

The Information Literacy User's Guide: Marietta College Remix

Linda Lockhart

Peter Thayer



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INTRODUCTION

You may be using this book for any one of a variety of reasons. It may have been assigned by a professor, in whole or in part. You may be using it to enhance your research techniques for your classes. Or you may see the importance of being savvy about information use and production and have decided to learn more on your own. After all, our world is defined by our easy access to information. In fact, as is often said, we are drowning in information.

Some is valuable. Some is worthless. And some is just fun, in its proper context. As you know, information comes in many different formats and sometimes, depending on the content, information in one format can be in any of these categories. For example, a tweet could be valuable (maybe an expert on a topic has just announced something groundbreaking), worthless ("Going shopping. Looking for socks that don't fall down."), or fun (I'll let you decide what that message might be). So, it seems that information content, context, and quality matter more than what kind of package or format the information takes. You will have a

chance to read more about this later in the book. And accessing information is just one component; there is also your role as an information producer. We'll get to that, too.

You will learn a number of ways to enhance your abilities to work with the information that surrounds you. So let's start at the beginning. This book is entitled *The Information Literacy User's Guide*. If you are information literate, you are adept at working with information. But a user's guide can still be of assistance, since there are so many components to information. While you will find elements in this book that you are totally up to speed on, there will be others that you have less familiarity with. Hence, the value of a user's guide.

This book is arranged using a model called the SCONUL Seven Pillars of Information Literacy (<http://www.sconul.ac.uk/sites/default/files/documents/coremodel.pdf>). The model was developed in the United Kingdom, and revised in 2011, to reflect today's information world. As you would expect, its visual representation shows pillars, each one labeled with a one-word access point to the larger concept of information literacy. The seven pillars, with short explanatory descriptions, are:

- Identify (understanding your information need)
- Scope (knowing what is available)
- Plan (developing research strategies)

- Gather (finding what you need)
- Evaluate (assessing your research process and findings)
- Manage (organizing information effectively and ethically)
- Present (sharing what you've learned)

Each of the seven areas incorporates both abilities and understandings. The abilities include what an individual can do. The understandings cover both attitude and behaviors. For example, someone might be aware that they should carefully evaluate the information they find and know how to go about it, yet not care enough to actually do it. Abilities and understandings work together to enable information literacy. Near the beginning of each chapter, you will find pertinent abilities and understandings lists taken from the Seven Pillars model.

This introductory chapter is intended to be short, and will end with an important recommendation: As you learn from this textbook, remember to reflect on your new knowledge, skills, and attitudes. What are you doing differently? Did you find particular new approaches to locating or sharing information that work better? Why? Are you evaluating information more consistently? Differently? Do you feel more comfortable as an information producer? If you continue to ask

yourself questions like these, and follow through based on your responses, your proficiency with information will last far beyond your memory of reading this textbook.

ABOUT

About this Textbook

Good researchers have a host of tools at their disposal that make navigating today's complex information ecosystem much more manageable. Gaining the knowledge, abilities, and self-reflection necessary to be a good researcher helps not only in academic settings, but is invaluable in any career, and throughout one's life. *The Information Literacy User's Guide* will start you on this route to success.

The Information Literacy User's Guide is based on two current models in information literacy: The 2011 version of The Seven Pillars Model, developed by the Society of College, National and University Libraries in the United Kingdom and the conception of information literacy as a metaliteracy. These core foundations ensure that the material will be relevant to today's students.

The Information Literacy User's Guide introduces students to critical concepts of information literacy as defined for the information-infused and technology-rich environment in which they find themselves. This book helps students examine

their roles as information creators and sharers and enables them to more effectively deploy related skills. This textbook includes relatable case studies and scenarios, hands-on exercises, and learning resources.

About the 2023 Marietta College Remix

Dr. Linda Lockhart and Peter Thayer have adapted the textbook, *The Information Literacy User's Guide: Marietta College Remix – An Open, Online Textbook*, for local use at Marietta College. The remix draws from content in the 2014 book edited by Bobish and Jacobson and from the 2019 adaptation by Becknell and March. Lockhart and Thayer have edited and authored additional content to this version of the text.

Linda Lockhart is Associate Professor of Communication and the Director of the college's information-literacy based first-year seminar, PIO 101. She received the Harness Outstanding Educator Award in 2022.

Peter Thayer is Assistant Professor and Reference Access Librarian in Marietta College's Legacy Library, focusing in areas of reference, library instruction, interlibrary loan, and government documents. He teaches first-year PIO 101 and business classes.

About the Authors

Linda Lockhart and Peter Thayer are faculty at Marietta College, where both teach PIO 101 First-Year Seminar classes, which is grounded in Information Literacy.

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*Authors of the original **Information Literacy User’s Guide***

Deborah Bernnard, University at Albany, State University of New York

Greg Bobish, University at Albany, State University of New York

Daryl Bullis, iBabson College

Jenna Hecker, University at Albany, State University of New York

Irina Holden, University at Albany, State University of New York

Allison Hosier, Coastal Carolina University.

Trudi Jacobson, University at Albany, State University of New York

Tor Loney, Albany Public Library

Elissah Becknell and Rebecca March, Minneapolis Community & Technical College Library. In 2019 they revised and adapted the original textbook for classroom use at MCTC.

READING KEY

Features to help readers better understand and apply material are included throughout the *Information Literacy User's Guide: Marietta College Remix*. Watch for the following features.

LEARNING OUTCOMES

Each chapter features one of the learning outcomes of Marietta College's PIO 101 course, which is grounded in information literacy. A learning outcome states what students should know, be able to do, or value as a result of taking the PIO 101 course. The Learning Outcome featured in a chapter is one most closely related to the content of the chapter.

UNDERSTANDING AND SKILLS

Each chapter lists these attributes in relation to the pillar of information literacy covered in the chapter.

REAL-LIFE SCENARIOS

These scenarios provide relatable experiences of students learning and applying the concepts of information literacy in college work and life.

KEY TAKEAWAYS

Several chapters include key pieces of information in pull-out columns. These items constitute a common understanding of terminology or concepts.

ILLUSTRATIONS

Some chapters include illustrations to enhance the content.

LEARNING ACTIVITIES & RESOURCES

Most chapters include exercises, resources, or worksheets that are helpful in practicing the skills taught in the chapter. A highlighted insertion titled with this phrase indicates a related activity or resource is included at the end of the chapter.

1.

IDENTIFY

Understanding Your Information Need

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

The PIO 101 learning outcome that aligns with IDENTIFY is:

Students will be able to pose

**appropriate questions that will
help
them and others develop deeper
understanding of course content.**

In this chapter:

- IDENTIFY: Understanding and Skills
- Understanding Context of an Information Need
- Defining Information Needs
 - Make a Chart to Take Stock of What You already Know
 - Make a KWL Chart to Keep Track of What You Know and Learn
 - Conduct a Preliminary Investigation
 - Creating Research Questions and Thesis Statements
 - A Wider View
- Learning Activities & Resources

IDENTIFY: Understanding and Skills

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

They understand:

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

They are able to:

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

- Take personal responsibility for an information search,
 - Manage time effectively to complete a search.
-

Real-life Scenario

Hunter is a gamer and spends most of his free time playing Massively Multiplayer Online Role-Playing Games (MMORPGs). When his Information Studies professor assigned a paper about the impact of the Internet on American Society, Hunter thought it was going to be an easy A, because he could write about gaming. Unfortunately, the paper has not been going well. Hunter is only coming up with the negative impacts of gaming for his paper. He knows that MMORPGs are fun to play and that all his best friends are gamers. However, most of the other people in his life tell him that MMORPGs are a massive waste of time, highly addictive and definitely nerdy. Hunter does not have strong arguments for why MOORPGs are good for American Society and he is quickly losing interest in writing the paper.

Understanding Context of an Information Need

Information need describes the desire to locate and obtain information that is relevant in relation to successfully satisfying a given task.

That task may be an assignment to write a paper or to prepare for a discussion or presentation in class. The task may be for personal development, such as knowing how to participate in a job interview or deciding what career you may want to pursue. Or, it may be a driving interest to study a topic that you've been wanting to learn more about and not related to a school assignment at all.

Regardless of the reason you have a need for information, one of the first things to do when beginning a research project is to acknowledge that you likely do not already know enough to proceed. School and professional assignments, and even personal improvement, are best accomplished by researching to find relevant information that is complete, non-biased, and current. By assuming we already know enough, we usually end up wasting valuable time working with incomplete, biased or outdated information that will be inadequate or unacceptable for best results in completing the task.

When you develop a topic, it is important that you explore the existing information landscape to find

out what is already out there. You need to think broadly about the information environment in which you are operating. For instance, any topic you need information about is constantly evolving as new information is discovered and added. Trained experts, informed amateurs, and opinionated laypeople are publishing in traditional and emerging formats; there is always something new to find out. Part of becoming information literate is developing habits of mind and of practice that enable you to continually seek new information and to adapt your understanding of topics according to what you find. While you are busy searching for information on your current topic, be sure to keep your mind open to new topics or arguments you have not considered. Often the information you find for your initial need will change the way you think about or frame a topic.

Undergraduate students are often assigned papers and projects that require informational research. This type of research differs from scientific research in a few important ways.

- Informational research involves interpretation and discovery of information that is already produced.
- Scientific research involves experimental design and produces something tangible that can be reproduced.
- Another important feature of informational research is that it can be reexamined and

reinterpreted at a later date because our information landscape is always changing.

- Informational research can be used to create an argument, analyze different facets of a topic, or introduce a body of literature.

When you understand the information environment where your information needs are situated, you can begin to define the topic more clearly and understand where your research fits in with related work that precedes it.

Defining Information Needs

In the real-life scenario, Hunter was abruptly confronted by his lack of knowledge when he realized that he had mostly negative things to write about MMORPGs. At this point, he has to decide whether to do some research or abandon his topic. While the path of least resistance is appealing, doing research into something important to you can be rewarding. If Hunter finds positive arguments for MMORPGs, he can use them in his paper and in real life.

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

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

LEARNING ACTIVITIES & RESOURCES at the
end of this chapter

Exercise 1A can help you identify what you don't know about a topic, and what you need to know.

All of us lack knowledge in countless areas and this is not a bad thing. Once we acknowledge that we don't know something, it opens up the possibility that we can find out all sorts of interesting new things.

Taking your lack of knowledge and turning it into a topic or research question starts with being able to identify the knowledge you lack. We rarely start a research project from absolute zero. Most of the time you have heard something about the topic, even if it is just a brief reference in a lecture or

reading. Taking stock of what you already know can help you to identify assumptions you are making based on incomplete or biased information. If you think you know something, make sure you find at least a couple of reliable sources to confirm that knowledge before taking it for granted. Use the following exercise to learn what needs to be supported with background research.

Make a Chart to Take Stock of What You Already Know

As discussed above, part of identifying your own information need is giving yourself credit for what you already know about your topic. Before you begin research take time to write down a list of what you already know about the topic.

An easy way to do so is to construct a chart similar to the one below, adding a many lines as needed.

1. Write your research topic at the top.
2. In the first column, list what you know about your topic.
3. In the second column, briefly explain how you know this (from the professor, read it in the textbook, saw it on a blog, etc.).
4. In the last column, rate your confidence in that knowledge. Are you 100% sure of this bit of knowledge, or did you just hear it

somewhere and assume it was right?

My research topic is:		
What do I know?	How do I know it?	How confident am I in this knowledge?

Now that you have written down everything you know about the topic, step back and look at the whole chart. You may be surprised at how little or how much you know, either way you will be more aware of your own background knowledge on the topic. This exercise should give you a starting point and may help you identify specific gaps in your knowledge.

After you have clearly stated what you know, it should be easier to state what you don't know. Keep in mind that you are not attempting to state *everything* you don't know. You are letting your current information need guide this exercise. This is where you define the limits of what you are searching for. These limits enable you to meet both size requirements and time deadlines for a research project. If you have a clear goal in mind, you can keep yourself on track as you proceed with your research.

Make a KWFL Chart to Keep Track of What You Know and Learn

A useful way to keep your research on track is to construct a chart similar to the one below so you can write down what you already know and what you want to know. Later you will use this chart to include how you will find information you need and what you have learned about the topic.

Start by making four columns.

1. In the left **KNOW** column list the things from your earlier chart that you already know about the topic.
2. In the **WANT** column, write down what you want to know. For example, if you listed that you already know something about the topic but you were only 60% confident in your knowledge being accurate, write down that you want to check that piece of information from another source. If you don't know anything about some facet of the topic, write down what you would like to know about it. You can add as many lines to the chart as needed.
3. When you have everything written down, you can look at how you **FIND** each bit of information you have noted in the WANT column. (refer to the PLAN chapter)

4. When you have completed the planned research, list your new knowledge in the **LEARNED** column.

My research topic is:			
What do I already KNOW?	What do I WANT to know?	How will I FIND information on this topic?	What have I LEARNED about this topic?

It can be useful to revisit this chart as you work on your research project to see how far you’ve progressed or to double check that you haven’t forgotten an area of weakness.

Conduct a Preliminary Investigation

Defining a research question can be difficult. Your initial questions may be too broad or too narrow. You may not be familiar with specialized terminology used in the field you are researching. You may not know if your question is worth investigating at all. These problems can often be solved by a preliminary investigation of existing published information on the topic. In academic research, it is important to look for experts who have laid the groundwork for you to build upon.

On a more practical note, gathering background information can provide you with commonly used terminology and arguments. Having the right background knowledge can help you create thoughtful research questions and construct more precise searches.

Creating Research Questions and Thesis Statements

Now that you have identified your knowledge gaps, conducted a preliminary investigation on the topic and set limits on your research based on your current information need. You are ready to write out your research question or thesis statement. Research questions and thesis statements can be understood as two sides of the same coin. You can start with a research question and restate it as a thesis statement, or vice versa. The characteristics of a good research question can be used to create a good thesis statement. A good research question has several characteristics.

- **The answer to a research question should not be immediately obvious.**

A good research question encourages exploration. It should force you to seek out new and varied information, not just one fact or figure. The research

question should not be answered with a simple yes or no. It should require that you analyze several sources of information to get a complete answer.

- **A research question should help you feel focused.**

A good research question helps you focus on a specific context. This context could be a specific time period, human population, geographic area or set of circumstances. You have a clear sense of who or what you are researching. It does not require you seek out information indefinitely.

- **A research question should address an issue or controversy, or seek to solve a problem.**

Whenever possible, you should articulate the controversy or issues concerning your research topic. A typical research assignment seeks to answer a question, find a solution or convince your audience of a stance. If you need a strong set of arguments or solutions, then you should ask questions that address the issue or controversy explicitly.

- **A research question is hopeful.**

Sometimes a controversy or issue seems overwhelming. You may feel like the answer is impractical or improbable for humans to execute. Try not to despair, and do not frame your research questions in exaggerated or apocalyptic language. Also, avoid creating open ended questions that reflect your feelings about human frailty. Accept that humans are not perfect and find the workable solutions.

- **An *informational* research question is not theoretical or revisionist.**

It is fun to think about alternative realities, theoretical possibilities or revised histories. If you are assigned a research project, you will find the whole endeavor more productive if you stick to what is known about the world. When scholars, academics, researchers or scientists explore the unknown they use disciplinary research methods to make new discoveries. If you go far enough in your academic journey, you will learn how to conduct original research or set up scientific experiments.

- **Informational research requires a**

body of information to explore.

Do not worry about perfection. You should revise your research question or thesis statement several times during the course of a research project. As you become more and more knowledgeable about the topic, you will be able to state your ideas more clearly and precisely, until they almost perfectly reflect the information you have found.

LEARNING ACTIVITIES & RESOURCES at the end of this chapter

Exercise 1B can help you to get a better grasp of exactly what you are trying to find out, and to identify some initial search terms to get you started.

A Wider View

While IDENTIFY is presented as the first step in a research process, you may find yourself circling back to topic development many times during a research process. It is impossible to keep up with an evolving information landscape and we often start out with incorrect assumptions or outdated information. Other chapters in this book deal with

evaluating, managing and presenting information during a research process. You may revisit your initial ideas about your topic in response to what you're doing with what that information later on.

Students often think that their lived experience is not relevant to or researched in scholarly circles. Hunter was carrying baggage about Massively Multiplayer Online Role Playing Games when he started writing about it for a class. A little preliminary research and topic development will go a long way to assuage your fears about finding scholarly sources of information. Professors, researchers, scientists and practitioners study all sorts of real world phenomena and draw interesting conclusions about what they observe.

Learning Activities & Resources

Exercise 1A: Identifying What You Don't Know

1. Wherever you are, look around you. Find one thing in your immediate field of view that you can't explain.
2. What is it that you don't understand about that thing?

3. What is it that you need to find out so that you can understand it?
4. How can you express what you need to find out?

Exercise 1B: Research Question/Thesis Statement/Search Terms

Since this chapter is all about determining and expressing your information need, let's follow up on thinking about that with a practical exercise. Follow these steps:

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

“a,” etc.). These common terms are likely the important concepts that you will need to research to support your thesis/hypothesis. They may be the most useful search terms overall or they may only be a starting point.

COMMON TERMS:

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

2.

SCOPE

Knowing What is Available

In addition to knowing that you are missing essential information, another component of information literacy is understanding that the information you seek may be available in different formats such as books, journal articles, government documents, blog postings, and news items. Each format has a unique value and understanding those differences helps to guide your search.

The PIO 101 learning outcome that aligns with SCOPE is:

Students will be able to recognize types of sources.

In this chapter:

- SCOPE: Understanding and Skills
- The Information Cycle
- Where Can You Find Information?
 - Web Searches: Free Market Information and Filter Bubbles
 - Access – is free really free?
 - Filter bubbles – who determines what you find?
 - Academic Libraries
 - Reference Information
 - Books
 - Newspaper and Magazine Articles
 - Scholarly Articles
 - Government Information
 - Library Catalogs
 - Locating Resources in the Library
- Where Can You Find Help?
- How to Be a Strategic Researcher
- Learning Activities & Resources

SCOPE: Understanding and Skills

A person who is information literate in the SCOPE pillar is able to assess current knowledge and identify gaps. They understand:

- What types of information are available,
- The characteristics of the different types of information sources available and how the

format of the source—such as digital or print—may affected them,

- How the publication process is related to how current a source is,
- Why individuals publish information,
- Issues of accessibility,
- What services are available to help and how to access those services.

They are able to:

- “Know what you don’t know” to identify any information gaps,
- Identify which types of information will best meet the specific need,
- Identify the available search tools, such as general and subject specific resources at different levels,
- Identify different formats in which information may be provided,
- Demonstrate the ability to use new tools as they become available.

