

Chapter 19. Early Inquiry: Exploring Research Questions

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This chapter will prepare you to:

- Identify the types and stages of inquiry that will best support your writing project
- View inquiry as recursive, multimodal, networked, rhetorical, and ethical
- Define and explore your initial question or hypothesis
- Conduct exploratory inquiry across multiple kinds of source material as you start your writing project

All writers research.

If you are familiar mostly with writing school “research papers,” you may think of “research” as a separate, defined step that a few writers take once and are done

with—as in “choose a topic, research it, write your draft, and finish your essay.” So the idea that advanced writers integrate informal and formal cycles of inquiry into nearly every writing task we complete may be surprising.

Yet it may also seem obvious. After all, the writer—the *author*—has to write from some position of *authority*, and so we nearly always have information we need to acquire or at least verify (was that family trip to Arkansas in 2019 or 2020?). Moreover, writers are curious beings: as we write, we think, and our thinking raises questions we want to know more about, so we inquire and explore in multiple stages during a writing project.

If we don’t define “research” as “looking up six online articles and citing them” but as any kind of **deliberate, rhetorical inquiry** to improve our communication with readers, we recognize how often writers use inquiry processes, whether we’re writing posts, poems, or proposals. Writers who are engaging in research and inquiry may want to keep several threshold concepts in mind:



Good writing adapts dynamically to readers and contexts

Writing—like dancing or judo—is more about evolving actions and interactions than it is about producing a single object.



Good writers frequently struggle and revise

Since writing is difficult for many writers, and the expectations for success depend on the exact audience or context, a writer’s main job is to persist through difficulty.



Writing creates and integrates knowledge

Writing is about representing what you already know, and also about creating new knowledge through the act of putting words onto a page or screen.

At a very simple level, research might include a **quick query for information**. For example, as you reply to a message from your favorite aunt, you could find and include links to two websites related to Crohn’s disease, since she mentioned your cousin was just diagnosed. You might also include some information about a specialized clinic that your roommate’s lab partner recommended when you asked yesterday. You never entered a library or conducted a formal interview, but your inquiries were purposeful and directly linked to your aunt’s needs.

Research might also include an **informal survey of multiple perspectives**. For instance, in order to write a memo to your manager recommending the purchase of a back-up generator, you could check online reviews to find out about performance and reliability. You might also ask your tech support manager about the

building's power needs, call the local power company and the county to see what regulations they have for installing large generators, and text a friend at another company to see what they use. You never downloaded an article from the *Journal of Modern Supplemental Generators*, if there is such a thing, but each of these inquiry steps helped support your final written recommendation.

These days, research might include **using an AI chatbot to summarize public knowledge** on an issue or question. Generative artificial intelligence tools can provide increasingly useful first responses to researchers, but they do not yet fully replace the work of the writer. You might prompt a chatbot to “Identify five social determinants of health care that is available to fentanyl addicts” and receive a list that summarizes information available in the chatbot’s database. The usefulness and accuracy of this summary will depend on how you designed the prompt, how carefully you check it for errors or “hallucinations,” how you follow up to be sure you have the most recent information, and how you adapt the knowledge to your readers’ needs—that is, it depends on your engagement as an active and skeptical researcher.

Explore 19.1

Think back over the last 24 hours—or keep track for the next 24 hours—and write a list of all the times you have participated in some kind of inquiry. You should include anything you “looked up” on your phone or computer, any time you asked a friend or an instructor for more information, and even any time you sat by yourself trying hard to remember a forgotten detail that you needed. As you look at your list, write a note: what kind of inquiry do you usually prefer? how might you use one of these strategies in your current project?



19.1 Researching as a Reflective Writer

Like writers, advanced researchers don’t “just do it”: we plan, act, and reflect throughout our process of learning more about a question or issue. Researchers in the 21st century rarely struggle simply to find some information somewhere, but we do face challenges in ensuring that the information is accessible, relevant, insightful, substantive, and credible (see [Rate My Source](#) in Chapter 25, Exercises for Starting and Deepening Inquiry, for more on using these A-RISC criteria).

Researching is also intertwined with writing: instead of a one-and-done approach where writers do all the research and then begin to write, we need to move between inquiring and writing, exploring and reflecting, reporting and evaluating. One word for this is *recursive*: each step occurs and re-occurs multiple times. In addition, it helps to acknowledge other ways that research requires active and flexible approaches: this work is multimodal, networked, rhetorical, and ethical.

Inquiry is recursive

Inquiry is not a single, isolated step in a linear process. The key steps of inquiry occur and repeat at several points, as writers

- experiment with expanding and narrowing our scope of attention;
- use strategies for gathering, evaluating, and analyzing information; and
- alternate between locating relevant information and writing about it.

Although you may have learned and even been successful with a linear process for inquiry-based writing (choose a topic → *find your information* → write your draft), you might already have found problems with that approach. Perhaps you chose a topic that turned out to be too big or too narrow (or too boring!) to research well, or perhaps peers or instructors reviewed your “final” draft and asked for more information or examples when you thought you were done.

Taking extra research steps is not a sign of your failure as a writer: advanced writers working on a complex project nearly always need to complete at least *three rounds* of research. Moreover, in each of these stages, writers move back and forth between gathering information, reading and evaluating it, and writing or revising writing.

Early inquiry: Explore research questions

In **Round One** of researching, advanced writers begin inquiring even before we have “chosen a topic” or fully planned our writing strategies. How can you choose or plan an investigation when you don’t even know *what you don’t know* and *what you need to know*? In this stage, which you might think of as “pre-search,” your goal is to identify a viable, intriguing issue that is the right size and focus for your course, your readers, and your own goals. But you won’t just be thinking-and-choosing on your own: you will need to:

- **Gather** information about what is already known and relevant to your issue
- **Evaluate** kinds of research strategies and source material to identify what will serve your goals best
- **Write** to explore a problem or question
- **Revise** your initial proposal, hypothesis, or research plan as you learn more about the issue and your available resources

Early inquiry often takes place in the opening stages of a writing cycle. As a reflective researcher, you can use the DEAL framework: you are defining your writing task, exploring your resources, acting to locate your first useful sources, and learning enough about the issue to ask better questions and make initial hypotheses.

Middle inquiry: Gather and evaluate information

In **Round Two**, your middle stage of inquiry will most resemble what happens in a “research paper” model: you settle on a question or set of questions, and seek answers. But instead of just “hunting” for answers you already agree with and then “writing up” the results, you try to learn enough that you can understand and join an ongoing conversation. In this stage, you might:

- **Gather** a wide range of perspectives to see how others are already discussing the issue
- **Evaluate** your information to select the sources that will be most relevant and credible to your readers
- **Write** notes or drafts to analyze and synthesize the information you’ve gathered
- **Revise** or shift your focus or arguments as you learn more about the issue

Middle inquiry also uses a reflective process that parallels the DEAL frame: you will more accurately define the key issues of your project, explore and evaluate resources in more depth, act to write your initial draft incorporating the information you’ve learned, and learn about the areas where you may still need more information.

Late inquiry: Address gaps and complications

In **Round Three**, as you complete your document draft, you often need to engage in more focused inquiry. Now that you know the issue, your readers, and your goals much more clearly—because writers always learn as we write!—you need to ensure that your data will actually help you move your readers. In this stage, you might:

- **Gather** additional information or analysis that can help you give a complete and responsible representation of the issue
- **Evaluate** counterarguments, alternate perspectives, resistance points, and gaps in the current conversation that could be addressed
- **Write** to go beyond reporting or critiquing others’ ideas and toward creating new knowledge
- **Revise** your current argument or focus to match it to the best information you’ve located

In the late stages of assessing and adapting the rest of your document, you will often find that you still have inquiries to complete. Just as you created time for “pre-search” before you began writing, you need to leave time to “re-research” for in your final steps: defining any gaps or resistance points, exploring ways to respond credibly to those points, acting to complete the last revisions to your document, and stepping back to learn what strategies have been most helpful for us in the research process.

Learn



- To learn more about the A-RISC model and to practice evaluating your sources of information, see [Rate My Source](#).
- To learn more about strategies for choosing and focusing the topic of your inquiry, see [Chapter 5, Planning a Writing Project](#).
- To learn more about the DEAL framework for reflective practice, see [Chapter 4, Reflecting Throughout Your Writing Process](#).

Inquiry is multimodal

Advanced writers use multiple strategies for inquiry, across multiple types of sources.

