- Select appropriate publications and dissemination outlets in which to publish if appropriate
- Develop a personal profile in the community using appropriate personal networks and digital technologies (e.g. discussion lists, social networking sites, blogs, etc.)



Proficiencies in the Present pillar

## Processing What You Find

In many or even most cases, during the process of finding a variety of information sources, you will begin to develop an answer to your research question. Even if you feel that you've already found the proof you need to support your thesis, it is still important to review the information and data you have to be sure you're clear about what it is (and isn't) telling you. Be careful not to let your own opinion lead you into a misinterpretation of your sources.

One useful way to consolidate the information you've found is to summarize what you think it says, and then find a definite source for each specific item in your summary. You can start by filling in the final box in the chart below, from the Identify chapter.

| What do you already Know about your topic? | What do you Want to know about your topic? | How will you find information on your topic? | What have you Learned about your topic? |
|--------------------------------------------|--------------------------------------------|----------------------------------------------|-----------------------------------------|
|                                            |                                            |                                              |                                         |

However, an expanded version of this same box can tell you a lot more about where the information is from, and will also prove useful when you need to cite a specific bit of information in your bibliography. In the left column of the following box, list what you have learned, bit by bit. In the right column, list where you found it. If it was found in more than one source, list them all and think about which one you find to be the most reliable or useful. Depending on where and how you present your findings, you may be called upon to defend your sources, so it pays to be prepared for this.

| What have you learned about your topic? | Where did you learn it? |
|-----------------------------------------|-------------------------|
|                                         |                         |
|                                         |                         |
|                                         |                         |
|                                         |                         |
|                                         |                         |

This exercise is just one way to process your information and may not be the best way for everyone. Summarizing in paragraph form is another way to accomplish the same task, with the added benefit that what you write in the summary can often become part of your final product. Just be careful that you aren't using paraphrased material without properly citing the source it came from. Verbally summarizing your findings, and especially your arguments in favor of your conclusions, to a friend, classmate, or teacher is an excellent way to confirm your mastery of the topic. While the means of summarizing can vary, the key at this point is to make sure you understand what you've found and how it relates to your topic and research question.

Now that you're confident in your knowledge of your topic, you can formally answer your original research question when you present what you've found. Did your original thesis/hypothesis turn out to be true? If so, say so! If not, why not? Be sure you're able to state specifics that prove or disprove your projections. Was anything a surprise? Do any of your findings suggest future research possibilities?

One of the most satisfying parts of doing research is having something to add to a topic's base of knowledge. Think about what you found in relation to your original research question and compare it to all of the sources you examined on your topic. Did you discover something new? If your research involved experiments, you may have new results or data sets that others can use. Even if you didn't generate new data, maybe you saw new connections between existing sources that no one has written about before. Think about this as you begin to put together the presentation of your findings, you may have something to share!

## Choosing How to Present

The way you finally present your research findings is largely dependent on your original goals. If you were researching for a class project, it's likely that the teacher provided you with fairly specific requirements and it would obviously be a good idea to stick to them.

Even if you did initially do the research for a class project though, you may find yourself in a situation similar to Norm at the beginning of the chapter, wanting to share your work more widely. You've already done the work, so why not get all the benefit you can?

Some of the more common ways of presenting information are discussed below, but the descriptions of them are not exhaustive and remember that these are not nearly all of the options. In addition, you can often combine more than one method of presentation to highlight different elements of your findings or to reach multiple audiences.

### Written

Writing is the most established way to share your research findings. Benefits of writing include the ability to proofread, edit, and rewrite to get your presentation exactly right. Done skillfully, writing can hold your audience's attention and effectively deliver information. Done poorly, it can confuse or bore your audience to the point that they stop reading. To avoid this second possibility, if at all possible, have someone read your writing before you give it to the final audience. Take constructive criticism to heart, so that your voice is clearly heard.

- **Traditional Paper.** One of the most common ways to present research findings, especially for students, is in a short paper written as a class assignment. The way this type of paper is formatted is determined by the teacher, and is fairly straightforward.

The goal is usually to demonstrate to the teacher that you have understood the topic and can draw some conclusions from what you've learned.

- **Thesis/Dissertation.** At higher levels of education, you may be called upon to write a thesis paper or even a dissertation. At this point, you are entering the realm of high level professional or scholarly expertise, and will be expected to produce original ideas and the necessary supporting research to contribute to your field. The type of writing in theses and dissertations varies depending on the subject area, but generally these manuscripts are longer and more detailed than a traditional class paper. They also use more discipline-specific language, and can take several years to complete.
- **Scholarly Journal Article.** Articles published in scholarly journals undergo a peer-review process (see the Evaluate chapter) to ensure that they are reliable and significant additions to the literature on a topic. If you get to a point in your research where you feel you have a contribution that others could use, investigate the possibility of submitting an article for publication, especially if your research is relevant to your intended career. It can be difficult to determine which journal to submit your article to, so don't hesitate to ask teachers, colleagues, or even the editor of the journal if your article's content is appropriate.
- **Blog/Tweet/Other Social Media.** A relatively new option for getting your information out to a wide audience is to use social media tools. If you have your own blog or website you can easily publish your findings for the entire world to see (getting people to actually look at it is another issue, with many possible solutions). You can also use Facebook, Twitter or other tools to let people know what you're working on and to direct them to more detailed information that you've posted elsewhere online. While this may seem unusual, it is becoming more and more popular for researchers to share work online as it progresses, so that other interested parties can contribute and ask questions, making the final product more robust, whatever form it ends up taking.