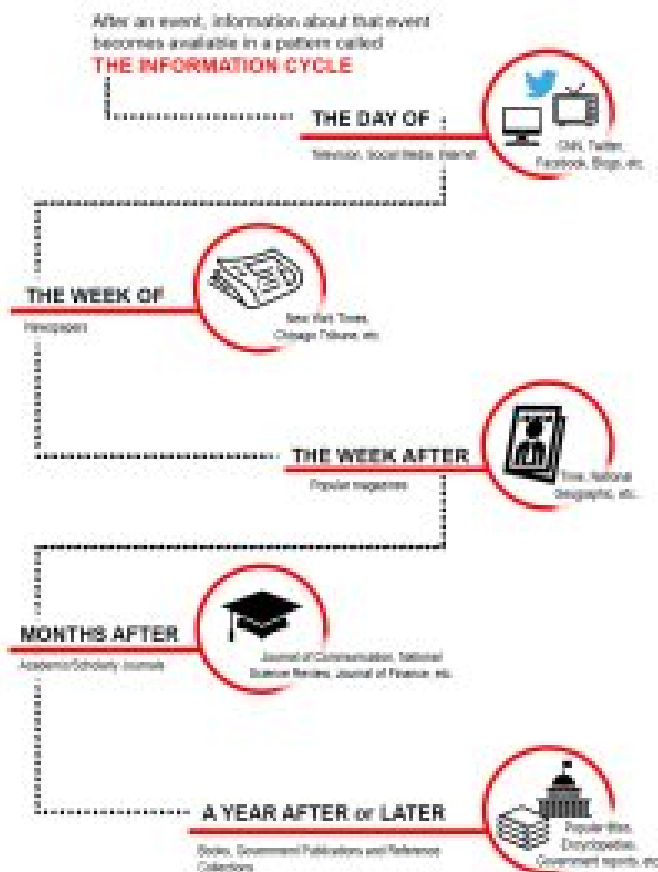
Real-life Scenario

Mohamed is active in his Mosque and a student group for Muslims on campus. He was born into a Muslim family and lives in a community with Muslims from all over the Middle East and Africa. He is interested in how greater American society perceives

the Muslim faith and to what extent it welcomes faithful Muslims into everyday life. He knows that there are kind and welcoming non-Muslims in his community and on campus, but he also sees tensions and conflicts between people of different faiths or backgrounds. Mohamed wants to put together a research paper about this topic for his Writing course, but is nervous about the directive from his professor to use academic books and scholarly journals about this topic.

The information lifecycle is the progression of media coverage of a particular newsworthy event. Understanding the information cycle will help you to better know what information is available on your topic and better evaluate information sources covering that topic.

Most professors do not want a simple account of the world, they want a deeper examination. When college professors ask students to use academic books and scholarly journal articles, they are asking students to seek out information that examines, analyzes, synthesizes, scrutinizes and frames issues using scholarly perspectives, theories and research methods. To help us better understand how information is created and disseminated, the graphic below represents a common process of information dissemination, known as The Information Cycle. (Illinois)



The graphic demonstrates the Information Cycle process during a period of time.

- **When an event happens**, we usually hear about it quickly from social networks and news sources first. Information on *the day of*

the event:

- Includes the who, what, why, and where of the event are reported.
- Is quick, but not detailed; it is regularly updated.
- Is authored by journalists, bloggers, social media participants.
- Is intended for general audiences.
- **Within a few days after the initial news of an event**, more details and analysis of the event is communicated, often by newspapers.
 - Explanations and timelines of the event begin to appear.
 - More factual information may include statistics, quotes, photographs, and editorial coverage.
 - Authors are journalists.
 - Is intended for general audiences.
- **Six Months or More After an Event**, the event has been studied in more depth and articles, often peer reviewed, are disseminated through academic, scholarly journals. These articles are:
 - Focused, detailed analysis and theoretical, empirical research,
 - Peer-reviewed, ensuring high credibility and accuracy,
 - Authored by scholars, researchers, and professionals,
 - Intended for an audience of scholars, researchers, and university students.
- **A Year to Years After an Event**, in-depth coverage and analysis is published in books

and/or reports..

BOOKS

- In-depth coverage ranging from scholarly in-depth analysis to popular books
- Authors range from scholars to professionals to journalists
- Include reference books which provide factual information, overviews, and summaries

GOVERNMENT REPORTS

- Reports from federal, state, and local governments
- Authors include governmental panels, organizations, and committees
- Often focused on public policy, legislation, and statistical analysis

LEARNING ACTIVITIES & RESOURCES at the
end of this chapter

Exercise 2A can help you think about how the Information Cycle can guide you in beginning your information search for different topics.

Referring back to the scenario at the opening of the chapter, as Mohamed seeks out scholarly information for his college research paper, he should think about how the specific topic he is interested in exploring fits into larger social problems, scientific theories, legislative solutions or academic disciplines.

Mohamed might explore what scholars have to say about the assimilation of Muslim immigrants into American society, or how Muslims and Christians coexist in American society over time or how recent events in the Middle East have affected Muslims in America. Simple web searches do not typically lead to information that addresses this degree of complexity. There are scholarly journal articles, extensive government reports, in depth journalistic pieces and documentaries on the web; however, you have to know where to look.

Where Can You Find

Information?

Thinking about where Mohamed may find the information sources needed for his research paper, consider the following possibilities.

Web Searches: Free Market Information and Filter Bubbles

Because The Information Cycle begins with an event that is disseminated across social networks or news sources, it is tempting to think this is where you should start a research project. Many of us are introduced to new events, ideas, organizations, people and places in our social networks or trusted news sources. We might even have an important news article, blog post, personal experience or podcast that inspires the research project we are interested in exploring for a class. Taking your inspiration from real life events or personal experiences is a great idea, but doing research in your preferred digital ecosystem is not advisable.

There are two problems with conducting research through our social networks and in web browsers:

1. most of us lack access to high quality information, and
2. when we interact with the internet most of us

are subject to algorithmic intervention—where a computer follows step-by-step instructions to perform a task (an algorithm) that makes inferences about data that includes things such as identity, demographic attributes, preferences, past behavior, and likely future behavior to automate decisions about what you are looking for and determine what search results may be provided.

Let's look at each of these issues more closely.

Access – is free really free?

When you are conducting research for a college level course, most professors require the use of peer reviewed journals or scholarly publications. These high quality information resources are not typically given away for free. If you pay for access to every article or book you want to read for a research paper, you will quickly find research to be an expensive endeavor. Two examples:

Google Scholar: Many scholarly articles can be found in a Google Scholar (or other preferred browser) search; however, when you go to the website to access the article you are given a free abstract of the article but then may be asked to pay for the full text. But, if you are on Marietta College's campus you can access the scholarly articles via Google Scholar.

Scholarly books: The same can be true of scholarly books; you can get a free preview but have to pay for a full text view of the book online. Scholarly information is valuable and can command high prices in the free market. But, if you are using the Marietta College library databases, such as OhioLINK Electronic Book Center, you have free access to many scholarly ebooks, as well.

The Legacy Library is a resource that provides you with access to a wealth of sources and services. Your tuition helps pay for this information and it has been vetted by librarians, so you know it will be appropriate for college level research.

Filter Bubbles – who determines what you find?

The more subtle problem with research across social networks and through web browsers is algorithmic intervention. Companies that provide web-based services, like social media platforms or web browsers, have powerful incentives to keep you engaged with their platform or application: advertising revenue and personal data collection. Facebook, Twitter, Google and other web-based service providers keep your business and increase your participation on their platforms by presenting you with content that entertains or resonates with you. They employ sophisticated algorithms to make sure you enjoy connecting with people, events, ideas, organizations and advertising on

their platforms. These companies also collect as much personal information about you as they can to tailor your experience and perhaps sell this data to other companies.

If you use a web-based platform enough you will find yourself in a Filter Bubble, a place that presents you with agreeable and entertaining information at the expense of challenging or disagreeable information. The vast majority of free web-based services or applications rely on personal data collection and advertising revenue to get and keep your business. Conducting research in this kind of environment will limit your ability to find multiple perspectives, especially perspectives that differ from your own view of the world.

Academic Libraries

Academic libraries are an important place for students to conduct research. They are not interested in collecting personal data from students or optimizing search so that students only find agreeable or entertaining content. Academic library collections are developed with students and faculty in mind. They are tailored to the academic programs, assignments and research needs of the campus. Students who become familiar with the organization and collections of an academic library will save themselves time and effort when conducting research for college

classes. Academic libraries primarily collect scholarly information in a variety of formats; however you will also find information from journalists and government officials. In this way, academic libraries mirror the classroom. Professors are primarily concerned with scholarship and academic ways of thinking about the world, but they are keenly aware of how this relates to greater society.

Mohamed knows he needs to use academic books and scholarly journal articles for his paper, but it is important to understand how these required resources relate to other formats in an academic library collection. Scholarly information is published in a variety of formats, each with its own special considerations in regard to conducting research. The formats described below can be found on physical shelves and in digital searches of databases or catalogs.

Librarians are available in Legacy Library to help you navigate the library and advise you on your information search.

LEARNING ACTIVITIES & RESOURCES at the
end of this chapter

Resources: Take a video tour of Legacy

Library.

You might use the following formats as you conduct research at your academic library.

Reference Information

In an academic library, reference information is synonymous with background information. It is the source information you use to understand the basic elements of your topic, the terminology scholars use when discussing a topic and how it fits into a larger context. Academic encyclopedias and dictionaries form the backbone of a reference collection, but you might use other primary sources or commentary collected by your academic library to learn more about your research topic. Reference collections tend to be separated from other collections physically and digitally. They are intended to be used like Wikipedia, for understanding a topic, but not necessarily as the final destination for inquiry. Unlike Wikipedia, most professors are fine with students quoting and citing academic reference resources. This is because reference resources are

written or edited by academics, scholars, scientists, researchers and other experts. However, students should not stay in a reference collection if they want to go deeper into a research topic.

Books

Books have been a staple of academic research since Gutenberg invented the printing press. Most academic books come out of traditional publishers with clear editorial review policies. Research in the humanities and social sciences, which include academic disciplines such as anthropology, literature and history, are primarily published in this format. A book can cover a research topic deeper than most other information sources. Books will give you a full picture of the topic, event or controversy you are researching. They can give you the context of a research topic, detailing the history and current situation we find ourselves in. Books tend to be the culmination of long term research and investigation, so you can mine a book's bibliography or works cited pages for scholarly journal articles, research studies, government reports, experts in the field or other books. Also, academic books give you clear connections to disciplinary thinking on a topic, giving you insight into the important academic theories, scholars, research experiments or foundational knowledge of which you should be aware.

Newspaper and Magazine Articles

Magazine and newspaper articles are typically written by journalists who report on an event they have witnessed firsthand or after they make contact with those more directly involved. Journalists focus on information that is of immediate interest to the public and they write so that a general audience can understand the content. In research, newspaper articles are often best treated as primary sources, especially if they were published immediately after a current event. (See the GATHER chapter for more information about primary sources.) Magazine articles and longer investigative newspaper articles tend to explore *why* something happened, usually with the benefit of a little hindsight. Writers of these long form articles rely heavily on investigation and interviews for research. Journalists tend to be equal opportunity consumers of academic, government and popular information resources. This blending of resources makes their work more accessible for students exploring a topic or looking for a direction to take their research. Newspaper and magazine articles are considered popular resources rather than scholarly resources, which gives them less weight in academic work.

Scholarly Articles

Scholarly articles are written by and for experts in an academic field of study. They typically describe original research conducted to provide new insight to an academic field of study. You may have heard the term “peer review” in relation to scholarly articles. Peer reviewed articles undergo a review process carried out by professional researchers, academics and industry experts. This group checks the accuracy of the information presented in a scholarly article and the validity of the research methods used to conduct the research behind the findings. This peer review process adds a level of credibility to scholarly articles that you would not find in a magazine or news article. Scholarly articles tend to be long and feature specialized language that is meant for an expert audience. They provide the framework for researchers and scholars to build new original research projects. Scholarly articles carry a lot of weight in scholarship and professors often require their use in undergraduate assignments.

While scholarly journal articles are typically required for students doing college level research projects, they are not a great place to start your research. By their nature, scholarly journal articles are narrowly focused on one particular study or research project. It takes several studies to start drawing conclusions about a social phenomenon, scientific theory, law of nature or other piece of the

academic cannon. As a novice to a field of study, an undergraduate student should start formulating their research question, research topic, and narrow research focus before they dive into scholarly journal articles.

When searching databases for scholarly journal articles, it is a good idea to have a few different arguments or points you want to make about your topic. Having more than one argument or line of reasoning ensures that you can use different studies for different points you want to make. It also forces you to find scholarly articles that come to slightly different conclusions or design their experiments in slightly different ways.

Government Information

Some academic libraries are depository libraries for the Federal Depository Library Program and collect specific documents or publications from different government agencies; most are not. All academic libraries collect or curate government information, in print or digital formats, that is useful to their campus communities.

Government information consists of any information produced by local, state, national or international governments and is usually available at no cost. However, it can be reproduced by a commercial entity with added value and cost. To use free government information, look for

websites that are created by official government entities such as the US Department of the Interior, UNESCO, the State of Ohio or the Library of Congress. You can typically conduct searches of the official websites or use databases and tools developed by a government agency to search different kinds of information. For example, the United States Congress has a searchable database of legislation and proposed bills. The US Census Bureau has a searchable database to help you explore census data. Another way to access free government information is to use web portals developed by official government agencies. Web portals are websites that bring together information of many different formats into one uniform search. USA.gov is a large federally developed web portal that brings together information and services from many different government agencies across the United States. Many academic libraries have research guides or links to relevant government information, databases, tools and portals.

Government information can help students understand the history, policies, legislation, programs, regulations, or agencies involved in a research topic. Sometimes the government is a key player in our research interests. In this case, government information can be treated as primary source information. Many government agencies conduct original research, this can be published as government reports or scholarly journal articles. In this case, government information can be used

as evidence to prove or disprove a theory or hypothesis. Many government officials have demonstrated expertise and first-hand experience with our research topic. In this case, government information can lend us credible expert opinion or commentary on our research topic. Government information is useful and vast, students should approach government information with a clear research topic or research question in mind to avoid overload.

Library Catalogs

A library catalog is a database that contains all of the items located in a library as well as all of the items to which the library has access. It allows you to search for items by title, author, subject, and keyword. A keyword is a word that is found anywhere within the record of an item in the catalog. A catalog record displays information that is pertinent to one item, which could be a book, a journal, a government document, or a video or audio recording.

If you search by subject in an academic library catalog, you can take advantage of the controlled vocabulary created by the Library of Congress. Controlled vocabulary consists of terms or phrases that have been selected to describe a concept. For example, the Library of Congress has selected the phrase "Motion Picture" to represent films and movies. So, if you are looking for books about

movies, you would enter the phrase “Motion Picture” into the search box. Controlled vocabulary is important because it helps pull together all of the items about one topic. In this example, you would not have to conduct individual searches for movies, then motion pictures, then film; you could just search once for motion pictures and retrieve all the items on movies and film. You can discover subject terms in item catalog records.

Many libraries provide catalog discovery interfaces that provide cues to help refine a search. This makes it easier to find items on specific topics. For example, if a student enters the search terms “Hydraulic Fracturing” into a catalog with a discovery interface, the results page will include suggestions for refinements including several different aspects of the topic. The student can click on any of these suggested refinements to focus their search.

Locating resources in the library

Using the library catalog, you may find several good resources on your topic, then you need to locate those resources. The catalog will provide you with information about the location of a resource. For example, the image below shows the Legacy Library catalog record with the location and the call number for the resource.

Annie and the wild animals / written and illustrated by Jan Brett. Brett, Jan, 1949- Boston : Houghton Mifflin Co., 1985.		
LOCATION	CALL #	STATUS
JUVENILE COLLECTION - 2ND FLOOR	P27.B7559 An 1985	AVAILABLE
The Pushcart prize : best of the small presses / edited by Bill Henderson. Yonkers, N.Y. : Pushcart Press, ©1976.		
LOCATION	CALL #	STATUS
CIRCULATING STACKS - 3RD FLOOR	PS536 .P8 1976-77	AVAILABLE

Where Can You Find Help?

The librarians at Legacy Library are there to help you when you have questions about searching for a source. Although single libraries can't hope to collect all of the resources available on a topic, fortunately, libraries are happy to share their resources and they do this through OhioLink and interlibrary loan.

OhioLINK member libraries from across Ohio share books, periodicals, electronic resources and other items. You can find these in the Legacy Library OhioLINK catalog. You can view and/or check out these resources directly through the Legacy Library site.

LEARNING ACTIVITIES & RESOURCES at the

end of this chapter

Resources: Watch the video, "Intro to OhioLINK" to learn more about this service

Interlibrary loan (ILL) allows you to borrow books and other information resources from other libraries that are not necessarily part of OhioLINK. If you know that a book exists, ask your library to request it through their interlibrary loan program and have it delivered to the Legacy Library for your use. To learn more about Interlibrary Loan, email ill@marietta.edu. ILL service is available at both academic and most public libraries.

LEARNING ACTIVITIES & RESOURCES at the
end of this chapter

Resources: To learn more about Interlibrary Loan, visit [Legacy Library's ILL FAQs and Tutorials webpage](#).

There is a wealth of knowledge contained in the resources of academic and public libraries throughout the United States.

How to Be a Strategic Researcher

It is a good idea to run your research topic by a professor or librarian to get recommendations about scholars, experiments, literature reviews, ethnographies, or scientific studies that might be important to your understanding of the topic.

In the scenario above, Mohamed also has been learning about how information is created and disseminated across American society and what academic libraries collect. This knowledge should help him find academic books and scholarly journal articles on his research topic. More importantly, this information should help him be strategic about what to collect and when. He has learned:

- The first thing he should do is gather background information and develop a research question. You can review Chapter 1: Identify if you need help with topic development.

Once he is focused, he has to make decisions about where to look for information on his research topic.

- He might immerse himself in popular magazines and newspapers to understand

what the conversation about Muslims in America looks like to everyday people. He may look for an academic book that deeply explores this topic, sets up a framework for understanding this topic and maybe even points to relevant scholars or research on this topic.

- Mohamed will definitely need to find scholarly journal articles, but he should do that when he has several answers to his research question that he wants to verify or find evidence to support.
- Government information may or may not be important to his research; fortunately, he does not have to make that decision right away.

Additional chapters in this guide discuss important knowledge, techniques and skills needed to navigate the physical and digital collections in an academic library.

Learning Activities & Resources

Exercise 2A: Using the Information Cycle as a Guide

For each event listed in the left column in the table below, refer to the Information Cycle to determine where might be the best place(s) to begin looking for information. Check each box that applies.

EVENT	SOCIAL MEDIA, TV, the WEB	NEWSPAPERS or POPULAR MAGAZINES	SCHOLARLY JOURNALS,	BOOKS, PUB
Yesterday's fire in Chicago				
World War II				
The latest mass school shooting				
The outbreak of the war in Ukraine				
Last week's political news				
Queen Elizabeth's death in Sept. 2022				



Resources

For more about **The Information Cycle**, watch the YouTube video “The Information Cycle,” by USC libraries. (<https://youtu.be/xQxUHCDHEv4>)



One or more interactive elements has been excluded from this version of the text. You can view them online here:

<https://pressbooks.pub/mariettainfolitguide/?p=45#oembed-1>

Take a **Video tour of Legacy Library**. Watch the video “Legacy Library Video Tour.” (<https://library.marietta.edu/c.php?g=836257&p=5972111>)



One or more interactive elements has been excluded from this version of the text. You can view them online here:

<https://pressbooks.pub/mariettainfolitguide/?p=45#oembed-2>

For more Information about **OhioLINK**, watch the video “Intro to OhioLINK,” by Marietta’s Legacy Library.