For a “research paper,” students typically use one mode of inquiry: they consult formal, published reports or analyses in which experts summarize key points. However, most writers draw information from a wide range of sources. Since there is no such thing as an absolutely bad source, only more or less appropriate sources for a given project, you might consult local primary sources (by interviewing an expert about generators) or look at informal published sources (by reviewing comments on a medical blog). Your sources must be credible to your most skeptical readers, but if you know that your boss will trust what the company’s chief of facilities says, and you know that your aunt really wants to hear what other parents have experienced, those sources will be valid for those audiences.

Inquiry is networked

Advanced writers understand that good questions lead to other questions and that good sources or answers lead to other sources or answers.

Inquiry follows networks of questions

While school subjects are neatly divided into individual courses and essay topics, true inquiry subjects are endlessly linked into larger conversations. A single question about treatments for Crohn’s disease is connected to larger questions about the causes of gluten intolerance, to narrower questions about a specific treatment’s side-effects, and to questions that might initially seem unrelated, such as inquiries into food company monopolies.

When you are in an inquiry mode, try to leave time to understand how questions relate to one another across a network of inquiry, so that you don’t overlook questions or results that could resonate strongly with you and your readers.

Inquiry follows networks of sources

Because knowledge is created over time and in discourse communities, every

discovery is networked to other relevant ideas and data. You probably already know that can follow a historical network by checking out earlier sources that are cited by the article you are reading.

You also know that you can follow a line of inquiry horizontally: every time a shopping website says, “Other customers who liked this product also liked X,” it is helping you network your inquiry. For a formal inquiry project, you might see how a journal article about earthquakes will cite an esteemed geologist → whose webpage notes that he appeared on a news show on predicting earthquakes → that also featured a woman who was an eyewitness → who mentioned that her father also survived a similar earthquake 20 years earlier in another country. Each source here can help you tap into a larger network, helping you enrich your inquiry.

Inquiry is rhetorical

Advanced writers know that we must collect and analyze information rhetorically, with attention to the goals of the inquiry and the expectations of the audience.

The breadth and depth of inquiry is rhetorical

Students who write “research papers” often are told how much information they need: “Locate six sources” or “Write five pages.” However, as an advanced writer and researcher you will need to make rhetorical choices guided by your goals: are you providing basic education on an issue or vigorously trying to instigate change? Your choices will also be guided by your readers’ previous knowledge and their needs. When you have novice readers to inform or resistant readers to persuade, your inquiry must respond directly to their situation.

The resources used in inquiry are rhetorical

Students who write “research papers” are often told what sources are correct: “Use only peer-reviewed journal articles.” However, as an advanced writer and researcher you will need to select and evaluate the appropriateness of information based on your goals and your readers’ expectations. Your town council may be persuaded by results from a 100-person, three-question survey about a proposed curfew, while your sociology instructor might find that sample too small and the resulting statistical significance too weak for you to draw any conclusions at all. A single resource may function poorly in one rhetorical situation but well in another.

Inquiry is ethical

Advanced writers do more than “cite their sources”: ethical research also involves being openminded about an issue, thorough in locating multiple credible views, and accurate in representing and acknowledging others’ ideas.

Inquiring about multiple credible perspectives is ethical

Students who write “research papers” sometimes decide in advance what they believe, and look only for information that will confirm their view. (Sometimes they include an alternate view, but only because they intend from the start to show how it is wrong.) As an ethical researcher, you should ask real questions you don’t know the answer to, keep an open mind as you inquire, and be prepared to change your mind if you find credible evidence. More than that, you should actively seek out information from credible alternate perspectives. Usually an issue that is important enough to write about has more than “two sides,” and an experiment can have more than two outcomes. When you mentally prepare to look for a range of evidence, you can also find out what your “unknown unknowns” are—that is, you have the opportunity to learn about views, experiences, arguments, or data that you didn’t initially realize existed.

Gathering, evaluating, and comprehending information is ethical

As an advanced researcher and writer, you will want to review enough evidence to make an informed, ethical decision about what to share with your readers. If you gave a new drug to one person and it worked, that wouldn’t be enough information to conclude or argue for its efficacy; you’d need to do multiple tests in carefully controlled environments. If you read only one source, or only one type of source, or only sources that refer to one part of the issue, then you will be writing based on your assumptions rather than on evidence.

You also need to read and evaluate data and sources carefully, making sure that you use active reading strategies to understand the research context rather than only skimming for a good quotation. If you don’t understand a concept but you write as if you are certain about it, you are not being truthful with your readers (this is one reason researchers sometimes begin by reviewing basic information in sources such as Wikipedia or querying a chatbot). In order to write based on a complete and multifaceted understanding of a complex issue, writers often read more sources or gather more data than we refer to in a written document, actively seeking perspectives that differ from our own initial views.

Tracking, representing, and acknowledging sources or data is ethical

You already know that if you refer to data, ideas, or quotations that you learn from another source, you need to acknowledge the source clearly to your readers, so that you gain credibility for yourself and recognize the work other researchers have done. In some academic essays, this ethical practice takes the form of structured citations; in other genres, you may use other strategies to acknowledge sources.

As you quote, paraphrase, or summarize information, you need to be complete and accurate. If other researchers state that a majority of students in their study were distracted by text messaging during class, you cannot exaggerate their

conclusions by saying all students everywhere are distracted; you also cannot suggest that these researchers believe that texting is always bad. As you review sources and data, then, you need to create a system for accurately tracking what they really said: identify information that is a direct quotation vs. your own summary, identify the authors' conclusions vs. your own opinions or analysis, and identify the exact details or limitations of their data.

Explore 19.2



Consider some of the recommendations noted in this section: use a back-and-forth recursive process of reading and writing in multiple stages, seek multiple kinds of sources beyond printed articles, let one source lead you across a network to another source, evaluate a source based on its rhetorical appropriateness for your goals and your audience's needs, and represent your findings completely and ethically.

Choose one of these strategies that you are already fairly comfortable with, and explain in a sentence or two how exactly you used it in a previous project. Choose another strategy that seems less familiar or more difficult, and explain in a sentence or two what might be hard about it and how you could adapt to using it in an upcoming project.

Learn



- To learn more about discourse communities, see [Chapter 3, Responding to Readers' Needs](#).
- To learn more about active reading strategies, see [Chapter 6, Reading as a Writer](#).
- To learn more about working ethically with sources, see [Chapter 22, Integrating and Acknowledging Sources](#).

19.2 Defining the Questions

It can be said that advanced research is more about defining intriguing questions than it is about locating precise answers. While advanced writers eventually want to produce texts that provide reliable information, recommendations, and analyses, we are also aware that the advanced problems that most demand our attention do not have easy answers. Often as advanced researchers we are inquiring into just a part of an issue, or exploring an unusual connection among similar issues, and our careful *journey toward better understanding* is at least as important as landing on a “correct” answer.

Measure twice: Exploring and planning

If you are actually inquiring about an open question rather than just writing a

summary of what some people say, then you will need to cope with not just one but four categories of knowledge:

- What you know that you know
- What you know that you don't know
- What you don't know that you know
- What you don't know that you don't know

In order to define and ask real questions—to inquire, not just look for information that supports what you already believe (this is called confirmation bias)—you need to focus on what you don't know. That is, you need to cultivate *humility* about your own expertise and *curiosity* about others' knowledge. The third and fourth categories listed above are especially important: until you spend some time thinking about an issue, you don't know whether your own knowledge or assumptions are credible, and you really don't know what you don't know. Once you become familiar with the key questions surrounding an issue or situation, you can make an informed plan for your research.

If you're used to a linear, one-stage research model (choose a topic → find three sources → write your essay) then these early steps may seem awkward and even inefficient. Why not just start by finding the four sources for your project, so you can jump into writing? For advanced writers, early inquiry steps match the advice in the proverb “Measure twice, cut once”: by taking time to consider the questions and get your bearings early in the process, you will make choices that can improve your motivation, efficiency, and effectiveness.

Even here at the beginning of your project, you will want to remember that:

- **Inquiry is recursive:** you may go back and forth between reading and writing, between exploring and deciding and exploring again.
- **Inquiry is multimodal:** you may need to use multiple types of sources and strategies.
- **Inquiry is networked:** one step or source should lead you to an even more interesting or relevant approach.
- **Inquiry is rhetorical:** you should identify your goals and anticipate readers' needs to guide your actions.
- **Inquiry is ethical:** you should begin inquiry with an open mind, and gather and record diverse sources of information carefully.