## Spoken

Presenting information verbally might seem easier than writing or terrifying, depending on your experience and personality. Ideally you will be thoroughly prepared and able to clearly explain your findings, while also being able to respond effectively to unanticipated questions. It takes practice and a deep knowledge of your topic to do this—even the best speakers get flustered once in a while. Don't be afraid to say you don't know the answer and always offer to follow up on a question.

- **Class Presentation/Speech.** As with the class paper, a class presentation is one of the first experiences most students will have with verbally presenting their research. One great benefit of this type of presentation is that you will most likely receive detailed feedback on how well it was received and perhaps even get some suggestions on how to improve your delivery. Your fellow students will also be faced with the same task and can even provide this type of feedback before the actual presentation takes place.
- **Conference Presentation or Poster Session.** As your expertise on a topic grows, you may want to reach a wider audience. You will also want to reach an audience that is interested in your topic. An excellent place to find this audience is at a professional conference in your field. Aside from the many other benefits of attending professional conferences, presenting at a conference will help you begin to make yourself known to other researchers in similar subject areas. Responding to audience questions will give you the chance to prove that you really know your material or, alternately, can point out gaps in your knowledge that may lead to new research opportunities. Poster sessions are a great way to get your feet wet, as your poster will be available for you to refer to and the atmosphere is not quite as overwhelming as standing in front of a full audience for a presentation.

## Audiovisual

Visual images can have an immediate impact on how your audience reacts to and understands your presentation. Choose them wisely and use them at appropriate times! You can read more about how different visualizations of information affect the way that information is received in the Visual Literacy chapter. Below are just a few brief thoughts about how you might use visuals in your presentations.

- **Powerpoint/Prezi/Other Presentation Software.** Powerpoint has been around long enough that most everyone knows it. For many purposes a slideshow that you speak over, or even a slideshow that is posted online for individual viewing, can succinctly get your point across. Newer presentation tools such as [Prezi](#) use a similar underlying idea but enable you to create more dynamic presentations directly online. Keep in mind that in most cases, tools such as these are meant to accompany a speaker and to use them effectively takes forethought and practice.

- **Images.** Images can be powerful tools to grab attention, condense information, and tell your story. Different types of images can be useful in different contexts. In an art class you may use reproductions of famous paintings or drawings, or images you've created on your own. In a business class, graphs and charts may be more appropriate. Just make sure the images you choose actually make your presentation more effective rather than distracting attention from your main point.
- **Song.** Keeping your audience in mind, don't be afraid to present your material in an unusual manner. If you can create a song (as one example), you may make your audience curious enough to stay around for more detailed information later!
- **Video.** With the tools available now, it is possible to create a quality video product to present your information without extensive training or a lot of money. New online tools are constantly being introduced (and retired, unfortunately) which enable you to enter your content (words, images, video, etc.) and have it processed into a completed video in a short amount of time. Your library is also likely to have tools available for you to use to create video and audio projects, including not only the editing software, but often the video cameras, microphones, and hard drives you'll need to create original content. Don't hesitate to ask a librarian for both access and help using these resources. Many libraries also offer introductory courses on the software they provide to get you off to a running start.

## Choosing a Presentation Format

The examples above give you an idea of the variety of presentation venues available, but it's up to you to decide which is most appropriate at a given time. If you're unsure, experiment.

## Exercise: Present Your Information in Different Formats

Take what you've learned about your topic and express it as a written paragraph, a 140 character tweet, and a Prezi. Try to draw a picture that clearly explains your findings. Which of these seems most complete? Which seems most effective? Which seems most attention grabbing? Which was the hardest to do? Attempting this exercise might help you to make your decision about which format to use, although there are other things to consider first, particularly your intended audience.

## Audience

Who you plan to present to affects how, when, and what you will present. If you're presenting your findings in a paper that only your teacher will ever see, you will focus exclusively on what that teacher has asked for. When you're presenting for a less well-defined audience however, you must imagine what they may already know (or not) about your topic, as well as what might interest them and what forms of presentation might be most appealing to them.

## Exercise: Plan for Your Audience

| Audience                              | What might they know? | What presentation methods might appeal most? |
|---------------------------------------|-----------------------|----------------------------------------------|
| Teacher of the class                  |                       |                                              |
| Fellow students                       |                       |                                              |
| Experts at a conference               |                       |                                              |
| Your family at a holiday gathering    |                       |                                              |
| A group of elementary school students |                       |                                              |
| Newscaster interviewing you           |                       |                                              |

How do the different audiences affect what you might or might not include in your presentation about your topic? How do they affect the ways you might choose to present the information?