(<https://library.marietta.edu/c.php?g=836257&p=7674259>)



One or more interactive elements has been excluded from this version of the text. You can view them online here:

<https://pressbooks.pub/mariettainfolitguide/?p=45#oembed-3>

To learn more About **Interlibrary Loan**, visit [Legacy Library’s ILL FAQs and Tutorials webpage](https://library.marietta.edu/ill-faq).

(<https://library.marietta.edu/ill-help>)

3.

PLAN

Developing Research Strategies

Even when a person knows their information need and knows what is available, they have to be able to locate information and data to fill those needs. A person who is information literate in the PLAN pillar can construct strategies for locating information and data.

The PIO 101 learning outcome that aligns with PLAN is:

Students will be able to develop strategies for accessing needed information.

In this chapter:

- PLAN: Understanding and Skills
- Selecting Search Tools
 - So, how do you identify the best search tools?
- What to Search
 - Database Research at Your Academic Library
 - A Side Note About Library Catalogs and Discovery Interfaces
 - Searching Databases
 - Metadata
 - Controlled Vocabulary
- How to Search
 - Determining Search Concepts and Keywords
- Putting it All Together
- Learning Activities & Resources

PLAN: Understanding and Skills

Being information literate in PLAN includes:

- Understanding a range of searching techniques,
- Understanding the various tools and how they differ,
- Knowing how to create effective search strategies,
- Being open to searching out the most

- appropriate tools,
- Understanding that revising your search as you proceed is important,
- Recognizing that subject terms are of value.

There are also things you need to be able to do:

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

Real-life Scenario

Natalie is concerned about water pollution in Minnesota. As a member of the Fond du Lac Band of Ojibwe and a Minneapolis resident, she has spent most of her life around different bodies of water in the state. She wants to write a research paper about water pollution in Minnesota, but is having a difficult time figuring out what to focus on. She is concerned about copper nickel mining in northern watersheds, wild rice cultivation, protecting the Boundary Waters Canoe Area, global warming and lakes in Minnesota and walleye harvests on Mille Lacs. Natalie feels that all of these issues are

related to each other, but is wondering if she will be able to tie it all together. Natalie has developed a set of research questions for her topic:

- *How are Ojibwe people affected by water pollution in Minnesota?*
- *What can Ojibwe people in Minnesota do to protect water resources in Minnesota?*
- *How do tribal governments affect change at state legislatures, especially in relation to treaties and environmental protection of natural resources?*

Natalie knows that she needs government information to fully understand her topic. She also needs to find academic books and scholarly journal articles because that is required by her professor. She is interested in tribal activism and wants to find a way to highlight some of the important work of protestors and activists in her community.

Selecting Search Tools

Part of planning to conduct research is determining which search tools will be the best ones to use. This applies whether you are doing scholarly research or trying to answer a question in

your everyday life, such as what would be the best place to go on vacation. “Search tools” might be a bit misleading, since a person might be the source of information you need.

Students often automatically search Google first, regardless of what they are looking for. Choosing the wrong search tool may waste your time and provide mediocre information, whereas other tools might provide spot-on information and quickly, too. In some cases, a carefully constructed search on Google, particularly using the advanced search option, will provide the necessary information, but other times it will not. This is true of all tools: make an informed choice about which ones to use for a specific need.

So, how do you identify the best search tools?

For academic research, talking with a librarian or professor is a great start. They can direct you to specialized tools that provide access to what you need. This chapter will cover generic search strategies and techniques that work in many search tools; however, a librarian can show you specialized techniques in different search tools to focus your search and retrieve the most relevant results.

If neither your professor nor a librarian is available when you need help, check your school’s library

website to see what guidance is provided. There will often be research guides or subject guides to assist researchers. There should also be an A-Z list of the databases the library subscribes to, including important information about the subjects and formats these databases cover. Take advantage of the expertise of librarians by using such guides. Novice researchers do not usually look for this type of help, and, as a consequence, often waste time.

The Marietta College Library website (<https://library.marietta.edu>), has subject guides, course guides and access to over 200 research databases on a huge variety of research topics. The reference librarians are happy to show you how to effectively and productively search any of these tools.

When you are looking for non-academic materials, consider who cares about this type of information. Who works with it? Who produces it or help guides for it? Some sources are really obvious, and you are already using them—for example, if you need information about the weather in Marietta three days from now, you might check Weather.com instead of going to a library (in person or online), and you wouldn't need to do database search. For other information you need, think the same way. Are you looking for anecdotal information on old

railroads? Find out if there is an organization of railroad buffs. Librarians can point you to tools like these to help you find information, even if it isn't for an academic paper or assignment.

What to Search

Database Research at your Academic Library

Databases are research interfaces that libraries either lease or develop for various physical and digital collections. In the day-to-day manner of speaking, when someone says "go search in a database" they mean go to a search interface for a particular collection of resources.

A Side Note about Library Catalogs and Discovery Interfaces

A library catalog is a database that contains bibliographic records of all of the items physically located in a library as well as select digital collections. Some academic libraries place every digital collection they subscribe to in their library catalog search, others make selections based on their campus community. The library catalog does not search the full text of an item, rather it searches the bibliographic record or description of

an item. Many academic libraries place their library catalog in a discovery interface or search. These search interfaces might have branding like *Onesearch* or they might just look like a Google search box located on the library's homepage. Discovery interfaces blend full text searching with bibliographic record searching, so some collections just have bibliographic records (like the circulating books) and other collections have full text availability (like a collection of scholarly journals). Discovery interfaces can be a great place to conduct research because they combine so many different formats and collections into one search. They can also be aggravating for expert researchers who know how to use the sophisticated features of databases for particular collections.

Searching Databases

Databases have interfaces that help researchers conduct simple searches and advanced searches. Advanced searching allows you to refine your search query and prompts you for ways to do this. Consider the basic Google.com search box. It is minimalistic, but that minimalism is deceptive. It gives the impression that searching is easy and encourages you to just enter your topic, without much thought, to get results. You certainly get many results. But are they good results? Simple search boxes sometimes do researchers a disfavor.

Advanced search screens show you the options available to you to refine your search, which should get you manageable numbers of relevant items. Many databases and web search engines include advanced search screens. Advanced search screens will vary from collection to collection, but they often let you refine your search in these ways:

- Implied Boolean operators (for example, the “all the words” option is the same as using the Boolean operator *and*)
- Limiters for date, domain (.edu, for example), type of resource (scholarly journal articles, e-books, patents), language, full text availability
- Field (a field is a standard element, such as title of publication, an author’s name or a subject heading)
- Phrase (rather than entering quotation marks around multiple words)

In most library databases, the search results page will have facets that allow you to apply advanced search refinements to your initial simple search. Commons sorts include: by date, alphabetical by author, and alphabetical by publication. Common refinements include: date ranges, full text availability, subjects or topics, publications, collections, format, and call number ranges. There is usually an option to add more terminology with Boolean operators.

Going back to the real-life scenario, if Natalie enters the simple search terms *water and*

Minnesota into her library catalog, the results page will include suggestions for subject refinements including: *environmental policy*, *causes and theories of causation*, and *conservationists*. Natalie can click on any of these suggested refinements to add this subject to her initial simple search and get a set of more focused results.

Metadata

A bibliographic record is a descriptive record created by a cataloger or other metadata expert that describes an item in a collection. The description of items is called metadata, and this metadata is usually divided out into fields like: author, title, publication date and subject. Some important descriptive metadata you find in bibliographic records are: title, author, date of publication, table of contents, abstract or summary and subject/topical headings. A bibliographic record is made up of fields populated by metadata created by professionals. Subject heading searching can be a powerful way to find items in these sorts of collections. Also, starting with simple keyword searches is advisable, then you can apply refinements once you get to the search results page.

Controlled Vocabulary

If you search by subject in a library catalog you can take advantage of the controlled vocabulary created by the Library of Congress. Controlled vocabulary consists of terms or phrases that have been selected to describe a concept. For example, the Library of Congress has selected the phrase *Environmental Law* to represent laws and regulations governing the environment. So, if you are looking for books about American laws that impact our environment, you could enter the term *Environmental Law* into the subject search. Controlled vocabulary is important because it helps pull together all of the items about one topic. In this example, you would not have to conduct individual searches for environmental law, then environmental regulation, then environmental legal framework; you could just search once for *Environmental Law* and retrieve all the items about the laws and regulations governing the environment. Subject headings are particularly useful when you are researching something new to you or if English is not your first language. You can use this suggested terminology from databases to generate better searches and learn more about how others discuss your research topic. Once you start conducting subject searches, you will have access to the same refinements as a keyword search in your search results.

OhioLINK

In the scenario, Natalie performs a simple keyword search in the library catalog: *water and minnesota*. She finds several good resources on her topic and has her pick of books, e-books and streaming films. While the films look entertaining, Natalie decides to check out two print books for her research project. After writing down the call numbers, Natalie tries a different keyword search: *Ojibwe and activism and Minnesota*. This search brings up zero items in her library catalog, but she notices that she can expand her search to other academic libraries in Ohio. After she expands the search, she sees some interesting results including more books, a radio show recording, and some government documents. The government document records link to free reports on the Department of Natural Resources website. The books and recording are available as OhioLINK requests. After consulting with a librarian, Natalie learns that she can request the books from another library and have them delivered to her campus within a few days. She decides to order these books because they are at the heart of her research interests.

Full Text

Databases sometimes contain the full text of reference articles, scholarly journal articles,

magazine articles, newspaper articles and e-books. Full text searching of resources lets researchers create searches that query the full text of resources in the database. Full text availability means that researchers have instant access to the resources of the database, no need to walk to a shelf at the library or make an OhioLINK request. When a database does not have full text searching, you are searching bibliographic records or descriptions of the various resources.

How to Search

Determining Search Concepts and Keywords

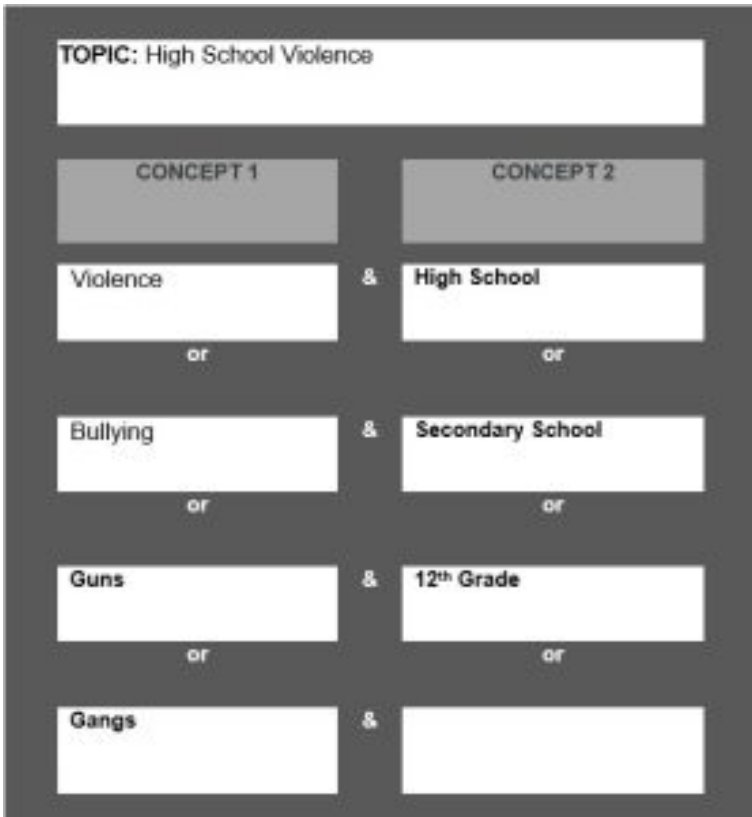
Keyword searching is our typical approach to using search boxes. You start by coming up with logical keywords or phrases and then put this terminology into a search box. You let the computer find these terms in bibliographic records or the full text of items, and then these items populate a search result.

When deciding what terms to use in a search, break down your topic into its main concepts. Don't enter an entire sentence, or a full question. Different databases and search engines process such queries in different ways, but many look for the entire phrase you enter as a complete unit,

rather than the component words. While some will focus on just the important words, the results are often still unsatisfactory. The best thing to do is to use the key concepts involved with your topic. In addition, think of synonyms or related terms for each concept. If you do this, you will have more flexibility when searching in case your first search term doesn't produce any or enough results.

This may sound strange, since if you are looking for information using a Web search engine, you almost always get too many results. Databases, however, contain fewer items, and having alternative search terms may lead you to useful sources. Even in a search engine like Google, having terms you can combine thoughtfully will yield better results.

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



Boolean logic is a better way to construct searches. This is the form of mathematics that governs the behavior of search boxes. Boolean logic or search logic helps clarify what you mean when you search more than one term in a search box.

Before we get into search logic, it is helpful to start with terminology, the words you use to describe your research topic. In the scenario above, Natalie

has well developed thinking on her research topic, so she can easily generate a list of important keywords and phrases that describe the information she is seeking in databases:

- “water pollution”
- Minnesota
- “Fond du Lac Band of Ojibwe”
- water
- “copper nickel mining”
- “northern watershed”
- “wild rice cultivation”
- “Boundary Waters Canoe Area”
- “global warming”
- lakes
- “walleye harvest”
- “Mille Lacs”
- “tribal government”
- “state legislature”
- treaties
- “environmental protection”
- “nature resource”
- activism

This list is not exhaustive, but it is starting to get at the main ideas of Natalie’s research topic. Some of this terminology singularly describes a concept, like: *water*, *lakes*, and *activism*. Some of this terminology requires more than one word to describe a concept, like: *Boundary Waters Canoe Area*, *copper nickel mining* and *global warming*.

In the world of search, any time you have more than one word in a search box, you should have search logic to clarify what you mean to the computer. Quotation marks tell a search box that you have a phrase, or a set of words that belong together in a specific order. You can see all the phrases in Natalie's list have quotation marks. Phrase is the first type of search logic you are going to learn in this chapter.

Logical Operators

Once you have the concepts and terminology you want to search, you need to think about how you will enter them into the search box. Any time you have more than one word in a search box, you should clarify what you mean with Boolean search logic, expressed as logical operators. Sometimes using quotation marks and creating phrases is enough, often we have to go even further. There are several logical operators that work across databases: AND, OR, NOT, Truncation, Wildcard and Nesting. We'll explore each of these operators in depth.

KEY TAKEAWAY

One term to describe a concept is called a **keyword**.

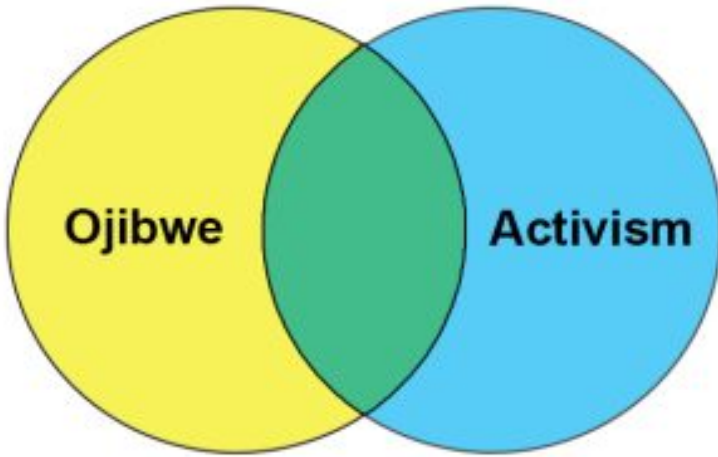
Two or more terms to describe a concept is called a **phrase**.

Boolean Operators: AND – OR – NOT

AND, OR and NOT are the most commonly used logical operators. They search concepts in three different ways. They do not have to be capitalized in a search box, they are capitalized here only for clarity.

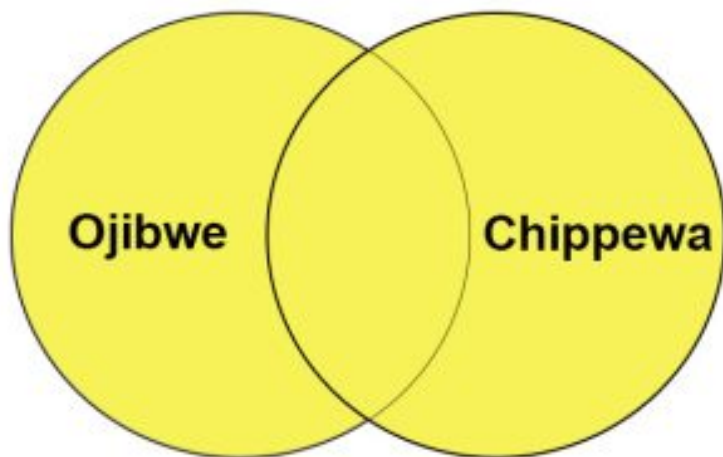
AND links concepts that are very different from one another. Natalie's search of the library catalog is a good example: *Ojibwe AND activism*.

These concepts do not make up a phrase and you would not want a search to link these concepts together as a phrase. Using the AND operator, we make sure that the database knows to find items with both concepts in the bibliographic record or full text of a potential item. We can visualize this; imagine two circles that encompass all the items in a collection for each concept, the only items from these circles you will see in your search result are found in the intersection where the circles overlap (green area).

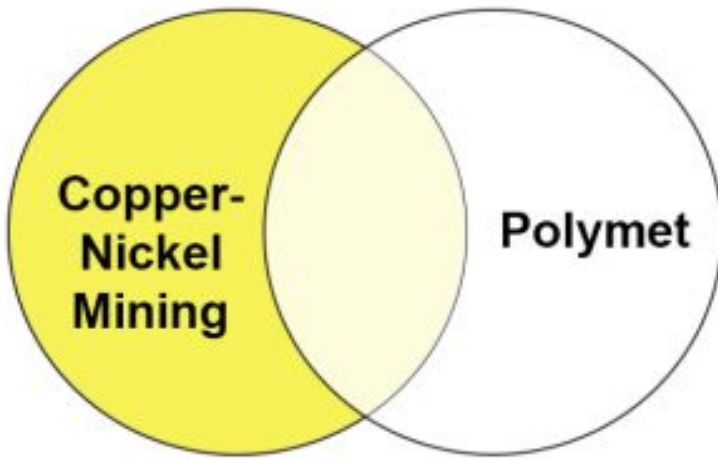


You can think of OR as an “either or” search. **OR searches concepts that have similar meanings.**

Ojibwe is one name for the group of people that Natalie is part of, but this group has other names that get applied to them like Chippewa. If Natalie wanted to make sure she found all the items in a database about her people, she might need to type both of these terms into the search. OR would be a logical way to way to accomplish the ask: *Ojibwe OR Chippewa*. We can visualize this search; imagine two circles that encompass all the items in a collection for each concept, with the OR operator you will see every item in these circles show up in a search result.