Since inquiry is recursive and networked, even this early inquiry cycle does not have a single sequence that every writer follows, or that you will follow every time. Whatever the order, you will likely work in most or all of four modes: develop a question, survey known information, write to reflect, and choose inquiry methods.

Develop a question or hypothesis

Identify a protest or puzzle

In school, a “research paper” often begins with a “topic” and sometimes even with a clear “position.” Writers in such a situation may create an “all-about” essay based on what they already know that they know: “All About *Calymmochilus dispar* and *Gelis apterus*” or “All About How Bad Parking On Campus Is.” Outside school, there remains a small demand for writers who understand the complex biological relationships of wasps like *C. dispar* and the ant-eating spiders they prey on, and can explain “all about” those interactions in short summaries that ordinary people can read. However, unless you simply need to demonstrate that you know some key facts in a field or that you can state those facts in error-free prose, “all about” research doesn’t provide much motivation for you or useful learning for your readers.

Advanced inquiry, on the other hand, often begins with a **protest or a puzzle**: a “Darn it!” or a “Wha-a-at?”

Not all protests or puzzles lead to extended inquiry. A protest about stubbing your toe (“Darn it!”) probably has no far-reaching ramifications, and a factual question about which team upset the defending champions last night (“Wha-a-at?”) can be answered quickly with a few taps on your networked device. Likewise, your protest over the car that cut you off in traffic or your question about how to fill out a federal tax form may be forgotten by lunch. But then again, maybe you keep thinking: it does seem like more drivers than ever are behaving so badly in your city, and darn it, somebody should be doing something to fix it! Meanwhile, if you can’t figure out the new tax form, you might wonder: how do people like your eighty-five-year-old grandmother get through it?

When you are writing for a school assignment about a specific issue, you may benefit from trying to develop a protest approach (what frustrates you or other stakeholders?) or a question approach (what puzzles you or seems debatable?) that you can build from in order to select an initial area of inquiry and give your project a stronger foundation.

Develop initial questions or hypotheses

If you define your inquiry as a topic, you may end up writing an “all about X” response. A better place to start is with a question or a hypothesis, so that you focus on inquiry that will add to what is already known. You should also take time to adjust your initial question or hypothesis since your first version may be too broad, too narrow, or too straightforward.

While it may seem obvious that a puzzle should be framed as a question and a protest as a hypothesis, that’s not always the case. Some writers always prefer

open questions as they start, while others find that testable hypotheses give them stronger direction. More often, advanced writers decide on a case-by-case basis which one seems most helpful.

You might choose to write a focal question if . . .	You might choose to write an initial hypothesis if . . .
<p>. . . you are new to studying this issue</p> <p>. . . the issue is new and so information is scarce</p> <p>. . . you want to stay as open-minded as possible</p> <p>. . . you are working in a field that is question-based</p> <p>. . . you plan to gather new data yourself</p>	<p>. . . you have some expertise in this field already</p> <p>. . . the issue is long-standing and some “sides” are clear</p> <p>. . . you want to move quickly in a definite direction</p> <p>. . . you are working in a field that tests hypotheses</p> <p>. . . you will mostly be analyzing others’ positions</p>

Next, you’ll want to adjust the scope of your inquiry. Most often, writers who are developing their focal questions or initial hypothesis will need to narrow the scope of their inquiry.

- Since inquiry cycles are networked and recursive, even a small project is likely to expand. Without clear boundaries your inquiry could grow to fill infinite time and consume infinite resources, neither of which you or your readers have available.
- Since readers who cannot read minds require more precise detail and evidence than writers first anticipate, even a small-looking question will expand as it moves from a thought-experiment to a writing project.

If your initial question or hypothesis is too broad, you can take steps to explore narrower, less obvious, or more personally relevant angles. For instance, you could:

- **Focus on personal connections.** Which events, questions, or policies do you or people you know consider most irritating, intriguing, or important to address?
- **Identify relevant sub-issues.** What specific people, places, time periods, scenarios, effects, or processes are most severely affected? Which are often ignored but need attention?
- **Consider starting points.** If the problem is a large or longstanding one, what first steps would at least help improve or ease the situation? What underlying questions need attention—what needs to be measured, located, tracked, described, or revealed in order to study this puzzle?

- **Connect to your resources.** How can you best use your current knowledge or personal experience, your community connections, or your familiarity with print or personal information sources?
- **Review the conversation.** What has already been suggested, proposed, or even tried—for this precise issue and for related issues—and what options are still under discussion?
- **Tune in to your readers.** What questions or consequences resonate strongly with your audience or your discourse community, and what questions, limitations, or objections might they raise?

Occasionally, writers need to expand at least part of the scope of their inquiry, when they discover that they need to expand in order to have sufficient resources, to explain crucial parts of an issue they hadn't seen before, or to respond to readers' interests or situations. However, such an expansion often comes at a later point in the inquiry and writing process. For now, you should probably aim to narrow rather than expand your focus.

Finally, in order to avoid the “all-about” mode, you need to be sure that your question cannot be answered by a simple “Look it up!” search online. Likewise, you don't want your hypothesis to be so obvious that no reasonable person would debate it.

Which words or phrases in the Question-Hypothesis chart demonstrate that the writer has a puzzle or a protest rather than a bland “all about” stance? Which words or phrases show that the writer is aiming for more direction (to move quickly) or trying to leave some options open (to gain flexibility)?

Remember, even a narrow, open-ended, reasonable question or hypothesis is just a starting point: when you are studying live problems using an inquiry approach, you are likely to need to adjust your question or hypothesis as your knowledge and interests evolve.

Topic area	Factual “Look-up”	Initial Question	Non-debatable Point	Initial Hypothesis
Vacation spots near San Antonio	What are some popular vacation spots near San Antonio?	What are the best attractions for active families visiting San Antonio, Texas?	San Antonio has a lot of river-based activities for families.	Active families who want a memorable trip to San Antonio, Texas, should build their vacation around its distinctive river-based adventures.

Topic area	Factual “Look-up”	Initial Question	Non-debatable Point	Initial Hypothesis
Strategies for teaching art history	What kinds of strategies can college teachers use in large classes?	Do students in lecture-plus-discussion sections show any differences in their learning about art history compared to the students in the lecture-only sections?	Some students like discussion sections more than other students.	Students in lecture-plus-discussion sections will demonstrate some better learning than students in lecture-only sections of art history.
Coastal flood-protection approaches	How are new sand dunes usually constructed?	How do newly constructed sand dunes affect the economies of small seaside towns? How do direct effects on existing local businesses or tourism compare to less direct effects from weather protection or wildlife restoration?	Towns will benefit if fewer businesses flood.	Relocating businesses from flood-prone areas temporarily impacts local tourism, but good planning may help these communities adapt to new economic patterns.

Survey known information

When was the last time you ate at a new restaurant, bought a new kind of gadget, or made a travel reservation without first reading online to find out what others are saying about it? Instead of deciding on your topic and then seeking information—which is like paying up front for a hotel room and then reading the reviews of the hotel—you should consult source material during the process of identifying and revising your focal question or initial hypothesis, so that you understand the current context and conversation.

When you’re still planning your inquiry, you don’t need to find all the answers, take extended notes, or impress skeptical readers. You just want an overview. And so some of the sources, sites, and data that you encounter in your initial survey will not be ones that you refer to in your final project. If that seems like a waste of time to you—why locate a source that won’t even “count” toward your

assignment?—remember that you’re investing a little time now so that later searches will be more efficient.

As you survey known information, you might also bend or even break the “rules” for high-quality research. These strategies can keep you moving during early stages of inquiry:

- **Use popular (rather than specialized) sources:** the information in common, accessible sources such as Wikipedia, YouTube, a chatbot summary, or short news articles can help you quickly understand key elements of your issue.
- **Consult questionable sources:** when you locate some information that you disagree with, doubt, or think is irrelevant or severely biased, you can better decide on your standards for relevant and credible sources.
- **Skim rather than thoroughly read sources:** to identify relevant sources quickly, you should plan to read just the first and last few lines, to skip sections that are confusing, or to search just for mentions of your specific issue.