Many times you will present to an audience composed of various groups or unknown groups (particularly if you're posting the presentation online). If you've considered a number of different audiences and chosen the content and methods most likely to appeal to most of them, your chances of success will be higher than if you only include what is most interesting to you.

## Your Role in Creating and Sharing Information

When you finally do publish the results of your research, there are some things to think about in terms of what happens next.

What will you do with the information now that you're finished with it? If you've written a paper for a class there may be only one copy. Do you save it and the associated notes you've made in case you need them later or do you throw it away once you get the grade? It can be difficult to project what may be useful in the future.

If you've published more widely, there are likely to be more copies, either physical or digital. Who is responsible for maintaining those copies? In a more formal situation such as a scholarly journal, the article will be maintained as part of the archives of that journal. (However, there are some questions about online-only journals. What happens if the journal goes out of business? Some journals have contingency plans for this, but not all.) If you've given a speech, do you keep the notes? If you've published on a blog, are you archiving the blog, or will it disappear once you stop using it? Even if you decide to save absolutely everything, unless you have a plan for organizing it, you may not be able to find a specific item when you need it.

Another consideration about what happens after your work is shared is what the reaction to it might be. This depends on the audience, but if you've created something really interesting or important, you may find that there is follow-up to be done. You might just be responding to comments on a blog posting or you could find yourself presenting your findings at conferences and continuing to develop your research on the topic. There may be negative feedback as well, and this is where thinking ahead about how you can support each of your arguments is important. Online, of course, there may be everything from kudos to spam and you'll have to decide how seriously to take all of that feedback. As time goes by, you may find that your work is being cited by other researchers, which is a wonderful validation of your efforts.

## You are a Creator of Information

During the research process, at times it can feel as if you are just collecting what others have written or said, and that your presentation is just going to repeat what is already known on the topic. While this may be true for introductory-level papers, once you know a little more about your topic, you will be synthesizing what you've discovered, and drawing your own conclusions. Once you publish these conclusions you will have created new information.

Before the advent of online tools, publishing your new information was difficult and often expensive. It was hard to reach a large audience because of the physical limitations of producing and distributing paper copies of publications. Now anyone can publish anything and make it available to the entire Internet-connected world in a matter of seconds. This means that you have a great opportunity to share your ideas and to communicate with people around the world who are interested in similar topics. It also means that you have to carefully consider what you publish because anyone, even an unintended audience, can find what you've published.

In addition to being able to share information freely, you also have access to tools to create and edit audio and video materials that were prohibitively expensive to create or adapt not too long ago. You can now share more interactive and engaging material with a wider audience than ever before. This is a great opportunity and a great responsibility— use it wisely!

## Wider Connections

When you begin to share your own work, you gain insight into the processes of producing and publishing information, which will help you the next time you need to find sources for a research project. Now that you know what it took for you to produce information in a given format, you know what other creators had to do to produce their work. This can help you decide which sources will be most reliable and valuable for your own research.

Presenting your information is usually considered the final step in the research process. You tell the audience what you've found out and you go home. However, as we've seen, sometimes in the process of presenting or preparing to present, you uncover new questions and need to identify that new information need. Or you may discover that what you thought was a reliable source was not

so reliable and you need to Evaluate a little more. The research process is not linear, but a continuous cycle with various entry and exit points that change depending on your goals, topic, and methods. Ideally, for those who enjoy it, it never ends!

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## 7: A Glossary of Terms

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### **Boolean operators**

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

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

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

### **Catalog**

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

### **Citation**

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

### **Controlled vocabulary**

Refers to the way that articles or abstracts are organized in a database by a set lexicon of terms that are defined by the creators. Seasoned researchers will take their keywords from their research topic and look them up in the thesaurus of the database to find out which terms the database vendor has used to tag the concept being researched. You may also find related terms in the thesaurus that you had not previously thought of. Some thesauri allow you to “explode” the topic, which means that all related terms will be searched at once. In the U.S., the most common controlled vocabulary is the Library of Congress Subject Headings.

### **Discovery services**

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

### **eBook**

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

### **Grey literature**

Scholarly writing that appears outside the scope of the normal publishing channels (journals and books), such as reports, dissertations, theses, and conference proceedings. Grey literature is normally created by scholars in the field or graduate students, but it does not undergo the same level of peer review as a journal article or scholarly book.

### **Multidisciplinary database**

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

### **Subject-specific database**

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

### **Scholarly or Peer-reviewed**

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

### **Popular publication**

Examples of popular literature are magazines and newspapers. Articles in a popular periodical will be written for the purpose of entertaining or informing a wide audience. You can find examples of popular periodicals on newsstands and in book stores. They are usually written by journalists.

### **Trade publication**

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

### **Journal article**

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

### **Keywords**

A method of locating library literature in a database that requires you to search using broad, user-defined search terms to find all of the literature on a topic. Keyword searching is the type of library search most closely aligned to the way we naturally speak or write; look for the main ideas of your topic sentence to determine your keywords. Keywords may be separated by Boolean operators.

### **Magazine article**

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

### **Monographs**

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

### **Newspaper article**

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

### Periodicals

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

### Reference Books

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

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## Glossary

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**Sample Word 1** | Sample Definition 1

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