NOT is a filter, you use this operator to take a concept out of your search result. Let us imagine that Natalie has been looking into newspaper articles about copper nickel mining in Minnesota. She might find that a recent event, like the proposed opening of a new copper nickel mine in Hoyt Lakes Minnesota by the PolyMet mining company is over represented in her search results. To filter this out, she might try using the NOT operator like this: *copper nickel mining NOT PolyMet*. We can visualize this search, imagine two circles that encompass all the items in a collection for each concept, the only items from these two circles you will see in your search result are found in the first before you have overlap from the second.



Truncation and Wildcard

Truncation and wildcard are logical operators that help you find multiple variant forms of a word. The most common reason for needing variant forms of word is when you want the singular and plural version of a concept. Another reason you may need variant forms is that you have a root concept that gets expressed with slightly different endings or changes to letters in the middle. You use truncation when you need multiple letters to be different in the variant forms of a word. You use wildcard when you only need one letter to be different. In order to use truncation or wildcard, you need a root word to get started. The following sets of terms have a root word that we can truncate or wildcard.

- teen^* = teen, teens, teenager
- $\text{wom}?n$ = woman, woman, *womin*, *womyn* (these last two variants of woman are sometimes used in feminist literature)
- entrepreneur^* = entrepreneur, entrepreneurship
- govern^* = govern, governing, governor, governance, government
- $\text{cat}? = \text{cat, cats}$
- $\text{g}??\text{se} = \text{goose, geese}$

KEY TAKEAWAY

Truncation is represented by the asterisk *****

Wildcard is represented by **?**

In sets of terms above, three stand out as straight forward truncations with a root word: teen^* , entrepreneur^* and govern^* . You might also think cat, as in the feline animal that many of us have as pets, is another straightforward truncation. That would not work because cat^* is a root word for lots of other words:

$\text{cat}^* = \text{cat, cats, cathode, catastrophe, catapult, caterpillar, and so forth...}$

You might have noticed that wildcard operators can work in the middle of words, $\text{wom}?n$ and $\text{g}??\text{se}$ are good examples of this. *Goose* might behave a little strangely in a

search. As stated *g??se* could also bring up the term *guise*, which is not at all related to *goose* and *geese*. In most databases, you can have up to three wildcard operators in a row.

Truncation and wildcard are powerful logical operators, but you should test them for weirdness. The way you test any logical operator is to try the search without the operator and then with the operator.

Nesting

Nesting is a way to prioritize the search when you are using multiple Boolean operators.

Every time you create a search with AND, OR or NOT, you are creating a search statement. If you have more than one search statement in a search box, each statement is read and executed from left to right. Without parentheses, this left to right execution can get confusing. Since Natalie has such a nice list of search terminology, we can take her words and combine them into Boolean searches with nesting.

- “Boundary Waters Canoe Area” AND (PolyMet OR “copper nickel mining”)
- (Ojibwe OR Chippewa OR Anishinaabe) AND (activism OR conservationism OR environmentalism) AND (Minnesota OR Wisconsin)

- water AND pollution AND Minnesota
- (Ojibwe OR Chippewa OR Anishinaabe) AND water
- pollution AND (water OR watershed? OR lake? or river?) NOT "storm water"
- "wild rice cultivation" AND "copper nickel mining"
- "global warming" AND (water OR watershed? OR lake? or river?)
- "copper nickel mining" AND (water OR watershed? OR lake? or river?) AND pollution
- ("walleye harvest" OR spearfishing) AND "Mille Lacs"
- ("water right?" OR "land use right?") AND ("tribal government" OR "Fond du Lac")
- (activis? OR conservationis? OR environmentalis?) AND water AND Minnesota
- "copper nickel mining" AND leach* NOT PolyMet

As you look over the list, you might see some patterns:

1. OR search statements are typically placed in parentheses
2. NOT search statements are typically placed at the end of a search string
3. AND search statements can be placed everywhere

We can look at a nested statement to see how the parenthesis keep search statements behaving properly. Let's look at this complex search string:

*(Ojibwe OR Chippewa OR Anishinaabe)
AND (activis? OR conservationis? OR
environmentalis?)
AND (Minnesota OR Wisconsin)*

The parentheses force all the synonyms or words with similar meaning together. These OR searches become comprehensive search statements that get combined in many different ways. You basically get items with one word from

search statement 1, one word from search statement 2 and 1 word from search statement 3.

Another example is this search string:

*pollution
AND (water OR watershed? OR lake? or river?)
NOT stormwater*

In this example, the parenthesis pulls all the synonyms or words with similar meaning together. The order of the search statements gets read left to rights, so *pollution AND (water OR watershed? OR lake? or river?)* are searched and combined as:

- *pollution + water*

- *pollution + watershed?*
- *pollution + lake?*
- *pollution + river?*

Finally, any item with the term stormwater is filtered out of the search result. Filtering out articles about stormwater should get rid of articles that talk about urban and suburban stormwater runoff problems, which Natalie may see as environmental water problems outside the influence of tribes in Minnesota.

KEY TAKEAWAY

Nesting is represented by parentheses **()**

In general, nesting can be a power logical operator when we use multiple Boolean operators in a search string. When organizing search statements:

- place AND and OR search statements before NOT search statements,
- place all OR statements in parentheses, to keep synonyms or like terminology together,
- read your search statements left to right and see if things make sense.

Putting It All Together

Databases are the primary way researchers access information in an academic library. It is important to understand the features of advanced search interfaces, to help construct advanced searches or refine simple searches within these environments. It is also important to create searches that computers understand, with correct logical operators and relevant terminology to your research topic. Generating a list of relevant terminology for your topic often means you need to do some preliminary research or have some personal experience with the topic you select, both of which helped Natalie create searches and find relevant resources. It is always advisable to do topic development before diving deep into research.

Learning Activities & Resources

Search Terms Worksheet

TOPIC:		
CONCEPT #1	CONCEPT #2	CONCEPT #3
	&	
OR	OR	OR
	&	
OR	OR	OR
	&	
OR	OR	OR
	&	
OR	OR	OR
	&	

4.

GATHER

Finding What You Need

There are many types of information sources. Knowing the differences in sources helps to make research less confusing. Additionally, understanding the information included in citations and works cited can help identify additional sources to help in gathering information.

The PIO 101 learning outcome that aligns with GATHER is:

Students will recognize primary, secondary, and tertiary sources; peer-reviewed sources.

In this chapter:

- GATHER: Understanding and Skills
 - The Information Cycle and The Internet
 - Primary, Secondary , and Tertiary Sources
 - Newspaper Articles
 - Scholarly Journal Articles
 - Books
- Citations, Works Cited, and References
- MLA Style Basics
 - MLA Citation and Works Cited
- Citation and Works Cited Examples
 - Printed Books
 - Academic Journal Articles
 - Webpages
 - Websites
- Conclusion
- Learning Activities & Resources

Real-life Scenario

Harry Dosital is feeling overwhelmed by one of his class assignments. Harry would have been happy if the assignment was to write a traditional research paper but his professor has asked the class to solve a real life problem. The professor has asked the class to imagine a small city undergoing a natural disaster such as a flood or a tornado. Each group in the class is required to plan a hypothetical information command center for this city. The professor explains that the government needs to obtain accurate, up-to-date information on the scope of the damage and injuries sustained due to the disaster. This information is vital for the city to be able to provide adequate emergency and medical assistance to its citizens. Harry can see that this is an important function for any city in the midst of a crisis but he is not sure about where to get reliable information to help him construct a plan for the city.

Harry and his classmates do some brainstorming and decide to approach this assignment as if they were actually producing a research paper. Their first step will be to research recent disasters. They reason that this will provide some information about the way some cities have gathered information during disasters. If an information gathering strategy worked for other cities, it will work for their hypothetical city. There certainly have been a lot of natural disasters recently, so it shouldn't be too hard to find some

information. Super Storm Sandy in 2012 and Hurricane Harvey in 2017 are two events that i come to mind. The group starts to research Super Storm Sandy with Google and Wikipedia.

Harry and his classmates are engaging in the GATHER pillar of the Seven Pillars of Information Literacy model. Just as municipalities needed to gather reliable information in order to provide vital services to their citizens, Harry and his group members need to gather information that will help them complete this assignment.

GATHER: Understanding and Skills

These information needs are components of the GATHER pillar, which states that the information literate individual understands:

- How information and data are organized,
- How libraries provide access to resources,
- The different elements of a citation,
- The use of abstracts,
- The difference between free and paid resources.

They are able to

- Use a range of retrieval tools and resources effectively,
- Access full text information, both print and digital,
- Find personal, expert help.

The Information Cycle and the Internet

Traditionally, information has been organized in different formats, usually as a result of the time it took to gather and publish the information. For example, the purpose of news reporting is to inform the public about the basic facts of an event. This information needs to be disseminated quickly, so it is published daily in print, online, on broadcast television, and radio media. More in-depth treatment of information takes longer to research, write, and publish and traditionally was published in scholarly journals and books.

Today, information is still published in traditional formats as well as on the Internet. These information sources can include electronic journals, books, news websites, blogs, Twitter, Facebook, and location postings. The coexistence of all of these information formats is messy and chaotic. The process for finding relevant information is not always clear.

One way to make some sense out of the current

information universe is to thoroughly understand traditional information formats. We can then understand the concepts inherent in the information formats found online. There are some direct correlations such as books and journal articles, but there are also some newer formats like tweets that didn't exist twenty years ago.

Let's look at the news industry. Many traditional newspapers are shutting down and those that remain are retrenching. While there are many reasons for this, one of the major trends has been the rise of the Internet. In 2021 more than 86 per cent of the US population read the news online (Shearer).

Indeed, online news sites provide a different and, some might argue, a more relevant experience for the reader. They offer video and sound, up-to-the-minute updates on breaking news, and the ability to interact with the content by posting comments. Another important feature of online news is that search engines can deliver content from the site in response to a query. In other words, readers don't have to visit a site such as the New York Times to read its content.

This has both positive and negative consequences. The positive consequence is that readers can quickly and conveniently obtain information from a variety of sources on a topic or event. The negative consequence is that it is more difficult

to evaluate the credibility of the sources. The EVALUATE chapter in this book provides some good strategies for evaluating information sources.

For Harry and his group, all of this means they will have to research many kinds of information resources to create an effective information command center. The group finds there are several types of sources that present information from different perspectives.

Primary, Secondary and Tertiary Sources

When searching for information on a topic, it is important to understand the value of primary, secondary, and tertiary sources. Primary sources allow researchers to get as close as possible to original ideas, events, and empirical research as possible, while Secondary sources analyze, review, or summarize information in primary resources or other secondary resources. Tertiary sources provide overviews of topics by synthesizing information gathered from other resources.

PRIMARY SOURCES

Examples of primary sources include

autobiographies, personal correspondence (e.g., diary entries, letters), government documents, works of art and literature, statistics and data, and newspaper articles written by reporters close to the source. Today, even some social media posts are considered primary sources, because they are firsthand accounts of information.

A member of Harry's group recalled that he had cousins in New York City who experienced Super Storm Sandy firsthand. He offered to interview his cousins about their experiences during the storm. This type of first-person information is known as a primary information or source.

Primary sources can be found in a variety of locations and formats. There are many online sites that have created digitized collections of copies of diaries and letters from historical events. It is important to remember that primary sources are not limited to a single format. You may find them in books, journals, newspapers, email, websites, and artwork. You can quiz yourself on primary sources in a learning activity at the end of this chapter.

KEY TAKEAWAY

A **primary source** is a firsthand or eyewitness account of information by an individual who experienced the event or period being considered or a source containing raw original information that is not interpreted, condensed, or evaluated.

SECONDARY SOURCES

Examples of secondary sources include histories, biographies, interpretation of statistics and data, literary criticism, textbooks, and anything written after an historical event or analyzing something that already happened (e.g., examining a work of art from 100 years ago).

KEY TAKEAWAY

A **secondary source** is a second-hand account by people not experiencing the event or period, containing interpretation, analysis, and/or criticism of the information.

TERTIARY SOURCES

Tertiary sources can be a good place to look up facts or get a general overview of a subject, but they rarely contain original material. Examples include dictionaries and encyclopedias, almanacs, guidebooks, directories, indexes, bibliographies, catalogs, and search engines.

Depending on your research, you may need more primary or secondary sources. For example, if you wanted to trace the history of whale sightings off the coast of Alaska, you would probably need to find some historical documents that provide firsthand information on whale sightings from a

few hundred years ago. However, if you wanted to look at how boating has changed whale migration patterns, you would probably rely on some secondary sources that interpret data and statistics.

KEY TAKEAWAY

A **tertiary source** presents summaries or condensed versions of materials, usually with references back to the primary and/or secondary sources.

Defining a source as primary, secondary, or tertiary can also depend on how you are using the material. For example, a magazine article may be either primary and secondary.

- A magazine article reporting on recent studies linking the reduction of energy consumption to the compact fluorescent light bulb would be a secondary source.
- A research article or study proving such a link would be a primary source.
- However, if you were studying how

compact fluorescent light bulbs are presented in the popular media, the magazine article could be considered a primary source.

The distinctions between primary, secondary, and tertiary sources also can be confusing because different discipline areas may view documents differently and . For example, an individual document may be a primary source in one context and a secondary source in another. (Primary)

In the Humanities and Social Sciences

In the humanities and social sciences, primary sources are the direct evidence or first-hand accounts of events without secondary analysis or interpretation. In contrast, secondary sources analyze or interpret historical events or creative works.

PRIMARY SOURCES	SECONDARY SOURCES	TERTIARY SOURCE
<p>A primary source is an original document containing firsthand information about a topic. Different fields of study may use different types of primary sources, such as diaries, interviews, letters, original works of art, photographs, speeches, or works of literature.</p>	<p>A secondary source contains commentary on or discussion about a primary source. The most important feature of secondary sources is that they offer an interpretation of information gathered from primary sources: biographies, dissertations, indexes, abstracts, journals, articles, or monographs.</p>	<p>A tertiary source presents summaries or condensed versions of materials, usually with references back to the primary and/or secondary sources. They can be a good place to look up facts or get a general overview of a subject, but they rarely contain original material: dictionaries, encyclopedias, or handbooks.</p>

EXAMPLES

Subject	Primary	Secondary	Tertiary
Art	Painting	Critical review of the painting	Encyclopedia article on the artist
History	Civil War diary	Book on a Civil War battle	List of battle sites
Literature	Novel or poem	Essay about themes in the work	Biography of the author

In the Sciences

In the sciences, primary sources are documents that provide full descriptions of the original research. For example, a primary source would be a journal article where scientists describe their research on the genetics of tobacco plants. A secondary source would be an article commenting on, or analyzing the scientists' research on tobacco.

PRIMARY	SECONDARY	TERTIARY
These are where the results of original research are usually first published in the sciences. This makes them the best source of information on cutting edge topics. This includes conference proceedings, interviews, journals, lab notebooks, patents, preprints, technical reports, or theses and dissertations.	These tend to summarize the existing state of knowledge in a field at the time of publication. Secondary sources are good to find comparisons of different ideas and theories and to see how they may have changed over time: books, reviews, textbooks, or treatises.	These types of sources present condensed material, generally with references back to the primary and/or secondary literature. They can be a good place to look up data or to get an overview of a subject, but they rarely contain original material. Tertiary sources include compilations, dictionaries, encyclopedias, handbooks, or tables

EXAMPLES

Subject	Primary	Secondary	Tertiary
Agriculture	Conference paper on tobacco genetics	Review article on the current state of tobacco research	Encyclopedia article on tobacco
Chemistry	Chemical patent	Book on chemical reactions	Table of related reactions
Physics	Einstein's diary	Biography on Einstein	Dictionary of relativity

Newspaper Articles

One of the members of Harry’s group suggested they should consult a newspaper to see what role the newspaper played to help the city understand the destruction caused by the storm. The group chose the *New York Times*. The *New York Times* can be accessed online through Factiva, one of the library’s databases. Few articles from the day of the storm were found. The group found that more useful information was published in the *New York Times* in the days after the storm. Looking for information that was published days, weeks, or months after the storm took place was a good strategy.

Other newspapers can be accessed online or at the library through databases such as Factiva and a few others.

Scholarly Journal Articles

The results of the research that Harry and his group have done are useful, but Harry is concerned that there might be too much focus on Super Storm Sandy. He wants to find more information on crisis and disaster management in general. Harry thinks that there might be general standards or practices that should be incorporated into his group's plan. Journal articles and books might provide this information.

Harry starts his search for journal articles by using a multidisciplinary database because he is not sure which specific disciplines will cover the information he seeks. He constructs and executes a search query and finds that the abstracts included in the results help him choose several peer-reviewed, or scholarly, articles to read.

Key Takeaways (Sidebar)

Peer reviewed articles

undergo a review process carried out by professional researchers, academics and industry experts that checks the accuracy of the information presented in a scholarly article and the validity of the research

Scholarly journal articles usually include an abstract at the beginning of the article. An abstract summarizes the contents of the article. In an abstract, key points as well as conclusions are briefly described. Abstracts are often included in the database record. Researchers find this information helpful when deciding whether or not to retrieve the whole article.

Most of the articles that Harry chooses are available in PDF format from the database, but there are a few articles that look very relevant that don't have links to a PDF. Harry really wants to read these articles so he decides to try to find out if there is another way to obtain the full text. He consults a librarian who instructs him to look for the title of the journal (not the article) in the online catalog. The catalog record will provide information on

whether the journal is available online from another database or if it is available in print in the library. It will also provide information about whether the journal is peer-reviewed, which is a consideration when evaluating sources. (see the EVALUATE chapter for more information)

methods used
to conduct the
research behind
the findings.

Libraries have entered into agreements to share their journal and book collections with other libraries. If you are affiliated with a library as a student, staff, or faculty member, you have access to many other libraries' resources, through a service called interlibrary loan. Do not pay the large sums required to purchase access to articles unless you do not have another way to obtain the material, and you are unable to find a substitute resource that provides the information you need.

Books

Next, Harry's group looks for books on the topic. They search the library's online catalog using search terms that were successful in their database searches. They find some great titles and head to the library stacks to retrieve them.

Most academic libraries use the Library of Congress classification system to organize their books and other resources. The Library of Congress classification system divides a library's collection into 21 classes or categories. A specific letter of the alphabet is assigned to each class. More detailed divisions are accomplished with two and three letter combinations. Bookshelves in most academic libraries are marked with a Library of Congress letter-number combination to correspond to the Library of Congress letter-number combination on the spines of library materials. This is often referred to as a call number and it is noted in the catalog record of every physical item on the library shelves.

Harry uses the call numbers to locate some books that he found in the catalog. He is happily surprised to find that there are also some really useful books sitting on the shelf right next to the books he previously identified. This is a handy way to find additional information resources on a topic. It is more efficient to first search the online catalog to locate relevant resources and then search the shelves.