You should still use approaches that will make you an effective and efficient researcher:

- **Identify your goals** and/or your readers’ needs before you start to search, so that you don’t wander aimlessly like slow shoppers in a big-box store (inquiry is rhetorical).
- **Keep track of key concepts**, specialized terminology, or ideas/references that keep popping up in multiple sources, so that you can use those concepts to find even better information (inquiry is networked).
- **Consider a range of sources**, including people like friends and colleagues, public documents like reports and flyers, and multiple media including pictures, graphs, and videos, so that you are gaining the most complete view (inquiry is multimodal).
- **Take careful notes**, so that you always know what a source actually said and can acknowledge their words and ideas.

Write to explore and reflect

Sometimes the *worst* thing you can do is to begin an inquiry project by gathering lots of outside data without writing anything in your own voice—you can end up writing “all about” others’ ideas without feeling committed to or motivated by your own goals. And since writing is a way not just to report what you know but to find out what you know, generate momentum and confidence, and even create new knowledge, you don’t want to wait until you’ve made all your decisions before beginning to write.

Write to gain momentum and motivation

If you already know about or have experienced some key elements of your issue, then sitting down to write can be a good beginning strategy, even for a project that will require substantial additional research. On the other hand, if you're not yet sure whether or how you might be interested in this project, you can also take some writing time to build your own connection to an issue before you start looking up random facts. Sometimes writers find motivation in helping others: when you connect to your audience's needs, you may see the relevance and possible outcomes of your project.

Write to focus

If you know what you generally want to inquire about but it seems too vast or vague to handle in a single project, then you can use some writing strategies to gain focus—before you get lost on the “information highway.” Some of these approaches are similar to strategies for generating momentum or confidence, because they can help you generate lots of sub-topics or angles. Once you have a wide range of ideas, remember to take the next step of choosing one or two that most interest you to write about in a more focused way, to see what knowledge you can build.

Write to connect or explore information

As you begin to gather data or review what is known about your issue, you may want to take some writing time to explore how you see different parts of your issue relating to one another, and what you think the significance of particular ideas might be. This kind of writing is different from simply “taking notes” about what you read. When you write to connect or explore, you focus your efforts on generating your own ideas about the events, people, places, circumstances, relationships, or results that you are considering, rather than only reporting what you have observed or read.

Write to plan your project

As your initial hypothesis or focusing question begins to take shape, you can write to identify resources and challenges you see in this project, as well as to create a plan for further inquiry. This writing is exploratory: any plan you make now may need to be revised as you work on your project. Some writers like to create a plan that focuses on dates and deliverables; others like to create a plan that focuses on challenges and strategies. When you tell yourself a story about your work, you can identify ways to adjust your focus, find better information, and choose feasible methods.

Explore 19.3



To explore an issue, topic area, or idea you have for an upcoming project, brainstorm a list of at least 10 Problems or 10 Questions related to the same issue. You should try this even if you think you've already completely and finally decided what you will write about, so that you have given yourself the best opportunity to be openminded at the very start of your project. If you get stuck, try to expand to a larger problem or narrow the scope to a more precise or local (but still open-ended) question, or inquire from the perspective of someone else who might be affected. When you're done, identify one list item that seems the easiest or most relevant for you to explore, and identify one item that seems difficult or "off the main path" but might lead to intriguing results.

Practice



- To practice **creating a mindset for inquiry**, see [Assumption Inspection](#), [Authority/Curiosity/Annoyance List](#), [Mind the Gap](#), or [Reason Appallingly](#).
- To practice **locating and evaluating initial sources**, see [Cousin Topics](#), [Date My Topic](#), [Keyword Bingo](#), or [Rate My Source](#).
- To practice **writing in an exploratory mode**, see [Believing/Doubting](#), [Emperor for a Day](#), [Expand and Narrow](#), [Off on a Rant](#), or [Seven Generations](#).

19.3 Choosing Methods of Inquiry

For your school "research paper" assignments, you may have used only one kind of information source: a printed (or online) article from a magazine, journal, or book. But for the inquiry you do every day, at work and at home, you use a much wider range of methods and resources for finding out what you need to know. Careful problem solvers evaluate all their options—from formal and informal sources, researched arguments and informed analyses, and genres ranging from letters to videos and from recipes to social media posts—as they make and revise their plans for finding answers to their questions.

As you consider each approach, and each source within an approach, you need to think rhetorically:

- Will the information available suit your goals?
- Will the information available suit the needs of your readers?
- Will the information available be considered credible by most readers in your target audience?
- Will you have the skills, tools, and time necessary during this project to gather and analyze this type of information successfully?

Understand general research concepts

There is no such thing as a “bad source” or a “wrong research method,” only a source of information that is not well-suited to the inquiry project, the goals, or the readers you are currently working with, or an approach that has not been undertaken at a level of quality expected by readers or reviewers. Since research is rhetorical, a source of information can only be *more appropriate* or *less appropriate* for your goals and your readers’ needs. Thus an article from TeenVogue.com on celebrities who are climate activists might be just the right source when you’re writing to US high school students and writing *about* how to generate enthusiasm for community-based conservation projects—but it might be less helpful when you are writing an analysis of local freshwater preservation strategies to share with your Wetlands Ecology seminar classmates.

As you explore your question or hypothesis, you should stay open to multiple pathways toward better understanding, and evaluate which one(s) best suit your project.

Identify primary and secondary research

In an inquiry project, you may create or gather *new* data or information: this is called **primary research**. When you provide new testimony based on your own specific experiences or observations, conduct a survey or interview with experts or informed participants, review the statistics from your company’s balance sheet, or design an experiment to discover and record something about the physical world, you are seeing the actual data or ideas yourself. When you share and explain this data, you will be adding brand new information to the conversation that experts and scholars are having about an issue.

You may also or instead gather and analyze information or data that was reported by other people in articles, books, videos, or online sites: this is called **secondary research**. If someone else has analyzed the statistics or reported from the scene, they often make the information more accessible—but they may not include all the data, and they may emphasize points that you would not find important. If all you do is repeat what one or two of these sources have said, you might not be adding anything new to the conversation about your issue; you will need to add your own analysis and synthesis to contribute to readers’ knowledge.

Sometimes people categorize secondary research sources as being either “popular” or “scholarly.” These are *rhetorical* terms: their precise meanings depend on the person who uses each term and the community to which they belong.

For instance, “scholarly source” can be shorthand for “published in any academic research journal or book,” but in some fields, experts also rely on sources that are published by government organizations (such as the Federal Aviation Administration), trade organizations (such as the Center for Audit Quality), or

professional conferences (such as IEEE: The Institute of Electrical and Electronics Engineers).

Sources that are credible-to-scholars often appear in journals written for specialists in the field. Sometimes these can be identified by their title, which may include the word “Journal” or use several specialized terms that indicate only a specialist would read it: *Transactions on Aspect Oriented Software Development*. Some scholarly sources are books, or appear as chapters in books written for specialists in the field. In addition, scholarly sources often share the following characteristics:

- These articles, journals, and books often use a “blind peer review” process to select which articles get included: experts in the field (“peers” of the writers) read submissions while they are unable to access any information about the authors, so that reviewers don’t make any decisions based on a writer’s reputation or personality.
- These sources usually have editors who require authors to revise their work to meet the highest standard of research practices and written reporting.
- The authors of these sources usually cite additional credible secondary sources to support their conclusions.

Scholarly sources aren’t always the best sources: they may be so specialized that they are difficult for others to understand. Depending on your goals and your readers, you may want to blend information from scholarly sources with information from more popular or accessible sources to understand an issue yourself and to help your readers comprehend a complicated situation.

Distinguish between qualitative and quantitative data

Some data is numerical and provided by exact, verifiable measurements: the height of Mt. Kilimanjaro, the speed of a bumblebee’s wings, the percentage of cancer cells that survive in a lab experiment after being irradiated. That data is clearly quantitative: it is measured and written down as numbers.

Data about human beings and our choices is sometimes harder to quantify. However, when researchers create a careful methodology and study a large and representative sample, they can report reliable quantitative data about people. For instance, they might decide to ask all participants the same question in the same wording at the same time of day, and they might interview 500 (not just 5) college students who proportionally represent all the students at a university, including participants who are male and female, who are younger and older, and who are of different races, ethnicities, or sexual orientations in the same percentages as the whole university population is.

In order to fully understand human behavior, though, researchers also need to conduct qualitative research: research that focuses on the choices, judgments, and

interpretations that people make in response to their experiences. That is, it focuses on describing the qualities that people perceive, rather than measuring the quantities of their actions. In many discourse communities—including communities of nurses and market researchers, of historians and human-computer interaction scientists—the data that result from this type of inquiry are as valid as quantitative data, and are sometimes even more persuasive than numbers would be.