Library of Congress Classification

- A General Works — includes encyclopedias, almanacs, indexes
- B-BJ Philosophy, Psychology
- BL-BX Religion

- C History — includes archaeology, genealogy, biography
- D History — general and eastern hemisphere
- E-F History — America(western hemisphere)
- G Geography, Maps, Anthropology, Recreation
- H Social Science
- J Political Science
- K Law (general)
- KD Law of the United Kingdom and Ireland
- KE Law of Canada
- KF Law of the United States
- L Education
- M Music
- N Fine Arts — includes architecture, sculpture, painting, drawing
- P-PA General Philosophy and Linguistics, Classical Languages, and Literature
- PB-PH Modern European Languages
- PG Russian Literature
- PJ-PM Languages and Literature of Asia, Africa, Oceania, American Indian Languages, Artificial Languages
- PN-PZ General Literature, English and American Literature, Fiction in English, Juvenile Literature
- PQ French, Italian, Spanish, Portuguese Literature
- PT German, Dutch, and Scandinavian Literature

- Q Science — includes physical and biological sciences, math, computers
- R Medicine — includes health and human sexuality
- S Agriculture
- T Technology — includes engineering, auto mechanics, photography, home economics
- U Military Science
- V Naval Science
- Z Bibliography, Library Science

Citations, Works Cited, and References

As Harry's group starts to read and digest all of the information they have gathered, they notice that many articles and books contain references to other articles and books. Even Wikipedia entries contain references. These consist of citations to resources that authors have quoted or paraphrased in their work or have used to research for their publications. Some of these citations look like they would provide great information. But the group is confused. They don't know if the citation is to a book or an article or something else.

Understanding the basic parts of citations and works cited / references is important during the GATHER pillar, as you search the work of others to

help identify and locate their sources. Knowledge about citations will also be important in the EVALUATE, MANAGE, and PRESENT pillars as you record your research sources and present them in your writing and presentations.

Citations and references can be confusing. **In-text citations** appear in the body of the text and their purpose is to point to additional information at the end of the text.

Works cited/references are added toward the end of the main text as a list. In MLA style this list is called a Works Cited list; in APA style it is called References. The purpose of a works cited/references lists is to supply additional information about sources cited in the work.

The structure and content for citations is different than the structure and content for works cited/references and to make things more confusing, there are many different citation formatting styles that have slightly different rules about the structure of the citation or reference. Plus, there are not many hard and fast rules about when to use a particular style.

PIO 101 and PIO 102 classes

will use MLA style for class assignments.

Your professors in other classes may indicate which citation style you should use. If not, the general rule of thumb is:

- Physical and Social Sciences and Education disciplines use APA (American Psychological Association) citation style
- Humanities and Arts disciplines use MLA (Modern Language Association) or the Chicago style.

It is helpful to know that all citation styles have some things in common, most notably that they contain certain information about a source.

Common elements of a work cited/reference, in all styles, include:

- The author(s) name(s)
- The date of dissemination (printing, posting to a website, presentation given, etc.)
- The title of the work (title of a paper or presentation, webpage title, etc.)
- The title of the distribution channel, such as

the title of the academic journal, website, podcast, video, or other way in which the work was distributed

- Often the company or organization that published or disseminated the source is named, as well

A citation (in the body of the academic paper or other source) is a shortened version of the reference and “refers” to the longer reference information that’s listed above. A citation includes:

- The author(s) name(s)
- OR, If there is no author’s name, a shortened version of the title of the work
- In some styles, the date of dissemination (publication or posting of the work)
- In some styles, the page number where the information is found

This image compares an MLA reference to an APA reference, looking at the same source formatted in both styles.

APA

MLA

vs

What is the topic of your paper?

Physical and Social Sciences and Education disciplines use American Psychological Association style

Humanities and Arts disciplines use Modern Language Association style

COMPARISON

References	Citations
<p>Clugston, R.W. (2014) <i>Journey into literature</i>. San Diego, CAA: Bridgepoint Education, Inc.</p> <p style="font-size: 0.8em; color: #c00000;">Author last name and first initial(s). (Date of publication) Title of publication. Publisher information.</p>	<p>Clugston, R. Wayne. <i>Journey into Literature</i>. Bridgepoint Education, Inc., 2014. Print.</p> <p style="font-size: 0.8em; color: #000080;">Author last name and first name(s). Title of publication. Publisher information. Date of publication. Format.</p>
<p>(Clugston, 2014)</p> <p style="font-size: 0.8em; color: #c00000;">Author last name and date of publication</p>	<p>(Clugston 242)</p> <p style="font-size: 0.8em; color: #000080;">Author last name and page number</p>

Why even bother?

Two easy answers: credibility and honesty.

Credibility. When you acknowledge others' work, you build your own credibility as an informed person. By correctly citing someone else's work, you strengthen your own work by building your ideas, conclusions, and findings on the work of other scholars. When you review the citations of information you find in other people's work during

your research, you also expect them to be credible and use this as one test of whether the information you have found is reliable—more about that in the EVALUATE chapter.

Academic Honesty. Using the work or idea of another person without acknowledging the work belongs to that person—and thereby representing it as your own work—is plagiarism. Plagiarism is a form of theft, since it involves taking the words, ideas, or artwork of others and passing them off as your own. As such, it's academically dishonest and can have serious consequences for students, as well as later, when you are a career professional.

Citations and works cited/references are tools you use to give credit and to avoid dishonesty. They can be helpful in your research, as well, because they can lead you to additional information about your topic that may not have appeared in your initial searches.

When are citations not needed?

Information that is “common knowledge” does not require citation. Common knowledge is information that is accepted and known widely. Generally, if you can find information undocumented in at least five credible sources it would be considered common knowledge. For

example, “writing is difficult,” is considered common knowledge in the field of composition studies because at least five credible sources can back the claim up.

Use common sense and ethics when deciding if you need to document sources. You do not need to give sources for familiar proverbs, well-known quotations, or common knowledge. (For example, it is expected that U.S. citizens know that George Washington was the first President.)

Where to find help with citations and works cited/references

Next, we will review formatting basics for MLA style, but there are several sources of help if you need detailed information about how to format a citation or reference in any of these styles. One helpful website, Purdue OWL, is available online at <https://owl.purdue.edu>. There are several other authoritative sites available, and you can also obtain guidance on formatting citations at the Marietta College Writing Center or help from the reference librarians at Legacy Library, who can guide you to the most recent copy of the MLA Handbook for Writers of Research Papers, the latest Publication Manual of the American Psychological Association, for APA citations, or the current Chicago Manual of Style.

MLA Style Basics

Because your PIO 101 and 102 classes, as well as WRIT 101 and 102, will expect you to use MLA, this section will focus on common uses of MLA style. In MLA Style, referring to the works of others in your text is done using parenthetical citations. This method involves providing relevant source information in parentheses whenever a sentence uses a quotation or paraphrase. Any source information that you provide in-text must correspond to the source information on the Works Cited page.

The most common formats that you will encounter are books, journal articles, and websites, so an example of each will be shown below as a reference and an in-text citation.

MLA Citations & Works Cited

CITATION FORMAT:

For printed material, like books or journal articles, the author's last name and the page number(s) from which the quotation or paraphrase is taken must appear in the citation, in parentheses before the end of sentence punctuation. A complete reference for the source should appear on your Works Cited page.

Romantic poetry is characterized by the “spontaneous overflow of powerful feelings” (Wordsworth 263).

If the author’s name appears in the sentence itself, it does not need to be included in parentheses, but the page number(s) should always appear in the parentheses, not in the text of your sentence.

Wordsworth extensively explored the role of emotion in the creative process (263).

For other types of sources, the citation may include other information. For example, a webpage source would not have page numbers, and the author’s name may not be known. In that case you should include the first item that appears in the Works Cited entry that corresponds to the citation (e.g. author name, article name, website name, film name).

Below are examples of citations for some different types of sources you may encounter. When you find a source that is not included here, refer to the sources listed above for help.

WORKS CITED FORMAT:

If readers want more information about a source cited in the text, as above, they can turn to the Works Cited page, where further information about the source is included. What information is included and the format depends on the type of source.

For a book, a reference would include:

Last Name, First Name. *Title of Book*. Publisher, Publication Date.

Wordsworth, William. *Lyrical Ballads*. Oxford UP, 1967.

**Note: the City of Publication should be included before the Publisher only if the book was published before 1900, if the publisher has offices in more than one country, or if the publisher is unknown in North America.*

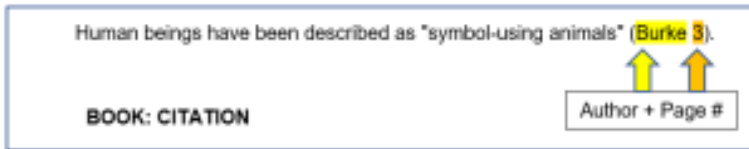
MLA Citation and Works Cited Examples

In this section examples of the parenthetical citation and the corresponding work cited are included for some commonly used sources.

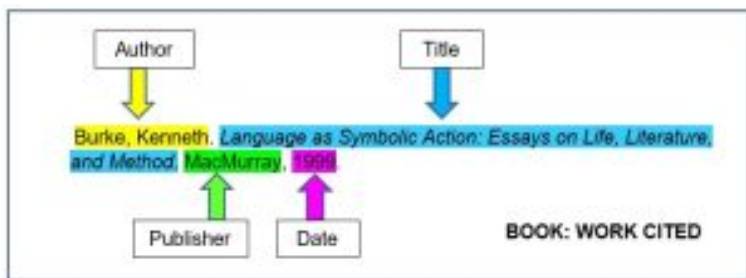
Printed Books

When citing information from a printed book include the author and the page number where the information was found. In the corresponding work cited, include the author's name, the title of the book in italics, the name of the publisher (which can be found in the front pages of the book) and the date it was published.

In-text, parenthetical citation



Corresponding Works Cited reference



Variations

- When a book has two authors, order the authors in the same way they are presented in the book. (Example: Gillespie, Paula, and Neal Lerner.)
- If there are three or more authors, list only the first author followed by the phrase et al. (Example: Wysocki, Anne Frances, et al.)

If the book is electronic, indicate that the book is an e-book by putting the term "e-book" before the publisher, separated by a comma. Example:

Silva, Paul J. *How to Write a Lot: A Practical Guide to Productive Academic Writing*. E-book, American Psychological Association, 2007.

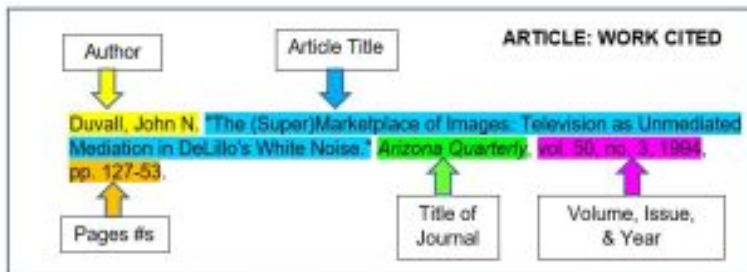
Academic Journal Articles

Cite the author and page number as you would for a book. Then, in the work cited, put the title of the article followed by the title of the journal in italics. Include the volume number ("vol.") and issue number ("no.") when possible, separated by commas. Finally, add the year and page numbers on which the articles appears.

In-text, parenthetical citation



Corresponding Work Cited Reference



Variations:

- If the journal you are citing appears in an online format, indicate the URL or other location information (DOI) AND the date you accessed the online version. Example:

Dolby, Nadine. "Research in Youth Culture and Policy: Current Conditions and Future Directions." *Social Work and Society: The International Online-Only Journal*, vol. 6, no. 2, 2008, www.socwork.net/sws/article/view/60/362. Accessed 20 May 2009.

*If it is available both online and in print, include page range.

- If the article is from an online database include the source (e.g. LexisNexis, ProQuest, JSTOR, ScienceDirect) Example:

Langhamer, Claire. "Love and Courtship in Mid-Twentieth-Century England." *Historical Journal*, vol. 50, no. 1, 2007, pp. 173-96. ProQuest, <https://doi.org/10.1017/S0018246X06005966>. Accessed 27 May 2009.

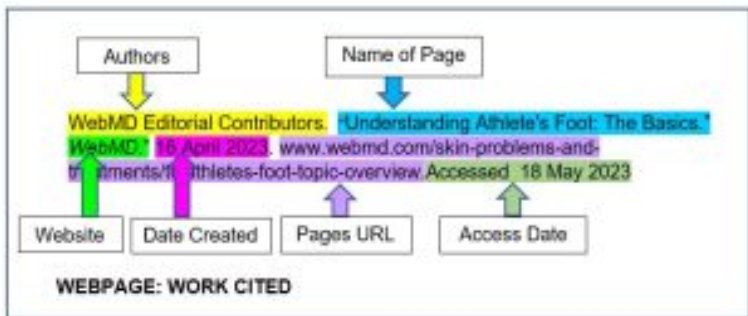
Webpages

For an individual page or a website, list the author or alias if known, followed by an indication of the specific page or article being referenced. Usually, the title of the page or article appears in a header at the top of the page. In the citation you can use a “signal word” that identifies the corresponding work cited in a shorter form.

In-text, parenthetical citation



Corresponding Work Cited Reference



Variations:

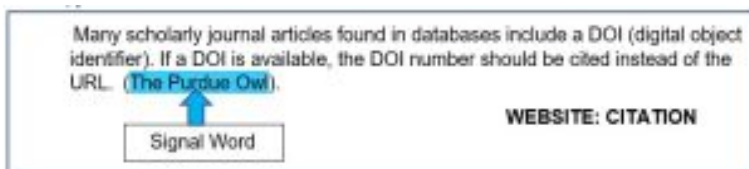
- If the author isn't known, begin with the name of the page.

- If a DOI is available, precede it with "https://doi.org/", otherwise use a URL (without the https://) or permalink.
- The title of the webpage or article title is laced in quotation marks and the name of the website is in italics.

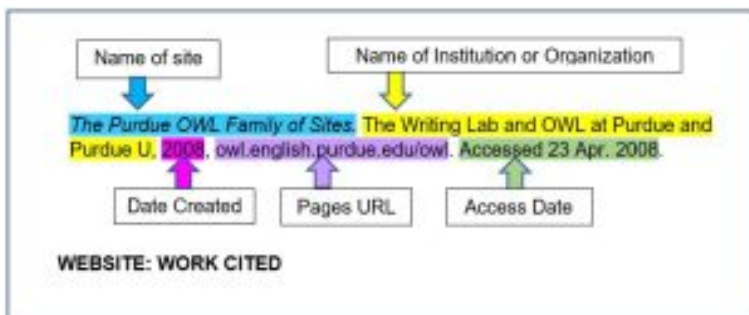
Website

When citing an entire website, include the website name and a compiler or author name if available.

In-text, parenthetical citation



Corresponding Work Cited Reference



Variations:

- If the compiler isn't known, begin with the name of the site.
- Online newspapers and magazines sometimes include a "permalink," which is a shortened, stable version of a URL. Look for a "share" or "cite this" button to see if a source includes a permalink. If you can find a permalink, use that instead of a URL.
- The title of the webpage or article title is placed in quotation marks and the name of the website in italics.

CONCLUSION

Harry and his classmates have spent time gathering information to help them create a realistic and accurate crisis command center. They used online newspapers and online journal articles. They even gathered some very useful hard copy books. During this process, the students learned about different ways that information is organized, including the Library of Congress classification system. Harry was amazed at the wealth of quality information he was able to gather. It took him a while and the process was more complicated than just searching the web, but Harry now feels more confident about acing the assignment. He also feels that he learned more than how to set up a command center. He learned how to engage in academic research!

LEARNING ACTIVITIES & RESOURCES



Quiz: Primary Sources

1, Where would you find a speech by Franklin Delano Roosevelt in which he said, "The only thing we have to fear is fear itself."?

- A. Web site of Presidential Speeches
- B. Newspaper article dated Oct. 29, 1941
- C. A print publication titled "Vital Speeches of the Day," which has been published since 1934
- D. All of the above

2, Which of the following sources is the most likely to contain an interview with Steven Spielberg about his film "Lincoln," produced in 2012?

- A, Article from a news magazine dated November 23, 2012
- B. A blog written by a fan of Steven Spielberg

- C. IMDb –A large online database of movie and television information
 - D. All of the above
3. Which source would have the original copy of a diary written a woman who lived in Tennessee during the Civil War?
- A. The Library of Congress American Memory Project web site
 - B. The Southern Historical Collection, University of North Carolina at Chapel Hill
 - C. Local public library's collection
 - D. All of the above
4. Which of the following is a primary source?
- A. A review of the film "Lincoln" by Steven Spielberg
 - B. A nonfiction book about the Civil War titled *The Fall of the House of Dixie : The Civil War and the Social Revolution that transformed the South*
 - C. The Facebook privacy policy
 - D. A reporter's article about an event that happened yesterday, written from information gathered from bystanders

5.

EVALUATE

Assessing Your Research Process and Findings

Most students struggle to find time to do everything. Researching an academic paper could be the kind of time-consuming process that pushes them over the edge. Professors have high standards for the kinds of resources they want students to use and they expect students to cite information and use information in the right context. This chapter covers two important, but sometimes time consuming, steps in the research process: evaluation and analysis.

Evaluating and analyzing resources matter when you need information to make important decisions or evidence-based conclusions. These skills help you judge the reliability of resources and put those resources into action. While these skills are emphasized in academic research, they are equally useful to students making important personal decisions.

There are shortcuts to evaluation and analysis, which can save you time and effort. One big time

saver is to use the academic library. The resources you find in databases and on shelves have been placed there by a librarian, so these resources have already been evaluated to a certain extent. Using academic resources can also save time when you start reading and analyzing the text. Traditional academic publishing required standard formatting that has carried through to the digital age. You can use this formatting to your advantage.

This chapter will explain the concepts behind evaluating and analyzing resources. It will also outline processes and guiding questions you can use to do evaluation or analysis effectively.

The PIO 101 learning outcome that aligns with EVALUATE is:

Students will be able to evaluate sources for credibility, relevance, and accuracy.

In this chapter:

- EVALUATE: Understanding and Skills

- Distinguishing Between Information Resources
 - Social Media
 - News Articles
 - Magazine Articles
 - Scholarly Articles
 - Books
- STEP 1: Choosing Materials
 - Quzility
 - Acuracy
 - Relevance
 - Bias
 - Reputation
 - Credibility
 - Evaluating your source's source
- STEP 2: Identifying Key Points and Arguments
 - Table of Contents
 - Reading a scholarly article
- STEP 3: Analyzing Information Resources
- Knowing When to Stop
- Applying Theory to Practice
- Conclusion
- Learning Activities & Resources

EVALUATE: Understanding and Skills

The EVALUATE pillar states that individuals are able to review the research process and compare and evaluate information and data. It encompasses important knowledge and abilities.

The information literate person in the EVALUATE pillar understands:

- The information and data landscape of their learning/research context,
- Issues of quality, accuracy, relevance, bias, reputation and credibility relating to information and data sources,
- How information is evaluated and published, to help inform their personal evaluation process,
- The importance of consistency in data collection,
- The importance of citation in their learning/research context.

They are able to

- Distinguish between different information resources and the information they provide,
- Choose suitable material on their search topic, using appropriate criteria,
- Assess the quality, accuracy, relevance, bias, reputation and credibility of the information resources found,
- Assess the credibility of the data gathered,
- Read critically, identifying key points and arguments,
- Relate the information found to the original search strategy,
- Critically appraise and evaluate their own findings and those of others,

- Know when to stop.
-

Real-life Scenario

Emilio has resolved to eat healthier and work out more. He just finished his first year of college and is not ready for the summer soccer season. As a nursing student, Emilio took a required nutrition course and he thinks he has the basics down. However, he feels his course work did not fully address diets for athletes with performance goals. In addition, he wants to develop a workout routine that he can maintain during the school year.

While writing a paper for the required nutrition course, Emilio learned about the health and science databases in his college library. He knows there are a lot of fad diets and “get pumped quickly” workouts on the web and he does not want to waste his time on gimmicks. He has been collecting interesting nutrition articles shared through his social media networks and he is following several fitness instructors on Instagram. Emilio is a bit intimidated, but he is going to take his research to the next level. He is going to see if the articles he found through social media are using evidence-based practice. He is going to start building his nutrition and workout plan today.

Distinguishing Between Information Resources

Information is published in a variety of formats, each with its own special considerations when it comes to evaluation. Consider the following formats.

Social Media

Social media is prominent in the landscape of information gathering. Facebook updates, Instagram posts, tweets, wikis, Tik Toks, YouTube, and blogs have made information creators of us all. These platforms have a strong influence on the way we gather and disseminate information. Social media is often the first place we learn about current events or discover new items of interest. Anyone can create or contribute to social media, and there are no

Key Takeaway

So, do people really use social media for research? Yes, there are some ways in which social media may be of value as a source of

information,
but it needs to
be evaluated
carefully.

gatekeepers to fact check for accuracy or censor slanderous or hateful speech.

Information Scientists might use social media for the aggregate data that is collected from users to gain insights, but this requires special training. Most other

academics use social media as primary source accounts of the human experience around historic events or social phenomena. You might look for the social media posts of the politically powerful, intellectually important or socially influential to gain their insights. Eyewitness accounts and reactions may also be important sources of information for context.

News Articles

These days, social media platforms are the first place many people get information about a big news story. News media often post to social media as they learn new facts and insights. Longer form news articles and reports are generated quickly as the story progresses. News articles are written by journalists who report on an event they have witnessed firsthand, or after they make contact with those more directly involved. Journalists focus on information that is of immediate interest to the public and they write so that a general audience can understand the content.

Key Takeaway

News articles go through a fact checking process, but when a story is big and the goal is to inform readers of urgent or timely information, inaccuracies may occur.

In research, news articles are often best treated as primary sources, especially if they were published immediately after a current event.

Magazine Articles

Key Takeaway

A magazine article is considered a popular resource rather than a scholarly one, which gives it less weight in academic research but doesn't take away the value completely.

While news articles and social media tend to concentrate on what happened, how it happened, who it happened to, and where it happened, magazine articles tend to explore *why* something happened, usually with the benefit of a little hindsight. Writers of magazine articles also fall into the journalist category and rely heavily on investigation and interviews for research. Fact-checking in magazine articles tends to be more accurate because magazines publish less frequently than news media, so they have more time to get the facts right. Depending on the focus of the magazine, articles may cover current events or just

items of general interest to the intended audience. The language may be more emotional or dramatic than the factual tone of news articles, but the

articles are written at a similar reading level to appeal to the widest audience possible. Magazines can be a more accessible resource to explore why something happened.

Scholarly Articles

Scholarly articles are written by and for experts in an academic field of study. They typically describe formal research studies or experiments conducted to provide new insight on a topic rather than reporting current events or items of general interest. You may have heard the term “peer review” in relation to scholarly articles. Peer reviewed articles undergo a review process carried out by professional researchers, academics and industry experts. This group checks the accuracy of the information presented in a scholarly article and the validity of the research methods used to conduct the research behind the findings.

Key Takeaway

The peer review process adds a level of credibility to scholarly articles that you would not find in a magazine or news article.

Scholarly articles tend to be long and feature specialized language that is meant for an expert audience. They provide the framework for researchers and scholars to build new original research projects. Scholarly articles carry a lot of weight in academic research and professors often require their use in undergraduate assignments.

Books

Key Takeaway

Most academic books come out of traditional publishers with editorial review still in place.

Books have been a staple of academic research since Gutenberg invented the printing press. A research topic can be covered more deeply in a book than most other information sources. Also, the conventional wisdom for books is that anyone can write one, but only the best ones get published. This is becoming less true as books are published in a wider variety of formats, which is

something to be aware of when using a book for research purposes. Research in the humanities, which include academic disciplines such as literature and history, is primarily published in this format.

STEP 1: Choosing Materials

When choosing a source for your research, what criteria do you usually use? Gauging whether the source relates to your topic at all is probably one. How high up it appears on the results list when you search may be another. Beyond that, you may base your decision at least partly on how easy it is to access.

While these may be important criteria, there are other criteria you should keep in mind when deciding if a source will be useful to your research.

Quality

Clues to a source's level of quality are closely related to thinking about how the source was produced, including what format it was published in and whether it is likely to have gone through a formal editing process prior to publication.

Scholarly journals and books are traditionally considered to be higher quality information sources because they have gone through a more thorough editing process that ensures the quality of their content. Generally, you also pay more to access these sources or may have to rely on a library or university to pay for access for you.

Accuracy

A source is accurate if the information it contains is correct. Sometimes it's easy to tell when a piece of information is simply wrong, especially if you have some prior knowledge of the subject. But if you're less familiar with the subject, inaccuracies can be harder to detect, especially when they come in subtler forms such as exaggerations or inconsistencies.

To determine whether a source is accurate, you need to look more deeply at the content of the source, including where the information in the source comes from and what evidence the author uses to support their views and conclusions. It also helps to compare your source against another source.

Relevance

Does the source relate to your topic and, if it does, how closely does it relate? Some sources may be an exact match; for others, you may need to consider a particular angle or context before you can tell whether the source applies to your topic. When searching for relevant sources, you should keep an open mind—but not too open. Don't pick something that's not really related just because it's on the first page or two of results or because it sounds good.

You can assess the relevance of a source by comparing it against your research topic or research question. Keep in mind that the source may not need to match on all points, but it should match on enough points to be usable for your research beyond simply satisfying a requirement for an assignment.

Bias

An example of bias is when someone expresses a view that is one-sided without much consideration for information that might negate what they believe. Bias is most prevalent in sources that cover controversial issues where the author may attempt to persuade their readers to one side of the issue without giving fair consideration to the other side of things. If the research topic you are using has ever been the cause of heated debate, you will need to be especially watchful for any bias in the sources you find.

Bias can be difficult to detect, particularly when we are looking at persuasive sources that we want to agree with. If you want to believe something is true, chances are you'll side with your own internal bias without consideration for whether a source exhibits bias. When deciding whether there is bias in a source, look for dramatic language and images, poorly supported evidence against an opposing viewpoint, or a strong leaning in one direction.

Reputation

What is the reputation of the author and the publication in which the source appears? Is the author a professor? A blogger? If the author is a professor, are they respected in their field or is their work heavily challenged?

Digging a little deeper to find out what you can about the reputation of both the author and the publication can go a long way toward deciding whether a source is valuable.

You can investigate the reputation of an author by looking at any biographical information that is available as part of the source. Looking to see what else the author has published and whether this information has positive reviews is also important in establishing whether the author has a good reputation. The reputation of a publication can also be investigated through reviews, word-of-mouth by professionals in the field, or online databases that keep track of statistics related to a journal's credibility.

Credibility

Is the source believable or trustworthy based on the evidence such as information about the author, the reputation of the publication, how well “put together” the source is – these factors all

contribute to whether a source has credibility. How likely would you be to use a source that was written by someone with no expertise on a topic or a source that appeared in a publication that was known for featuring low quality information? What if the source was riddled with spelling and formatting errors? Looking at sources like these should inspire more caution.

Objectively, credibility can be determined by taking into account all of the other criteria discussed for evaluating a source. Knowing that some types of sources, such as scholarly journals, are generally considered more credible than others, such as self-published websites, may also help. Subjectively, deciding whether a source is credible may come down to a gut feeling. If something about a source doesn't sit well with you, you may decide to pass it over.

Evaluating your source's sources

Evaluating the sources you use for quality, accuracy, relevance, bias, reputation, and credibility is a good first step, but have you ever thought about evaluating the sources used by your own sources? This takes extra time, but looking at the reference list, bibliography, or notes section of any source you use to gauge the quality of the research done by the author of that source can be an important extra step.

STEP 2: Identifying Key Points and Arguments

Evaluating information about the source from its title, author, and summary information is only the first step. The process continues when you begin to read the source in more detail and make decisions about how (or whether) you will ultimately use it for your own research.

Many academic sources of information are created with standard formatting guidelines that make it easier for users to browse and understand quickly. When you begin analyzing your resource, pay close attention to the following features of a book or article. Quickly scanning these parts of the resource can help you determine if the resource is worth pursuing further.

Introductions, Forwards, Prefaces, Abstracts

The purpose of the introduction to any piece that has one is to give information about what the reader can expect from the source as a whole. They hint at what the author is trying to accomplish with their book or article. Abstracts in particular will detail research methods used and ultimate conclusions in a scholarly article. Introductory sections can include information on why the topic

was chosen, the author's interest in the topic, why the topic is important, or the lens through which the topic will be explored. Knowing this information before diving in to the article or book will help you understand the author's approach to the topic and how it might relate to the approach you are taking in your own research. These sections might also help you evaluate the author.

Table of Contents / Menu

Most of the time, if your source is a book or an entire website, it will be divided into sections that each cover a particular aspect of the overall topic. It may be necessary to read through all of these sections in order to get a "big picture" understanding of the information being discussed or it may be better to concentrate only on the areas that relate most closely to your own research. Looking over the table of contents or menu will help you decide whether you need the whole source or only pieces of it.

References, Bibliographies, Works Cited, Footnotes and Endnotes

If the resource you are using is research-based, it should list out the sources of information. Sources of information can be found within the work, these

are typically footnotes, endnotes, in-text citations or references. Academic books and scholarly journal articles usually have bibliographies or works cited pages at the end of the work, where all the sources of information used in the work can be found. This large list of sources can give you a big picture view of the research the author engaged in. Some academic books list out the sources in bibliographies or works cited pages at the end of each chapter.

Newspaper and magazine articles typically mention their sources of information in the narrative of their work. That makes it a little more difficult to track down exact reports, studies or research referenced. If the newspaper or magazine article is web based, hyperlinking is a newer approach to creating in-text references for the readers to look into. If you really like what an author has to say in their book or article, the references can lead you to other relevant articles, books, reports or people to look into. This is called mining the bibliography.

Reading a scholarly article

Academic (and in particular, scientific) writing is not like other types of writing you may have encountered in the past. Academic writing tends to be information-dense, and therefore effective academic reading is hard work. This is due in part to the fact that when scholars write for an

academic audience, they can assume a different level of preparation on the part of their readers than someone who is writing a book or article for more general consumption.

LEARNING ACTIVITIES & RESOURCES *at the end of this chapter*

To help you identify key points and arguments in an academic paper, review the resource “**How to Read a Paper**”

STEP 3: Analyzing Information Resources

Once you have identified relevant articles, books, websites and sections of books, you need to do a more in-depth analysis of your resources. Analysis can help you find answers to your research questions, solutions to your problems, and logical arguments to organize your thoughts. This examination of specific resources is the most time-

Key Takeaway

Keep in mind that the overall goal of analysis is not just to

present a collection of gathered evidence. The goal is to strategically gather evidence that will answer your research question.

consuming part of your research process because it requires careful reading of your resources. Often this examination is done while you are developing your final research project. To do this effectively, you need to take time to read and examine resources.

Knowing When to Stop

For some researchers, the process of searching for and evaluating sources is a highly enjoyable, rewarding part of doing research. For others, it's a necessary evil on the way to constructing their own ideas and sharing their own conclusions. Whichever end of the spectrum you most closely identify with, here are a few ideas about the ever-important skill of knowing when to stop.

- **You've satisfied the requirements for the assignment and/or your curiosity on the topic.**
 - If you're doing research as part of a course assignment, chances are you've

been given a required number of sources. Novice researchers may find this number useful to understand how much research is considered appropriate for a particular topic. However, a common mistake is to focus more on the number of sources than on the quality of those sources. Meeting that magic number is great, but not if the sources used are low quality or otherwise inappropriate for the level of research being done.

- **You have a deadline looming.**
 - Nothing better inspires forward motion in a research project than having to meet a deadline, whether it's set by a professor, an advisor, a publisher, or yourself. Time management skills are especially useful, but since research is a cyclical process that sometimes circles back on itself when you discover new knowledge or change direction, planning things out in minute detail may not work. Leaving yourself enough time to follow the twists and turns of the research and writing process goes a long way toward getting your work in when it's expected.
- **You need to change your topic.**
 - You've been searching for information on your topic for a while now. Every search seems to come up empty or full of irrelevant information. You've brought your case to a research expert, like a librarian, who has given advice on how to

adjust your search or how to find potential sources you may have previously dismissed. Still nothing. It could be that your topic is too specific or that it covers something that's too new, like a current event that hasn't made it far enough in the information cycle yet. Whatever the reason, if you've exhausted every available avenue and there truly is no information on your topic of interest, this may be a sign that you need to stop what you're doing and change your topic. If you are working on an assignment for class, you should discuss a change of topic with your professor.

- **You're getting overwhelmed.**
 - The opposite of not finding enough information on your topic is finding too much. You want to collect it all, read through it all, and evaluate it all to make sure you have exactly what you need. But now you're running out of room on your flash drive, your Dropbox account is getting full, and you don't know how you're going to sort through it all and look for more. The solution: stop looking. Go through what you have. If you find what you need in what you already have, great! If not, you can always keep looking. You don't need to find everything in the first pass. There is plenty of opportunity to do more if more is needed!

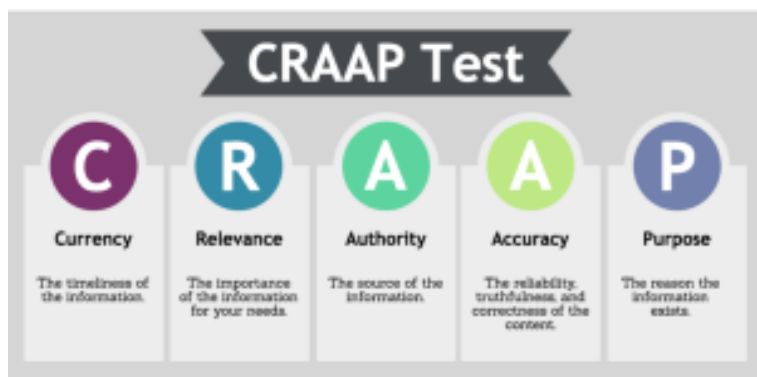
Applying Theory to Practice

Evaluation is arriving at a conclusion of the quality of something (whatever research you're using).

Analysis is the in-depth study of the material to better understand the information being presented. Evaluation is subjective; analysis is objective.

Now that you know more about the theory, it's time to apply the theory.

The following section will help you put source evaluation into perspective using something called the CRAAP Test. The CRAAP Test is a list of questions to help you evaluate the information you find. Not all criteria apply equally to all articles but will give you confidence that your sources meet the expectations of your assignment. (Evaluating)



(Research Guides)

The CRAAP test is a series of common evaluative elements you can use. The test was developed by librarians at California State University at Chico and it gives you a good, overall set of elements to look for when evaluating a resource. Let's consider what each of these evaluative elements means.



CURRENCY: Assessing currency understanding the importance of timely information means the

Certain topics require you to pay special attention to how current your resource is—because they are time sensitive, because they have evolved so much over the years, or because new research comes out on the topic so frequently.

- When was the information published or posted?
- Has the information been revised or updated?
- Does your topic require current information, or will older sources work as well?
- WEB SOURCE: Are the links functional?



RELEVANCE:
importance of the
information for your
specific needs.

Understanding what resources are most applicable to your subject and why they are applicable can help you focus and refine your thesis. Many topics are broad and searching for information on them produces a wide range of resources. Narrowing your topic and focusing on resources specific to your needs can help reduce the piles of information and help you focus in on what is truly important to read and reference.

- Does the information relate to your topic or answer your question?
- Who is the intended

audience?

- Is the information at an appropriate level (i.e. not too elementary or advanced for your needs)?
- Have you looked at a variety of sources before determining if this is one you will use?
- Would you be comfortable citing this source in your research paper?



AUTHORITY: Authority is the source of the information—the author’s purpose and what their credentials and/or affiliations are.

Understanding more about your information’s source helps you determine when, how, and where to use that information. Is your author an expert on the subject? Do they have some personal stake in the argument they are making? What is the author or information producer’s background?

- Who is the author / publisher / source / sponsor?
- What are the author’s

credentials or organizational affiliations?

- What qualifies the author to write about this topic?
- What affiliations does the author or organizational affiliate have? Could these affiliations affect their position?
- What organization or body published the information? Is it authoritative? Does it have an explicit position or bias?
- WEB SOURCE: Does the URL reveal anything about the author or source? examples: .com .edu .gov .org .net



ACCURACY: Accuracy is the reliability, truthfulness, and correctness of the content.

Determining where information comes from, if evidence supports the information, and if the information has been reviewed or refereed can help you decide how and whether to use a source.

- Where does the information come from?
- Is the information supported by evidence? Is the source well-documented? Does it include footnotes, citations or a bibliography?
- Can you verify any of the information from another source or from personal knowledge?
- Has the information been reviewed or refereed?
- Does the language or tone seem unbiased and free of emotion?
- Is the information written clearly and free of typographical and grammatical mistakes?
- Does the source look to be edited before publication?
- WEB SOURCE: Is the information crowd sourced or vulnerable to changes by other authors, i.e. Wikipedia or other public wiki?



PURPOSE: Purpose is the reason the information exists—determine if the information has clear intentions or purpose and if the information is fact, opinion, or propaganda.

- What is the author's purpose? Is it to inform, teach, sell, persuade, or entertain?
- Do the authors / sponsors make their intentions or purpose clear?
- Is the information fact, opinion, or propaganda?
- Is the article presented from multiple points of view?
- Are there political, ideological, cultural, religious, institutional or personal biases?
- Is the information clearly supported by evidence?

LEARNING ACTIVITIES & RESOURCES at the
end of this chapter

- ***Exercises 5A-5E*** can help you practice using CRAAP.
- **CRAAP Test Evaluation Rubric:** When you search for sources for a project, you're going to find a lot of information...but is it credible and reliable? Use this guide to help you determine this for yourself.

Conclusion

Emilio has a clear goal for his research and a good understanding of the information environment he lives in. He is willing to accept that information from his personal social networks should be verified by academic experts. Emilio is capable of developing an excellent nutrition and workout plan. However, a lot depends on his willingness to engage in evaluating and analyzing his resources.

Learning Activities & Resources

Exercise 5A: Assess Currency

Imagine you are writing a paper for a Political Science class on Japan's environmental policy since the Kyoto Treaty. Identify one resource that you would find helpful in your research, and one resource that you would find less helpful. Write one sentence explaining why you would or would not use each resource, paying special attention to the currency of each item.