Qualitative data is not the same thing as anecdotes overheard at a lunch table. While anecdotes can be useful to gain readers' attention, qualitative data sets that provide credible evidence need to meet more stringent requirements and use a deliberate methodology to limit bias or randomness. For example, qualitative researchers might interview only 5 college students one time (or interview one student five times), but they would determine the most relevant questions to ask and appropriate neutral language for those questions; they would design a plan for recruiting participants who could provide the most applicable information; and they would use an organized system for tracking who said what using which words.

Although readers in some discourse communities will only accept quantitative data, research into decision-making shows that the people who firmly disagree with you might respond best to a combination of credible quantitative and qualitative evidence—to see the measurable facts as well as the human experiences. So advanced inquirers keep our eyes open for both kinds of data as we start to investigate a question or problem.

Manage your bias as a researcher

All researchers, like all writers, are biased: we hold some ideas to be more valuable than others. And many research-based documents are designed to be persuasive: the authors hope to *change readers' minds* with their data and analysis. A researcher who argues a point has not necessarily become so subjective that readers should discount their evidence. All researchers, however, need to manage our biases: when we assess all the relevant facts, provide credible evidence, consider alternatives, reveal our goals, and draw reasonable conclusions, we help readers trust that we are providing useful information rather than only our own narrow view.

One key challenge for researchers is managing “confirmation bias.” If you've ever argued with someone who has strongly different views about politics, sports, or even food, you might have been frustrated at that person's unwillingness to consider any of the evidence you presented that challenged his or her viewpoint. As an advanced inquirer, you need to know that scholars predict that you, too—like nearly all human beings—may be twice as likely to believe information that confirms what you already think than you are to believe information that challenges your assumptions or presents new data. If you want to present honest, clear thinking to your readers, you will thus need to make extra efforts from the very beginning of your inquiry process

to uncover contradictory and unfamiliar ideas in order to test out whether they might have value and show how they are or are not relevant to your line of thinking.

Explore 19.4



Choose any two of the items below:

- A friend's description of the difficulty yesterday's Biology 101 final exam
- A survey of all 500 Biology 101 students that reports a high percentage found the final exam was very difficult
- An article in your campus paper reporting that many more Biology 101 students passed the final exam this year than in previous years, and quoting three students who said it was easy
- Your structured four-question interviews with three biology majors and three non-majors about how they studied for the exam that reveals non-majors studied for more hours
- A scholarly article that compares recent national studies about Biology 101 pass/fail rates to the authors' new analysis of pass/fail rates at your university, and finds students at your school fail more often

For each item you select, answer three questions:

- Does this item seem familiar or agreeable to you in a way that might trigger confirmation bias?
- Does this item include quantitative and/or qualitative data (or anecdotes only)?
- Does this item involve any primary research and/or secondary research?

Gather self-based data

You may not have counted “sitting down and thinking” as a form of inquiry, but establishing what you already know and searching your memories and personal records for specific Qdetails can be a powerful strategy for answering questions and gathering data in support of a hypothesis. In some fields and some documents, your own experiences and interpretations will prove to be engaging and credible data.

Kinds of self-based data

- **Factual information** drawn from past memory or current observation about events you have participated in, people you have met, places you have been, or concepts you have learned
- **Objects of study** you can locate in your personal belongings, from scrap-books, social network sites, shelves, or filing cabinets as well as from attics, basements, or back yards
- **Reflective or interpretive judgments** you can make about a performance, proposal, or idea, or about your own feelings, experiences, or goals

Benefits and applications of self-based data

- Evidence from personal narratives can create links that engage readers.
- Your testimony, if you are an eye-witness, participant, or local expert, can provide crucial information not available from other sources.
- In some fields (literary studies, music criticism, psychoanalysis), *educated personal interpretation* is a high form of inquiry and scholarship.

Limitations and complications of self-based data

- Your memory may be incomplete or faulty; your observations may be affected by your assumptions or biases.
- You may not have sufficient understanding of a situation to make useful or reasonable observations or judgments.
- Your observations, judgments, interpretations, or testimony—even when informed and reasonable—may not be deemed credible by some audiences or appropriate for some genres.

Gather people-based data

You gather data from other people all the time. Sometimes you consult experts, and sometimes you consult ordinary people. When you shift from asking a quick question about how many of your friends have seen the latest superhero movie to a more systematic line of inquiry, you can use the information that other people provide as reliable data for your writing project.

Kinds of people-based data

- An **interview** with someone who knows more about your area of inquiry than you do can provide valuable information, whether that person has gained knowledge through personal experience or through extensive formal study.
- Structured observation of a group of people—an **ethnographic inquiry**—can help you understand some of the patterns of behavior that are typical of that group. Your ethnography can be either of a group you belong to (and so your perspective would be an insider or “emic” perspective) or of a group you don’t know (from an outsider or “etic” perspective).
- A **survey** of a large collection of people could include close-ended questions (yes/no, multiple choice) or open-ended questions that require longer responses to help you see trends in knowledge or opinions. Your survey could be informally structured or carefully designed according to experimental parameters, depending on what your audience will find credible.

Benefits and applications of people-based data

- People can often provide more current, more local, and more emotionally rich data than printed sources.
- When you design an interview, ethnography, or survey, you can inquire about questions specific to your project, your goals, and your audience's needs as well as gathering more general background information.
- Writers don't need a lot of equipment or years of specialized training to contribute new people-based data to an ongoing scholarly or professional conversation.

Limitations and complications of people-based data

- Researchers need to treat other humans ethically: often this requires taking extra steps to inform them of the nature of the research project, obtain their formal consent to have their contributions shared with others, and represent their behaviors, words, and responses fairly and respectfully.
- Interview and survey designers need to learn to write questions that are relevant, neutral (not “leading”), and respectful of participants' time. Advanced researchers need to follow scholarly guidelines to write questions that will lead to reliable, precise data.
- Ethnographic observers need to understand how their own assumptions may influence what they look for and how they interpret what they see in others' words and actions, and either acknowledge or compensate for those biases.
- Researchers need to have reliable, methodical strategies for recording and analyzing data accurately: an audio or video device if permissible, a system of careful notetaking, and a balanced and deliberate approach to summarizing and representing data.
- Writers who report on people-based data need to carefully represent the level of its credibility: a survey of ten friends or an interview with an average employee may produce interesting descriptive results but not be as conclusive (or quantitatively reliable) as a survey of 1000 randomly sampled students that can be statistically analyzed, or as credible as an interview with a company specialist.

Gather reported data/analysis via the popular web

The popular web—what everyone encounters by opening a browser such as Chrome or Firefox and using a search engine such as Bing, Google, or Yahoo!—is a vast amalgam of secondary source information. On screen, a lot of the information looks the same, but you know it is vastly different in origin and thus in credibility. The page you are looking at could have been posted by Micah from

Mrs. Alvarado's fourth grade class in Dubuque, Iowa; by an unnamed college intern doing research for the organization Women for Women International; by someone called *@hithxbai* adding to a thread about someone's question on *Ask.com*; by a seasoned journalist reporting for (and fact-checked by) *The New York Times*; or by a professor at Stanford whose article for *Journal of Bioinformatics and Computational Biology* has been peer-reviewed by several experts in the field.

Since your goal in inquiry is not simply to “find three sources” but to “find information that credibly answers your questions and responds to your readers' needs,” you need to remain particularly alert and engaged as you sort through the heaps of information on the popular web, blending the work of *finding* with the work of *evaluating* and the work of *improving your strategies* at each step of the process.

Kinds of popular web-based data

The types here are listed in order of increasing credibility to most academic and professional audiences.

- **Unchecked, unmoderated personal opinion:** personal posts, tweets, blogs, pictures, videos, and pages; unmoderated discussion forums; local projects such as neighborhood newsletters or class assignments; crowd-sourced sites such as answer boards, product or service review sites, and buy-an-essay sites; letters-to-the-editor or comments sections of news or analysis sites; tabloid news sites
- **Lightly checked or partly moderated information and analysis:** lower-end news or information sites such as Examiner.com; incomplete or “stub” pages of resource sites such as Wikipedia.com; essays, blogs, tweets, or videos by reputable people or organizations (including many but not all pages with an “.edu” address); reviews on specialty sites such as appcraver.com
- **Strongly checked and deliberately partisan general access information and analysis** (mostly factually true but inclusive of one perspective only): websites, tweets, and videos from political or activist organizations; blogs and news aggregators with a political angle (Huffingtonpost.com, Red-State.com); information on commercial or business sites
- **Strongly checked and nonpartisan general access information and analysis:** major news sites with strong national or international reputations; government sites presenting policies or general-audience reports; thoroughly completed and edited pages of resource sites such as Wikipedia.com; online sites for reputable magazines (Science.com), journals, television shows, or local news organizations
- **Strongly checked and nonpartisan specialist information and analysis:** free-access articles from specialized journals such as *Evolutionary Psychology* or *Public Administration and Management*; specialized government

reports (such as recent groundwater sampling reports at Los Alamos National Laboratory, *lanl.gov*)

What about Wikipedia?