Exercise 5B: Find Relevant Sources

You are researching a paper where you argue that vaccinations have no connection to autism. Which of these resources would you consider relevant? Why or why not?

Hviid, Anders, Michael Stellfield, Jan Wohlfart, and Mads Melbye. "Association Between Thimerosal-Containing Vaccine and Autism." *Journal of the American Medical Association* 290, no. 13 (October 1, 2003): 1763–1766.
<http://jama.jamanetwork.com/article.aspx?articleid=197365>

Chepkemai Maina, Lillian, Simon Karanja, and Janeth Kombich. "Immunization Coverage and Its Determinants among Children Aged 12–23 Months in a Peri-Urban Area of Kenya." *Pan-African Medical Journal* 14, no.3 (February 1, 2013). <http://www.panafrican-med-journal.com/content/article/14/3/full/>

Exercise 5C: Identify Authoritative Sources

The following items are all related to a research paper on women in the workplace. Write two sentences for each resource explaining why the author or authors might or might not be considered authoritative in this field:

Carvajal, Doreen. "The Codes That Need to Be Broken." *New York Times*, January 26, 2011, http://www.nytimes.com/2011/01/27/world/27iht-rules27.html?_r=0

Sheffield, Rachel. "Breadwinner Mothers: The Rest of the Story." *The Foundry Conservative Policy News Blog*, June 3, 2013. <http://blog.heritage.org/2013/06/03/breadwinner-mothers-the-rest-of-the-story>

Baker, Katie J.M. "Your Guide to the Very

Important Paycheck Fairness Act.” Jezebel (blog), January 31, 2013, <http://jezebel.com/5980513/your-handy-guide-to-the-very-important-paycheck-fairness-act>

Exercise 5D: Find Accurate Sources

Which of the following articles are peer reviewed? How do you know? How did you find out? Were you able to access the articles to examine them?

1. Coleman, Isobel. “The Global Glass Ceiling.” *Current* 524 (2010): 3–6.
2. Lang, Ilene H. “Have Women Shattered the Glass Ceiling?” Editorial, *USA Today*, April 14, 2010, http://usatoday30.usatoday.com/news/opinion/forum/2010-04-15-column15_ST1_N.htm?csp=34
3. Townsend, Bickley. “Breaking Through: The Glass Ceiling Revisited.” *Equal Opportunities International* 16, no. 5 (1997): 4–13.

Exercise 5E: Identify Information Purpose

Take a look at the following sources. Why do you think this information was created? Who is the creator?

- <http://www.chevron.com/globalissues/climatechange/>
- <http://www.beefnutrition.org/>
- Fahrenheit 911—Movie.
<http://www.imdb.com/title/tt0361596/>
- Lydall, Wendy. *Raising a Vaccine Free Child*. Inkwazi Press, 2009
- <http://www.nwf.org/What-We-Do/Protect-Habitat/Gulf-Restoration/Oil-Spill/Effects-on-Wildlife.aspx>
- <http://zapatopi.net/treeoctopus/>
- Owen, Mark and Kevin Maurer. *No Easy Day: The Firsthand Account of the Mission That Killed Osama Bin Laden*. New York: Penguin, 2012.



Find the following
resources in the Supplementary
Material chapter.

How to Read a Paper: A guide to reading academic papers.

What is a Scholarly Article? Ways to determine if your article is scholarly and/or peer reviewed.

CRAAP Test Evaluation Rubric: When you search for sources for a project, you're going to find a lot of information...but is it credible and reliable? Use this guide to help you determine this for yourself. Give the source a score based on this point system. Is it credible and reliable or a bunch of ...?

6.

MANAGE

Organizing Information Effectively and Ethically

Now that you have gone through the processes involved to find and evaluate information, the next step is to start working with it. This is where the MANAGE pillar comes in; it focuses on the need to organize information professionally and ethically.

The PIO 101 learning outcome that aligns with MANAGE is:
Students will understand plagiarism and academic dishonesty policies.

In this chapter:

- MANAGE: Understanding and Skills
- Academic Dishonesty

- Intellectual Property
- Unintentional Plagiarism
 - Real World Cases
- What is Plagiarism?
- Keeping Track of Bibliographic Information
 - Reference Management Software
- When to Cite Sources
 - Citation Styles
 - Citation Generator Software
- Where to Go for Help
- Ethical Issues and Intellectual Property
- Learning Activities & Resources

MANAGE: Understanding and Skills

A person proficient in the MANAGE pillar organizes and uses information ethically.

Individuals understand:

- Their responsibility to be honest in all aspects of information handling and dissemination (e.g. copyright, plagiarism, and intellectual property issues),
- The need to adopt appropriate data-handling methods,
- The role they play in helping others in information seeking and management,
- The need to keep systematic records,
- The importance of storing and sharing

- information and data ethically,
- The role of professionals, such as data managers and librarians, who can advise, assist, and support with all aspects of information management.

They are able to:

- Use bibliographical software if appropriate to manage information,
- Cite printed and electronic sources using suitable referencing styles,
- Create appropriately formatted bibliographies,
- Demonstrate awareness of issues relating to the rights of others including ethics, data protection, copyright, plagiarism, and any other intellectual property issues,
- Meet standards of conduct for academic integrity,
- Use appropriate data management software and techniques to manage data.

Real-life Scenario

Jackie was working on her 10-page research paper at the last minute. It was 3:30 am and her paper was due in class at 9:00 am. She finished the last sentence at 5:15 am, did a spellcheck and voila! Done! Groggy yet awake, she went to class, turned in the paper and

waited for her grade. She received an email from her professor that read, "There are some major issues with your research paper that I need to discuss with you. Please see me." Uh oh. What could it be?

When she nervously went to see him, Professor Muntz told Jackie that she hadn't cited any of her sources, and because she included a lot of direct quotes in her paper, she was guilty of plagiarism. She received an F on her paper and may be referred to the school administration for academic dishonesty.

Was she really guilty of something that bad? In fact, yes she was. In this chapter we will discuss the importance of managing your information sources and some tips on how to easily and effectively avoid Jackie's pitfall.

Academic Dishonesty

In this chapter you will learn more about plagiarism, which occurs when a writer deliberately uses someone else's language, ideas, or other original (not common-knowledge) material without properly acknowledging its source. Plagiarism is often enemy number one when it comes to academic success involving research and writing. But there are other issues under the larger umbrella of academic dishonesty.

Every academic institution has a set of academic regulations that explain what is expected of students. Students are required to make themselves familiar with these rules.

The Marietta College catalog states:

“Dishonesty within the academic community is a very serious matter, because dishonesty destroys the basic trust necessary for a healthy educational environment. Academic dishonesty is any treatment or representation of work as if one were fully responsible for it, when it is in fact the work of another person.”

Examples of Academic Dishonesty include, but are not limited to:

- Copying off another student's exam;
- Using a “cheat sheet” during a closed-book exam;
- Previewing an exam from a “test” file when the professor does not permit this and is unaware of the file;
- Faking the results of a lab experiment or work;
- Asking for exam content or answers from another student;
- Working in a group or in pairs when an assignment is assigned as individual work;
- Having another student write a paper for you;
- Purchasing or receiving notes from a fellow student;

- Allowing another student to look at your answer sheet during a quiz or exam;
- Attempting to cheat, even if unsuccessful;
- Faking an illness when you're not sick to postpone a quiz, exam, or handing in an assignment;
- Faking the death of a loved one to postpone a quiz, exam, or handing in an assignment; and
- Purchasing or taking a paper from the internet.

A substantiated case of academic dishonesty may result in disciplinary action, including a failing grade on the project, a failing grade in the course, or expulsion from the College. If a substantiated case of academic dishonesty results in a failing grade in the course, a student who chooses to withdraw from the course will receive a grade of "F."

Professors are dismayed when they have to talk to students about these issues because, inherently, every teacher wants to believe that his or her students are honest. Unfortunately, plagiarism is so common that educators use plagiarism detection software, such as Turnitin.

Intellectual Property

It is wonderful to have access to information. It empowers us with data and knowledge that leads

us throughout our busy days and helps us organize our leisure time more efficiently. GPS devices and mobile phones help us get to unfamiliar destinations. We can find places to eat, to stay, and to get entertainment. All of this information is at our fingertips due to modern technology. We all take advantage of this technology to some degree and use this information to our advantage.

But there is another type of information—not just the kind that provides directions. We seek such information when we are ill and need to look up medical advice. We also seek information when in school, since very few subjects require only the use of a textbook. We need to search for information and then use it in our intellectual work, because every paper or project produced in college is a product of someone's creativity.

So how should we handle this product of creativity (a.k.a information)? Let's think about a simple example: apple picking in the fall. It is a popular thing to do, especially here in the Midwest. People go out to the farm, get bags or baskets, gather apples and then line up to weigh them and pay. The farmers' hard work is being rewarded.

Now imagine a different situation. You worked hard and wrote a very good paper and your roommate just copied a couple of paragraphs and inserted them into her own paper because the topics were related. Was this fair? How were you rewarded for your hard work? Nobody is saying

that your roommate should have paid you, as you would pay the farmer for apples. However, she should not use your intellectual work without attribution to you! What she did was an act of plagiarism—you will read more about it soon!

You might publish an article in your college newspaper. This article is your intellectual personal property and you hold the copyright, which means that no one has the right to reproduce all or any part of it (i.e. copy it) without your permission. If your roommate decides to use some information from your article in her paper, she should provide a citation (the information that will help the reader identify and find your article should they decide to do so). If she is using direct quotes from your article, again, she would need to put double quotes around your words and provide information about the author (you, in this instance) to avoid plagiarism. Keep reading to find useful information about avoiding plagiarism.

Copyright and plagiarism are just two aspects of intellectual property that you need to deal with. You have to respect copyright, i.e. the rights of the author and avoid plagiarism. However, there are more aspects to it. Have you heard of patents? If you are planning a career in science and technology-related fields then you also have to learn more about patents. Patents deal with creators' rights to their invention of new machinery or processes. Plants and design can also be patented. You can find useful information at the

United States Patent and Trademarks Office (USPTO) <http://www.uspto.gov/patents/law/>. Trademarks and trade secrets are other aspects of intellectual property that you may have to deal with.

In addition to being aware of plagiarism, patents, trademarks, and trade secrets, you need to be mindful of open access issues, which relate to valuable research data and academic publications posted online for everybody to read. However, you cannot always just use the data from open access sources. You often need to ask the author for permission. Many open access publications use Creative Commons licensing.

There is a lot to learn about using information legally and ethically, but this knowledge will empower you in your academic work and ultimately allow you to succeed. The following examples and tips will get you off to a good start.

Unintentional Plagiarism

Have you ever thought about why teachers and professors seem to spend way too much time urging everyone to be sure to cite all of their sources properly? You've heard it all before: footnote this, endnote that, put this in the bibliography, capitalize this word, where are the italics, the commas, periods, hanging indents, yada yada yada! It's enough to make you give up and just

wing it. But hold on a second while you gather your thoughts. Why do your professors always spend so much time urging you to do something that seems to have little practical purpose?

Real World Cases

Students often feel that they are being singled out in regard to plagiarism and academic dishonesty. But that is far from the case. There are numerous examples of scholars and other professionals who have been caught plagiarizing. One such person is Doris Kearns Goodwin, a famous historian who wrote the noted *Team of Rivals: the Political Genius of Abraham Lincoln* in 2006. She included material in an earlier book, *The Fitzgeralds and the Kennedys* in 1987, from three other sources without citing it, according to an article written by Michael Nelson (381).

Although she has since published other works, her reputation has been tarnished, and people may not take her work as seriously because of this. Unfortunately, as Nelson points out in his article, she is not the only well-known historian caught plagiarizing.

Another example, with a dramatic outcome, is that of Eugene Tobin. He was the president of Hamilton College in New York State, when it was discovered that he had included plagiarized material in speeches he had given over the course of almost a decade. He resigned from his position as the

head of this prestigious institution, admitting his guilt (Isserman B12). Other college presidents and administrators have also been caught violating academic trust: if you try a search using the terms *plagiarism* and *college president*, you may be dismayed at the number of results.

Like some of the historians Nelson cites in his article, many students fall into a trap when they do research because they fail to mention where they found all of their information. Thousands of students in schools, colleges, and universities are guilty of committing plagiarism, but often they don't know they are plagiarizing.

Let's look at plagiarism and how to avoid it, and then continue to some other intellectual property issues you may need to deal with.

What is Plagiarism?

In short, plagiarism is when you use words, images, stories, music, charts or anything from another intellectual work without giving credit to the original author or creator. In the classroom (and in the world of publishing), documenting your information sources is the only way others can tell how thorough and careful you've been in researching your topic. If you don't tell readers where your information came from, they may think that you either made up the information or "stole" it. Failing to cite your sources is plagiarism.

By managing the sources in your papers, you encourage others to do the same and you can be a go-to expert for your friends and classmates when they need help with how to find out how to cite sources properly. The information and advice you impart may help them avoid serious difficulties. Some students truly don't know that they are doing something wrong when they paraphrase information without citing the information source. They might feel that paraphrasing the words of someone who is clearly an expert on the topic is the best way to write an accurate paper. And because they aren't quoting it directly, it doesn't need quote marks or attribution, does it? While the penalties they receive might (and this is a big "might") be less severe than someone who buys a paper online or copies and pastes big sections of material into their work, the penalties could still be substantial. Raising your friends' awareness so they won't face this situation would be a kind thing to do.

Keeping Track of Bibliographic Information

Try this the next time you do research. Every time you find a great article on your topic, collect the following information as soon as you realize you have a helpful resource.

You may not use all of the bibliographic

information, it depends on the citation style your professor requires. However, having this bibliographic information for all your resources will help you keep track of everything you find so you can locate it again later if needed, and ultimately it helps you produce correct works cited pages and bibliographies.

When you find a journal article, make a note of:

- Author name(s)
- Title of the article
- Name of the journal
- The volume or version number
- The issue number
- The date of the issue
- The name of the database where you found the article

Or, if you find a book, note the following once you think it might contain useful information:

- Author name(s)
- Title of book
- Publisher's name
- Place of publication
- Year of publication

Or, if you find a website you want to use, collect the following details before you leave the site:

- Author name(s)

- Title of article or webpage
- Title of overall website
- The date of the webpage (if any)
- The URL (or web address)

You might be able to get some of this information with a simple screenshot, but be sure to fill in any missing elements.

This information is often referred to as bibliographic information or bibliographic metadata. It consists of essential information that identifies the information resource used to inform a research project.

As you read and analyze each resource, write down any of the authors' ideas, quotes, or thoughts you want to use and be sure to write down page numbers, if the source provides them. Also, collect images, evidence and charts you want to use; be sure to write down page numbers for these items, too. When you put your research project together, you will then have all the information you need to create in-text citations, embedded charts or images, footnotes and endnotes, and a page of works cited.

Reference Management Software

Many researchers take the time to gather all of this

information before they start writing. However, when they are ready to compile their footnotes or bibliography they can't find their preliminary notes. It may be the case that some notes are in one notebook, other notes are in a file in their computer and still others are missing entirely.

Fortunately, software has been developed that helps researchers manage their source material. You may have heard of some of these reference management products. Endnote, Refworks, Mendeley, and Zotero, among others, all help manage the information gathering and retrieval process.

In addition to providing one central location for all of your references, these reference managers can

- import bibliographic information directly from a library catalog database,
- provide additional space for personal notations,
- create a bibliography or list of references in a variety of citation styles such as APA, MLA, Chicago, and more.

LEARNING ACTIVITIES & RESOURCES at the
end of this chapter

Legacy Library's website includes a page with
links to **citation management tools**

When to Cite Sources

Now that you have gathered all of your information resources, you need to be mindful about how you used them in your research project. There are some very firm rules about what constitutes plagiarism:

- If you copy a sentence or paragraph verbatim (exactly) from a book, article, website, blog posting, or anywhere online or in print, you must provide information on the author and the publication in which the sentence or paragraph appears. This is known as “citing a source.”
- If you use some of the exact phrases in a sentence or paragraph, even if you are not copying the whole sentence or paragraph, you must cite your source.
- If you use original information that you have obtained from an interview or conversation

with someone, you must cite your source.

- If you do not use the exact sentence or phrase but paraphrase it, or use the ideas inherent in the exact sentence or phrase, you must cite your source.
- If you reprint images, maps, diagrams, charts, or tables, you must cite your source.
- If you embed video files or audio files into your work, you must cite your source.

Citation Styles

Citing sources and avoiding plagiarism should always be an author's intent, but it is easy to get confused about how to cite. Citation styles were introduced in the GATHER chapter, but it is worth repeating that there are many different citation styles. The three styles that are used most often are

- APA (American Psychology Association),
- MLA (Modern Language Association),
- Chicago.

There are no hard and fast rules about when to use each style. Professors often have a preference for one style over another, so make sure that you check with your instructor about which style they prefer.

Citation styles are very specific, so, if you are creating your own citations, it's a good idea to get

familiar with the specific rules of each style. Although the same information is included in each style of citation, the placement of information varies, as does the use of punctuation and capitalization.

Remember that citations for different formats (books, magazine articles, films, etc.) will also require different information. See the **Keeping Track** section above for a list of what is included in a citation for each type of source.

The following resources are useful tools for all writers and quick links are available on the Legacy Library website noted above.

- Publication Manual of the American Psychological Association, 6th edition for APA citations
- MLA Handbook
- The Chicago Manual of Style

Citation Generator Software

Creating properly formatted citations has become easier in recent years with the introduction of reference management software and citation generators. A citation generator is software that will help to correctly format your citations. The

above link to the Legacy Library includes free citation generators. These generators are handy to use but they often contain errors so it is important to check the results for accuracy.

In addition to providing one central location for all of your bibliographic information, some of these products can:

- import bibliographic information directly from a website, library catalog or database
- provide additional space for research notes and personal notations
- manage resources from a variety of databases and websites
- create in text or parenthetical citations for a research paper in a variety of citation styles
- create a bibliography or works cited page in a variety of citation styles

LEARNING ACTIVITIES & RESOURCES at the
end of this chapter

*Legacy Library provides links to **citation
generators***

Where to Go for Help

Even if you are a very organized person and have diligently collected bibliographic information on all of the information resources that you consulted during the research process, you may misplace essential information on a resource. You may think that since you can't find this information, you will be unable to use it. But there is another option—consult a librarian. Librarians have comprehensive knowledge about how information is organized and retrieved. They also have a wealth of information resources at their fingertips. Even if you can't retrace your steps to find the missing data, it is likely that a librarian will be able to help you find the bibliographic information you need. Librarians can also help you determine when and how to cite your work. They may even be able to help you navigate citation generators and

reference managers. Librarians at your library are available to help you in person, by telephone, and via email and chat. Consult your library's website for contact information.

Ethical Issues and Intellectual Property

The MANAGE pillar includes the practice of professional and ethical use of information. Ethical treatment of information assumes that you are treating an author's rights appropriately and avoiding an act of academic dishonesty such as plagiarism. As a creator of information yourself, you should understand the importance of respecting other authors' rights and following the general rules set forth in legal documents.