Since there is no such thing as a bad source, Wikipedia.com cannot be a bad source. It's often useful in the early stages of inquiry as you try to get a quick overall picture of an issue. Yet you may find it banned from course projects that you complete in college, and you may hear from other instructors or readers that even though they use it themselves, they don't consider it an *appropriate* source for information or data to use in an advanced inquiry project.

Some key limitations of Wikipedia (and similar sites) may make it a less appropriate source of information than others you could choose.

- Wikipedia is not consistently credible and accurate. Studies have shown that information on a page that receives constant attention from knowledgeable writers is likely to be as reliable as information in a more formally published article. However, as many as half of the pages on the site are “stubs,” pages that are incomplete and may not have been checked by many additional authors.
- Information on Wikipedia, like information in most encyclopedias, is generalized to provide a basic background: it supports “look-up” questions but not in-depth inquiries. Thus you risk telling your readers what they already know or could look up themselves.
- Wikipedia is written by people who are doing precisely what you are doing: gathering secondary information and synthesizing it to create a smooth report. So the information you see there isn't even secondary source material; it's tertiary, or quaternary, or beyond quaternary. When you rely on Wikipedia, you may begin to sound more like a child talking at a lunch table than an advanced writer: “Celia said that Asha said that Justin said that Surima said . . .” Fortunately, Wikipedia writers often provide links to their sources, which should provide links or citations to their sources, and in a networked age it might not take you very long to get straight to the in-depth original information and see for yourself.

What about generative artificial intelligence tools?

Like Wikipedia, Generative AI tools such as ChatGPT, Claude, or Dall-E can provide some useful information during early inquiry—along with some risks. Because they are fast and powerful, they can provide a boost to your initial investigations. They may be especially useful for questions about *what you know that you don't know*. If your instructor approves of these tools, you might try putting in questions where you directly request alternative viewpoints or solutions, scenarios that

involve communities different from your own, reasons why your primary audience might resist your arguments, or specific examples from multiple historical periods.

However, because Gen-AI tools are still developing, and because they depend on the general information that has been published online, they have some disadvantages as search tools that you should consider:

- Where fully-developed Wikipedia entries have generally been reviewed by multiple people who have an interest, if not expertise, in the subject, which increases their reliability, Gen-AI answers do not have this human review. At the beginning of your inquiry journey, you may not yet know enough about the issue to spot errors, made-up sources (sometimes called “hallucinations”), or omissions. Imagine if you spoke no Mandarin, and you asked a Gen-AI tool to translate a passage from English into Mandarin (or the other way around): how could you check whether the translation was accurate? When you *don't know what you don't know*, Gen-AI tools are much more risky.
- Like open-web searches, Gen-AI tools are “GIGO,” or “garbage-in, garbage-out.” Because they produce lengthy, confident-sounding responses, you have the illusion of a complete and accurate answer. But if you did not phrase your request accurately or in a way that provides a complete overview of what you want to learn, the answer you receive may leave out or misrepresent important concepts.
- Gen-AI tools are not usually searching “the internet” the way that current search engines are; they are only searching information that has been specifically included in their database. So they may miss information that is recent, information from other countries or languages, or information that relates to your specific community or angle.

You might also be wary of the ways in which Gen-AI tools address (or lack) privacy, since they may be collecting information about you as you collect information from them. You may be concerned that the tools replicate biases that are present in the documents they use for their predictions, or you may worry about the exploitative ways that their databases are created (by including original art without the creators' permission, and by requiring low-salary workers to view offensive content in order to limit its impact).

As an advanced researcher, you know that sources and tools to support you are neither 100% good or 100% bad. Your task is to learn strategies that increase your success while lowering your risks, and to continue to carefully evaluate the results you receive.

Benefits and uses of popular web-based searches

- Popular web sources are often easy to find, access, and understand.
- Information on popular websites is often hyperlinked to other related information, making it simple to follow networks of ideas.

- Popular websites often provide better access to information in pictures, music, and videos than many other kinds of resources you have access to.
- Recent, very local, or very personalized information is more likely to appear in popular web sources than in journals or books.
- You can use a popular website search to quickly gain background information on your issue, understand what terms are commonly associated with it, learn what alternative or opposing viewpoints have been presented, and practice adjusting your keyword searching strategies.
- You can use a popular website search to help validate or explain information that you find in other sources: to determine an author or journal's credibility, for instance, or to gather definitions or explanations of complicated processes.

Limitations and complications of popular web-based data

- With typical popular search engines, you're on your own: nobody is organizing or evaluating information for you.
- Popular web search engines (like Google or Bing) or chatbots are not entirely neutral: they use algorithms to organize results in part based on what millions of ordinary people prefer as quick results, in part based on how savvy website designers optimize their pages for keyword searches, and in part based on your previous patterns of searching. Thus you may find it difficult to locate good information that is less popular, more complicated, or contrary to your or your readers' usual views.
- You may find it difficult to determine the home organization, author, publication date, or target audience of a popular web site, and thus difficult to verify its credibility well enough to satisfy to your readers.
- Popular web sites often repeat information that was reported elsewhere without always indicating the repetition or providing clear direction to the original data, so you may find it difficult to determine whether the information itself is recent, credible, or accurate.
- Popular web site texts are often geared to readers with limited education and short attention spans, so you may find it difficult to locate sources that address your issue with the depth, complexity, or range of well-researched data that you and your readers need to fulfill your goals.

Strategies to help you search the popular web efficiently and effectively

Since the point of the popular web is that *anyone* can post *anything*, without needing to pass a test or even identify themselves, advanced inquirers need to take extra care to ensure that we don't get overwhelmed by thousands of barely-relevant sources, and to establish that the information we find online is high-quality information.

To begin with, you can use the following strategies to make your search more efficient:

- Find out whether your search engine has advanced searching features (try searching the phrase “Advanced Search [Insert Name of Search Engine: Google, Yahoo!, Bing, etc.]”) or allows Boolean operators or other characters as search filters. Some common advanced operations are
- Using quotation marks around an exact phrase you need, or a plus sign next to it: “*freshman fifteen*”
- Using the Boolean operator “NOT” or a minus sign to eliminate unwanted information: *YouTube NOT Kardashian*
- Read beyond the first 20 “hits.” These are likely to have information that is the most familiar to your readers. Sources may also be at the top of a list because of sponsors or website algorithms, not because they’re more relevant or reliable.
- Vary your search as you go: Change your language as you skim your sources and learn more about how insiders discuss your issue; switch from one search engine to another; move from text to video to news to see what other perspectives are available.
- Deliberately search for information or analysis that presents alternative, opposing, or unexpected points of view regarding your issue: You can add words such as *controversy*, *opposition*, *problems*, *alternatives*, *disadvantages*, or *cost* to your search string to start to uncover a range of views and resistance points.

Always cross-check your popular sources

It’s not enough to locate relevant sources: since anyone can put anything online, true or not, advanced researchers need some initial strategies for weeding out flawed, untrue, or incomplete sources. In 2019, researchers at Stanford asked over 3000 high school students from across the US six questions about whether online sources were credible. Ninety percent failed at least four of the six questions.

- 52% rated a video of unidentified people stuffing papers in boxes as credible evidence of US voter fraud—even though it was filmed in Russia.
- 96% believed that a website about climate change was credible and unbiased even though the organization that produced it was entirely funded by fossil fuel corporations like Exxon.

In each case, the students were given ample class time and told they could use any online tools they wanted, yet they were swayed by what they saw on the first screen: vivid video, a nonprofit organization, a direct message.

Would you make the same errors?

The one step you can take that almost none of these students did is to **cross-check: open a new browser tab** and search another source—even Wikipedia—for background information on a site’s author or organization, for a second source that corroborates the data, and/or for additional data about the issue that might not be mentioned. Unless you are certain that a source is reputable, objective, complete, and accurate, you must be your own detective agency—or risk sharing misinformation with your readers.

You should take some additional steps, even during these early steps of your search, to focus your attention on sources that are going to be credible to your readers. For popular web sources, you should use some basic detective skills to discover crucial information about a source’s author, publisher, citations, and publication date.

- Make no assumptions: Corporations can own “.org” pages or sponsor a nonprofit charity; students can put non-factual information on a “.edu” page; a picture or video can be altered; a hate group can build a well-organized and polite webpage; a group that calls itself “nonpartisan” or “research-based” may be significantly biased.
- For information about your source that you cannot find directly on the page or in the document, go back to the home page or root URL address (<https://ThisFirstPartIsTheRootURL.com>) and look for an About Us page, a Goals page, or a Submission Guidelines page, to see how long the site has been available, what its goals are, how it reviews the information published on it, and who writes or produces for it.
- When you cannot locate information about an organization or author within a page or document, you can quickly do a separate search to find how others in the field view this publisher, source, or organization, or to find out what the author’s credentials are and what else he or she has written.

Gather reported data/analysis via databases and library catalogs

A database is different from the whole internet the way a filing cabinet organized alphabetically by subject and then by date is different from a random heap of a million sheets of paper. If you’ve ever worked at an office that has filing cabinets, or one that has a system for storing information by categories in a database, then you know that for information to go into a database, smart people have to make several decisions:

- How to organize the categories of the database
- What information to let in, and what to keep out
- What category (or categories) to file each piece of information under

Computer algorithms can help sort and maintain databases, but decisions about creating and structuring complex databases need to be made by human beings. When you use a database, or search in a library, you benefit from the critical thinking that other people have already done.

Information databases such as your library's search system—or specific databases within it created by EBSCO, ProQuest, Lexis-Nexis, JSTOR, or PsychINFO—can connect you to secondary sources such as newspapers, magazines, journals, and books efficiently, as if you had just hired dozens of extra people who put in the time to select, organize, and file individual sources. If you attend a university, you have already paid to hire these people with your tuition and fees; if you use a public library, your taxes have already paid for your database access.

You also see *more* information—strange as it may seem, not everything is available on the public web. Magazine and journal publishers that are still trying to make money by selling subscriptions will allow electronic copies of articles to be distributed through a paid database for use by other researchers like you. And even sources like “Google Books” survey only a fraction of published books. So in addition to gaining your own personal research assistants, you gain access to your own private library that's not yet available to the average person online.

It can take time to learn how to use a database well, just as it took time to learn how to drive a car when you were already comfortable walking. It's sometimes not as convenient to fuel, repair, and park a car as it is just to put on some shoes and walk. But like your car, a database can get you to your destination faster and take you to new ideas that were out of reach on the popular web.

Kinds of secondary source databases

Library catalog: All libraries have a catalog that searches the books and journals that are present in the library. Since items are organized by subject, author, and date, when you find one book, the catalog will help you see what other books have similar information.

Library global search engine: A large library may have a generalized search feature linked to its front page that searches *all its books* and also *thousands of articles* that are available through its databases.

Generalist indexing and full-text databases: Databases such as Academic Search Complete, Lexis-Nexis Academic, and ProQuest Research Library include abstracts of and often full-text articles from newspapers, general interest magazines (such as *Psychology Today*), corporate or trade publications (such as *Advertising Age*), scholarly or professional journals (such as *The Journal of Laser Applications*), and sometimes books or chapters of books.

Specialized indexing and/or full-text databases: Databases such as the Modern Language Association International Bibliography, Computers and Applied Sciences

Complete, and Science Citation Index Expanded will include more references to specialized or “scholarly” publications relevant to that specific field. Some specialized databases may only have article abstracts (no full text), but they are able to quickly handle a search among millions of articles and chapters not listed in other databases.

Specialized organization-based indexes: Some individual publishers, organizations, or professional groups sponsor databases that allow you to locate particular kinds of documents or texts that are in a specific field. You might search in Congressional Research Service Reports for information about proposed legislation, in PsychExtra from the American Psychological Association for reports from research institutes and scientific societies that aren’t indexed in other databases, or in ERIC to locate published and unpublished research in education.

Kinds of sources in databases

Although database sources will all look very much alike on a computer screen, not all of them are of equal use or credibility. If you pay attention to the *type* of source you are looking at, you may gain some clues about its credibility, accessibility, and relevance.

- **A newspaper source** can address very recent, very local, and very trendy issues because its writers and editors work quickly: writers often observe, write, and revise a story in a day or two. Writers often aim for a neutral point of view, but specific sections of a newspaper (opinions, editorials, letters) can be non-neutral. The larger the city or organization publishing the paper, and the older the paper, the more likely that it will have a stronger reputation to protect, more experienced reporters, and a better fact-checking and editing team, all of which increase its credibility.
- **A magazine or other weekly or monthly periodical**, whether still publishing a print edition (*Game Informer Magazine*) or entirely online (*Wired Magazine*) can address either a general audience or specialize in one topic area: its writers can follow relatively recent stories but they have more time to provide in-depth analysis than newspaper writers do—but they may be less current or local. Not all magazines are equally credible on all issues: *Wired* is likely to be seen as much more credible on technology topics than it is on issues of agriculture or music education. Some magazines (like *Sierra* for environmentalists or *Reason* for libertarians) support particular points of view, and so may have limited credibility.
- **An article from an academic or “scholarly” journal, or a book or book-chapter** will address a narrow angle of an issue in great depth—but may not have the most up-to-date information. Writers often take a year or more to complete their inquiry and writing, and the blind peer review process with additional revisions and rounds of editing and fact-checking can take another year or more. Articles are usually

expected to address alternatives or opposing viewpoints with some objectivity. While some journals have higher standards than others, most established journals will be highly credible to an audience of university faculty or experts in a field. However, they will not usually address very recent events, cover many local angles, or use language or concepts accessible to a broad audience.

- **An institutional report, government document, doctoral dissertation, or conference proceeding** may be associated with another credible review process that helps assure its reliability—an institution, corporation, or government agency tracks the author’s work, or a student’s thesis committee and university set standards for a document’s quality. You may have to determine from field to field whether these documents have in-depth information, whether your readers consider them credible, and whether they support a single point of view or consider multiple perspectives objectively.
- **An individual conference paper, presentation, or report** will provide an informed but possibly less formal view. Some databases, such as the education database ERIC, include unpublished, unreviewed work in order to foster the fastest exchange of ideas. These sources should be considered one at a time just as you consider popular web sources carefully: some may be highly relevant and credible, and others may not be.

You can use the popular web to find information about the publication (how long has it been around and what are its goals? what kind of acceptance rate does it have?), the author or authors of the text, and what others are saying on the issue so that you know whether this view is mainstream or fringe.

Benefits and uses of database inquiry

- Databases increase the “people power” of your information gathering, so instead of hunting for information as a “lone wolf,” you’re always hunting as part of a pack that combines their talents with yours.
- Databases usually incorporate advanced search techniques that allow you to quickly eliminate sources you don’t consider relevant or credible, and locate other similar information.
- Databases frequently grant access to sources that have high value and credibility among college readers and other expert audiences.
- You can use a general or specialized database to find information or analysis when you know you need to address complications and alternatives; when you need thoughtful background or connections to advanced theories or principles; and when you need to persuade a skeptical and/or highly educated audience.

- You can use a specialized database (and you may also need help from a librarian) when you are hunting for the answer to a specific question or for a particular kind of analysis or data, and you don't have time to sort through three million popular web sources.

Limitations and complications of database inquiry

- Databases have limited access: in most cases, you need to be on location at a library that subscribes to them or to have a password to access the resources.
- Databases work best after you invest some time in learning how to use their tools, and they don't all use the same layout or have the same options.
- Not all references you find in a database will include the full text of the original source: you might need to track down the full text in another database, look it up in your library's print collection, or find it through interlibrary loan.
- Specialized or "scholarly" sources that can be accessed through databases are often difficult for non-specialists to read, and may not be either as "local" or as current as popular web sources.
- Databases don't automatically guarantee that the sources they reference will be of high quality or of high relevance (according to your and your readers' standards), so you still need to evaluate each source you find.

Strategies for searching through databases

- Databases rely on precise *keywords* more than the popular web does. Try using more formal rather than lunch-table words (*literature* vs. *books*) substituting similar words (*Islamic* vs. *Muslim*), or using terms that are more specific or more general (*Asian* vs. *Chinese* vs. *Shanghai*). As you find relevant sources, check what keywords they are categorized by so that you can use those terms more in your search.
- Use a *subject term* search: all articles on a similar subject will be labeled with the same subject terms even if their authors don't use a particular word.
- Use the *Boolean operators* and other common search modifiers that most standard database searches provide: "AND" helps you limit your search to sources that include all the listed terms; "OR" lets you expand your search to include multiple terms, "NOT" lets you exclude terms, and an asterisk often lets you look for word variations ("communicat*" will find *communication*, *communicator*, and *communicating*).
- Use *filters* in the database to restrict what you see: choose the date-range, limit your search to peer-reviewed scholarly journals, or search only

sources with full-text documents attached. Some databases will let you search for similar sources once you find a text that's "perfect" for you.

- *Be patient* as you work in a new database, and take time to learn its options and structures. Make each good source teach you how to find better sources: take note of the subject terms, specialized language, journal, or ideas stated in the abstract to learn how this database identifies and groups key ideas.

Consult a librarian when you have the opportunity

You can increase the "people power" of your database search significantly with one additional step: asking a librarian. Just as you should never sit staring at a screen while you have "writer's block," you should never sit staring at a screen with "library block" or "researcher's block." When you *know* or strongly suspect that good or better information exists but you cannot find it, you should ask an expert to assist you.

College and university librarians have advanced degrees specifically in *collecting, organizing, and locating information*, and they want to help you find what you need. Your tuition and your tax dollars have already paid for their support, so you should take advantage of it whenever you can. These days, you may be able to reach a librarian through a chat window or text message without ever leaving your desk.

You can maximize your librarian support with just a little preparation: instead of "I have a paper due tomorrow on elephants and I need five sources, what do I do?" advanced researchers ask specific questions:

- "When I do a general search for _____ I get ten thousand sources, but when I narrow it to _____, I only get five that don't help much. How can I create more reasonable search?"
- "I've found six sources explaining why _____ is a good plan, but I'm having trouble finding alternate plans or opposing analyses about it: what else can I try?"
- "All the information I've found on _____ so far is too basic [or too advanced]: how do I change my search strategy to find books or articles that match my readers' needs?"
- "I need to know what the average price of farmland in Weld County was for each decade in the 20th century, and how that translates to current dollars: how do you suggest I look for that data?"

Remember that librarians are people, too: if you don't feel you've gotten the best answer to your first question, consider asking a different question or even trying again later when a different person is available who might have more helpful perspectives.

Focus on equity: Inquire by including diverse perspectives

Like writers, researchers who are starting a project need to take active steps to identify our own assumptions and resist our own biases, to stay skeptical about the assumptions and biases that are embedded in the data or sources we locate, and to seek out relevant alternate perspectives even when they are not immediately evident in a quick online search.

In other words, inquiry requires a disposition of openness. Instead of preparing ourselves for conflict by identifying only data or expert views that support our current knowledge, advanced writers and researchers seek perspectives, data, explanations, and examples that help us understand the complexity of a situation and provide our own readers with an accurate view. This work is part of being an ethical researcher: even when we intend to argue for a specific stance or outcome, we act responsibly by approaching inquiry *as a process of learning* in which we might change our minds.

Beyond “find three sources”: Understand systems of discrimination in research

In the same way that “good” writing is not a neutral judgment, “good” research is not always neutrally defined. The sources that we view are researched and written by people who have been working in cultures that enable and reinscribe systemic racism and discrimination—so simply “finding three sources” is not going to provide you with an ethical, inclusive project.

For instance, it’s helpful to remember that:

- Funding for research has historically been given more often to people from White, Christian, wealthy backgrounds and those from elite universities and institutions than to people from less powerful or minoritized groups
- Research funding often supports inquiry into problems that affect a few powerful people, leaving a wide range of issues unassessed and a wide range of solutions unexplored
- The scholars who write research reports, as well as those who participate in the peer-review process employed by the scholarly journals and national publications, may be working from conscious or unconscious biases and assumptions that unfairly limit other researchers or suppress important investigations

The existence of bias and discrimination doesn’t mean that “anything goes” or that all information sources are equally unreliable. As a researcher, you should still be wary of a single writer publishing their analyses on an open website or launching opinions into social media; you should strive to cross-check and corroborate their claims using other sources. As an *inclusive* researcher, however,

you have a responsibility to do the hard work of assembling and judging sources for yourself: you must consider and actively seek out alternative and underrepresented perspectives, and then hold them to a high standard of credibility and relevance.

Beyond “both sides”: Inquire about multiple perspectives

We live in a complicated world, and most of the interesting areas for inquiry involve multifaceted, interconnected problems. As an advanced researcher, you should use deliberate strategies to ensure that you are considering a wide range of viewpoints. At a basic level, you already know that you should understand the most obvious oppositions to any argument you wish to make, so that you can respond to or refute those claims. More than “seeing both sides,” though, you should consider additional goals and strategies for your early inquiry:

- Add keywords such as *opposition*, *limitations*, *concerns*, *resistance*, or *complications* to your searches, to try gain better understanding of why a question or a problem has not yet been solved.
- Take time to imagine multiple stakeholders in a project or event, including leaders and advocates as well as people who may have been marginalized or erased from the conversation but who are affected by the outcomes, and then deliberately search for their perspectives.
- Remember that the algorithms that identify “top matches” to your search are not neutral and may overlook contributions by researchers and advocates from underrepresented and minoritized groups—so you may need to deliberately search for their insights.

Numbers don’t tell the whole story, but if you’ve located ten sources so far and nine of them are written by or about people from similar backgrounds (which you know because you cross-checked to find out!), or they are providing very similar arguments or analyses, you should pause and check your own strategies. You are researching in the 21st century, not the early 1900s: in the billions of sources at your fingertips, you can likely find some credible information that expands your and your readers’ views.

When you search consciously for multiple perspectives, you not only act ethically and inclusively as a researcher, but you lay the ground for a more successful project. Instead of restating ideas or solutions that everyone else has already found, you are more likely to propose a unique angle or viable solution that will strongly engage and motivate your readers.

Beyond “credible”: Don’t settle for biased or exclusionary sources

A government website, news organization, academic journal, or famous scholar may generally be a “credible” source that you and your readers trust, and yet a

specific article, study, example, or argument may reveal biases, overlook the ways that structural discrimination affects the issue, or exclude crucial perspectives.

A report or article doesn't have to be directly insulting of a group of people to be treating them or their views unfairly: discrimination can show up through omission or erasure of some key perspectives, or through unsupported generalizations about groups of people (even seemingly positive ones such as Asian Americans being a "model minority"). In the early stages of your research, you won't always be reading sources thoroughly, but you should still be skeptical of:

- Sources that discuss an issue in terms of "society" or "all people" or "teenagers" generally without acknowledging that people from minoritized or underrepresented backgrounds may have very different experiences, resources, or needs
- Sources that provide examples or cite studies that seem to primarily include White, middle-class, male, and/or straight/cisgender experiences or perspectives
- Sources that present simple explanations of causes or solutions without acknowledging how systemic discrimination or racism may affect events or decisions

You can use these sources in your research, of course—there are no categorically "bad sources"—but you will need to be prepared to critique any discriminatory practices or propositions that they offer.

If you are reviewing new sources about a question or problem and find that they frequently exclude, denigrate, or generalize about a group of people that you personally identify with, you don't have to settle for an inquiry project that replicates discriminatory practices: you may need to try more deliberate search strategies, alone or with a librarian, to locate credible research that fairly represents and examines key issues. Alternately, you may choose to work with your instructor to find a new angle or topic that you can inquire about that will enable you to explore questions and contribute your insights without so regularly encountering harmful materials. If you are a White researcher who is practicing anti-racism, or a Christian researcher aiming to be an ally to people from Muslim or Buddhist religious backgrounds, you can plan out your search strategies to deliberately seek sources and present analyses that help you push back against exclusion, racism, or discrimination.

Explore 19.5

Consider your current inquiry project, and answer three questions:

- What facts or arguments are most familiar or agreeable to you, and how can you seek out and be open to alternate perspectives?



Explore 19.5 (continued)



- What's one example of quantitative data (countable/measurable) you could seek, and one kind of qualitative data (interpretive/descriptive) you could seek?
- Beyond "scholarly journal articles," what are two other kinds of data that your readers might find credible? In a sentence each, describe what you might want to learn and what kind of source(s) you might consult.