As an information creator, you want to be respectfully treated by others. That is why you should constantly strive to improve your ability to practice fair treatment of other authors' works, including being cognizant of copyright, patents, and other issues associated with intellectual property.

It is imperative to understand that everybody has to be accountable for their own work and respectful of the work of others. Future scholarship depends on the accuracy and integrity of prior scholarship. That is why, when doing

research one must use the information produced by other people responsibly, i.e. provide citations within the text and a list of references at the end of the paper with full citation information that will allow retrieval of the document. Remember what you have learned in this chapter about managing your sources and citation style. If you are diligent about applying this knowledge and careful about giving credit where credit is due, you should have no worries.

Learning Activities & Resources



Resources

Citation management tools and **citation generators** are available on Legacy Library website. These free tools can assist you in the creation and management of citations in MLA style, APA style, and other formats.

VISIT: https://library.marietta.edu/citation_management.

7.

PRESENT

Sharing What You've Learned

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

The PIO 101 learning outcome that aligns with PRESENT is:

Students will be able to demonstrate their ability to engage in thoughtful, respectful academic-level discussions

In this chapter:

- PRESENT: Understanding and Skills
- Processing What You Find
 - Summarizing
- Writing a Thesis Statement
- Creating an Outline
- Choosing How to Share Your Information
 - Audience
 - Written Ways to Share What You've Learned
 - Traditional Paper
 - Thesis/Dissertation
 - Scholarly Journal Article
 - Blog/Tweet/Other Social Media
 - Spoken Ways to Share What You've Learned

- Class Presentation/Speech
- Conference Presentation or Poster Session
- Audiovisual Ways to Share What You've Learned
 - PowerPoint/Prezi/Other Presentation Software
 - Images
 - Song
 - Video
- Your Role in Creating and Sharing Information
 - Wider Connections
- Learning Activities & Resources

During the research process, at times it can feel as if you are just collecting what others have written or said, and that your presentation is just going to repeat what is already known on the topic. While this may be true for introductory-level papers, once you know a little more about your topic, you can begin putting different pieces of information together—this is called synthesizing what you've discovered. As you gain new knowledge, you can begin to draw your own conclusions about the topic you are studying. Once you share these conclusions you will have created new information.

Before the advent of online tools, publishing your new information was difficult and often expensive. It was hard to reach a large audience because of the physical limitations of producing and distributing paper copies of publications. Now anyone can publish anything and make it available

to the entire Internet-connected world in a matter of seconds. This means that you have a great opportunity to share your ideas and to communicate with people around the world who are interested in similar topics. It also means that you have to carefully consider what you publish because anyone, even an unintended audience, can find what you've published.

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

PRESENT: Understanding and Skills

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

They understand:

- The difference between summarizing and synthesizing,

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

They are able to:

- Use the information and data found to address the original question,
- Summarize documents and reports verbally and in writing,
- Incorporate new information into the context of existing knowledge,
- Analyze and present data appropriately,
- Synthesize and appraise new and complex information from different sources,
- Communicate effectively using appropriate writing styles in a variety of formats,
- Communicate effectively verbally,
- Select appropriate publications and dissemination outlets in which to publish if

appropriate.

Real-life Scenario — Revisit

Remember Hunter from the IDENTIFY chapter? He is a gamer who plays Massively Multiplayer Online Role Playing Games (MMORPGs) and has done a lot of work since the last time we saw him. His research supports his thesis statement and he's got something to say. Now he needs to figure out how to say it.

Processing What You Find

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

One useful way to consolidate the information you've found is to summarize what you think it

says, and then find a definite source for each specific item in your summary. In the **IDENTIFY** chapter you were presented with an exercise that included four questions:

1. What do you already know about your topic?
2. What do you want to know about your topic?
3. How will you find information on your topic?
4. What have you learned about your topic?

Now you can answer the fourth question—what you’ve learned about your topic. And you should ask yourself another question: Where did I learn the information I found? Make a list of all the sources you used and think about which ones you find to be the most reliable or useful. Depending on where and how you present your findings, you may be called upon to defend your sources, so it pays to be prepared for this. and this list will also prove useful when you need to cite a specific bit of information in your works cited page.

LEARNING ACTIVITIES & RESOURCES at the
end of this chapter

Exercise 7A provides one way to help you
organize what you have learned about your
topic and where you learned it.

Summarizing

Another way to organize and share your information is to summarize it in paragraph form. Summaries are shorter than the original text and provide a broad overview, not specific details. Summarizing your information provides an added benefit—what you write in the summary can often become part of your final product.

Summarizing involves putting the main idea(s) into your own words. To summarize information, first read the information, then ask yourself: What is this text about?

Write a short answer in full sentences – not in one or two words. Your summary should cover the main point and key ideas. **USE YOUR OWN WORDS!** Don't look back to “borrow” words from the original text.

LEARNING ACTIVITIES & RESOURCES at the
end of this chapter

Exercise 7B provides practicesummarizing.

Orally summarizing your findings (saying them out loud) to a friend, classmate, or teacher is an excellent way to confirm your mastery of the topic. While the means of summarizing can vary, the key at this point is to make sure you understand what you've found and how it relates to your topic and research question.

Writing a Thesis Statement

In the IDENTIFY chapter, you were introduced to the idea of a thesis—a potential answer to your main research question. The information you have gathered for your research topic should hopefully answer your research questions and you can now form a proper thesis statement. A good thesis statement not only introduces your reader to the topic, but also helps you to focus your argument or position.

Your thesis statement should be no more than three to five sentences in length, but is made of 3 parts:

- First part: Describe the main issue of your broader topic upon which you will focus (*1)
- Second part: Make a statement, claim or argument (take a position on your topic) (*2)
- Third part: Propose a solution or a call to action (*3)

Using Hunter's research example from the IDENTIFY chapter, let's create a thesis statement to support his argument that MMORPGs (Massively Multiplayer Online Role Playing Games) are good for American Society:

*MMORPGs have been demonized in American society as a waste of time and childish. (*1) Online games are more sophisticated than critics acknowledge and online gamer communities provide supportive social networks. (*2) MMORPGS have been shown to increase creativity, enhance social connections and are a productive use of gamers' time. American society needs to re-examine their stance on MMORPGs. (*3)*

Things to remember about thesis statements:

- A thesis statement is a *tentative answer* to your research question.
- Thesis statements must *make a claim* or *state*

an argument.

- The thesis should be *debatable* (must be something that people could reasonably have differing opinions about).
- The thesis statement should be *narrow and specific*.
- Thesis statements *are not* statements of fact, *nor* are they simply statements of opinion. They are a blend of both—*opinion backed up by supporting facts*.
 - The key difference between an opinion statement and thesis statement is that a thesis statement expresses to the reader that the claim being offered has been *thoroughly explored* and is *defendable by evidence*.
 - It's a good idea to think about what the *other side* of the argument is when you are constructing your thesis statement.

Creating an Outline

Once you have come up with your thesis statement, you can further focus your thoughts by creating a research topic outline. Creating an outline allows us to organize all of the research we have conducted into a logical and informative structure. Outlines can help you figure out how to

connect all of the ideas found during your research, and whether or not you have enough evidence to support the main points you want to make.

Conventions of the Research Topic Outline:

1. *Identify your Research Topic*
2. *Outline the Main Headings of your argument*
3. *Create Sub Headings as needed*
4. *Include relevant Evidence from your research portfolio analyses to strengthen your argument*

Start your outline by brainstorming and listing all of the ideas you want to include in your research paper. Next, start to organize all of those ideas by grouping related ideas together, arranging your ideas into main sections. Then express general ideas and subsections within each main section, try to get down to expressing specific ideas. Finally, include specific examples from your research to support your main and/or subpoints.

Now that you're confident in your knowledge of your topic, you can formally answer your original research question when you present what you've found. Did your original thesis/hypothesis turn out to be true? If so, say so! If not, why not? Be sure

you're able to state specifics that prove or disprove your projections. Was anything a surprise? Do any of your findings suggest future research possibilities?

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

Choosing How to Share Your Information

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

Even if you did initially do the research for a class

project though, you may find yourself in a situation similar to Hunter in the scenario below, wanting to share your work more widely. You've already done the work, so why not get all the benefit you can?

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

Real-life Scenario Update

Back to Hunter. He has done a lot of work. His research supports his thesis statement and he's got something to say. Now he needs to figure out how to say it. Hunter writes a 10-page paper starting with his thesis statement, followed by some facts from his research, and then briefly concludes that he has proved his point. He hands it in to his teacher and he's finished. Except that he starts to feel like he just did an awful lot of work for an audience of one person. Who else might be interested and how might he reach them? How can he communicate his message in ways other than a straightforward paper? How can he get the most out of his effort?

Audience

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

LEARNING ACTIVITIES & RESOURCES at the
end of this chapter

Exercise 7C can help you ***plan for your audience.***

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

Many times you will present to an audience composed of various groups or unknown groups (particularly if you're posting the presentation online). If you've considered a number of different

audiences and chosen the content and methods most likely to appeal to most of them, your chances of success will be higher than if you only include what is most interesting to you.

Written Ways to Share What You've Learned

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

Traditional Paper

One of the most common ways to present research findings, especially for students, is in a short paper written as a class assignment. The way this type of paper is formatted is determined by the teacher, and is fairly straightforward. The goal is usually to demonstrate to the teacher that you have understood the topic and can draw some conclusions from what you've learned.

Thesis/Dissertation

At higher levels of education, you may be called upon to write a thesis paper or even a dissertation. At this point, you are entering the realm of high level professional or scholarly expertise, and will be expected to produce original ideas and the necessary supporting research to contribute to your field. The type of writing in theses and dissertations varies depending on the subject area, but generally these manuscripts are longer and more detailed than a traditional class paper. They also use more discipline-specific language, and can take several years to complete.

Scholarly Journal Article

Articles published in scholarly journals undergo a peer-review process (see the EVALUATE chapter) to ensure that they are reliable and significant additions to the literature on a topic. If you get to a point in your research where you feel you have a contribution that others could use, investigate the possibility of submitting an article for publication, especially if your research is relevant to your intended career. It can be difficult to determine which journal to submit your article to, so don't hesitate to ask teachers, colleagues, or even the editor of the journal if your article's content is appropriate.

Blog/Tweet/Other Social Media

A relatively new option for getting your information out to a wide audience is to use social media tools. If you have your own blog or website you can easily publish your findings for the entire world to see (getting people to actually look at it is another issue, with many possible solutions). You can also use Facebook, Twitter or other tools to let people know what you're working on and to direct them to more detailed information that you've posted elsewhere online. While this may seem unusual, it is becoming more and more popular for researchers to share work online as it progresses, so that other interested parties can contribute and ask questions, making the final product more robust, whatever form it ends up taking.

Spoken Ways to Share What You've Learned

Presenting information orally might seem easier than writing or terrifying, depending on your experience and personality. Ideally you will be thoroughly prepared and able to clearly explain your findings, while also being able to respond effectively to unanticipated questions. It takes practice and a deep knowledge of your topic to

do this—even the best speakers get flustered once in a while. Don't be afraid to say you don't know the answer and always offer to follow up on a question.

Class Presentation/Speech

As with the class paper, a class presentation is one of the first experiences most students will have with orally presenting their research. One great benefit of this type of presentation is that you will most likely receive detailed feedback on how well it was received and perhaps even get some suggestions on how to improve your delivery. Your fellow students will also be faced with the same task and can even provide this type of feedback before the actual presentation takes place.

Conference Presentation or Poster Session

As your expertise on a topic grows, you may want to reach a wider audience. You will also want to reach an audience that is interested in your topic. An excellent place to find this audience is at a professional conference in your field. Aside from the many other benefits of attending professional conferences, presenting at a conference will help you begin to make yourself known to other researchers in similar subject areas. Responding to audience questions will give you the chance to prove that you really know your material or, alternately, can point out gaps in your knowledge

that may lead to new research opportunities. Poster sessions are a great way to get your feet wet, as your poster will be available for you to refer to and the atmosphere is not quite as overwhelming as standing in front of a full audience for a presentation.

Audiovisual Ways to Share What You've Learned

Visual images can have an immediate impact on how your audience reacts to and understands your presentation. Choose them wisely and use them at appropriate times!

PowerPoint/Prezi/Other Presentation Software

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

Images

Images can be powerful tools to grab attention, condense information, and tell your story. Different types of images can be useful in different contexts. In an art class you may use reproductions of famous paintings or drawings, or images you've created on your own. In a business class, graphs and charts may be more appropriate. Just make sure the images you choose actually make your presentation more effective rather than distracting attention from your main point. If you are using other peoples' images, be sure you are doing so ethically, including providing citations to the source of the images.

Song

Keeping your audience in mind, don't be afraid to present your material in an unusual manner. If you can create a song (as one example), you may make your audience curious enough to stay around for more detailed information later!

Video

With the tools available now, it is possible to create a quality video product to present your information without extensive training or a lot of money. New online tools are constantly being

introduced (and retired, unfortunately) which enable you to enter your content (words, images, video, etc.) and have it processed into a completed video in a short amount of time.

LEARNING ACTIVITIES & RESOURCES *at the end of this chapter*

Exercise 7D *can help you to think about different formats for your information.*

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

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

If you've published more widely, there are likely to be more copies, either physical or digital. Who is responsible for maintaining those copies? In a more formal situation such as a scholarly journal, the article will be maintained as part of the archives of that journal. (However, there are some

questions about online-only journals. What happens if the journal goes out of business? Some journals have contingency plans for this, but not all.) If you've given a speech, do you keep the notes? If you've published on a blog, are you archiving the blog, or will it disappear once you stop using it? Even if you decide to save absolutely everything, unless you have a plan for organizing it, you may not be able to find a specific item when you need it.

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

Wider Connections

When you begin to share your own work, you gain

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

Presenting your information is usually considered the final step in the research process. You tell the audience what you've found out and you go home. However, as we've seen, sometimes in the process of presenting or preparing to present, you uncover new questions and need to Identify that new information need. Or you may discover that what you thought was a reliable source was not so reliable and you need to Evaluate a little more. The research process is not linear, but a continuous cycle with various entry and exit points that change depending on your goals, topic, and methods. Ideally, for those who enjoy it, it never ends!

Learning Activities & Resources

Exercise 7A: What did you learn and where did you learn it?

In the left column, list what you have learned, bit by bit. In the right column, list where you found it. If it was found in more than one source, list them all and think about which one you find to be the most reliable or useful.

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

Exercise 7B: Practice Summarizing

First, read the following paragraph.

A penny for your thoughts? If it's a 1943 copper penny, it could be worth as much as fifty thousand dollars. In 1943, most pennies were made out of steel since copper was needed for World War II, so, the 1943 penny is ultra-rare.

Another rarity is 1955 double die penny. These pennies were mistakenly double stamped, so they have overlapping dates and letters. If it's uncirculated, it'd easily fetch \$25,000 at an auction. Now that's a pretty penny. (Morton)

- What is the main point of the paragraph?
- What key ideas are important to understand the significance of the paragraph?
- Now, write one or two sentences that captures the main point and any other key ideas.

EXAMPLES—How does your summary compare?

- The text is about pennies. *Does this include all of the key points necessary to understand the paragraph? This example is too short and is missing main kdeas.*
- The 1943 copper penny is worth a lot of money. Copper was hard to get during the war so there aren't many of them. The 1955 double die penny is worth a lot too. These pennies were stamped twice on accident. *Is all of the information that is included needed to understand the original paragraph's significance? There is too much unnecessary stuff, and the main idea is not clear.*
- This text is about two very rare and valuable pennies: the 1943 copper penny and the 1955

double die penny. *This example includes key information, doesn't include unnecessary information, and is a complete sentence.*

Exercise 7C: Plan for your audience

AUDIENCE	WHAT MIGHT THEY KNOW?	WHAT PRESENTATION METHOD MIGHT MOST APPEAL?
Teacher of the class		
Fellow Students		
Experts at a conference		
Your family at a holiday gathering		
A group of elementary school students		
A news reporter interviewing you		
ADD YOUR OWN:		
ADD YOUR OWN:		

Exercise 7D: think about different formats for your information

Take what you've learned about your topic and express it in the following formats.

- As a written paragraph, a 280 character tweet,
- As a Prezi.
- Try to draw a picture that clearly explains your findings.

Which of these seems most complete? Which seems most effective? Which seems most attention grabbing? Which was the hardest to do? Attempting this exercise might help you to make your decision about which format to use, although there are other things to consider first, particularly your intended audience.

APPENDIX: SUPPLEMENTARY MATERIAL

This appendix includes keys to quizzes and full versions of some additional resources which are listed at the end of chapters in Learning Activities & Resources. The following resources are included.

- **Key 4B – Quiz on Primary Sources**
 - **Key 4C – Quiz on Identifying Citations**
 - **Key 6A – Identifying Plagiarism**
 - **What is a Scholarly Article?** Ways to determine if your article is scholarly and/or peer reviewed.
 - **How to Read a Paper:** A guide to reading academic papers.
 - **CRAAP Test Evaluation Rubric:** When you search for sources for a project, you're going to find a lot of information...but is it credible and reliable? Use this guide to help you determine this for yourself. Give the source a score based on this point system. Is it credible and reliable or a bunch of ...?
-

[Key] Exercise 4B – Quiz on Primary Sources

1. Where would you find a speech by Franklin Delano Roosevelt in which he said, “The only thing we have to fear is fear itself”?

A. Web site of Presidential Speeches *[It is true, it should be here, but where else would it be found?]*

B. Newspaper article dated Oct. 29, 1941 *[It is true, it should be here, but where else would it be found?]*

C. A print publication titled “Vital Speeches of the Day,” which has been published since 1934 *[It is true, it should be here, but where else would it be found?]*

D. All of the above *[Yes, you are right. All three would contain the speech.]*

2. Which of the following sources is the most likely to contain an interview with Steven Spielberg about his film “Lincoln,” produced in 2012?

A. Article from a news magazine dated November 23, 2012 *[Yes, this is quite likely]*

B. A blog written by a fan of Steven Spielberg *[This might be possible, but there is a more likely source]*

- C. IMDb –A large online database of movie and television information *[Databases may contain full-text information sources, but usually lead you to other resources. See if you can select a better choice.]*
- D. All of the above *[No, two of these answers are not likely. See if you can select a better choice.]*
3. Which source would have the original copy of a diary written a woman who lived in Tennessee during the Civil War?
- A. The Library of Congress American Memory Project web site *[It is possible that they would have mounted a digital version on their site, but it would be a replica of the original.]*
- B. The Southern Historical Collection, University of North Carolina at Chapel Hill. *[Yes, you are right!]*
- C. Local public library's collection *[This is unlikely. They might have a later reprinting, if the diary was published, but not the original.]*
- D. All of the above *[You will want to pick the best answer of the other three choices]*
4. Which of the following is a primary source?
- A. A review of the film "Lincoln" by Steven

Spielberg *[Because a review is a commentary on a primary source, the review isn't primary (but the film itself would be!)] Try again to determine which is primary.]*

B. A nonfiction book about the Civil War titled *The Fall of the House of Dixie : The Civil War and the Social Revolution that Transformed the South* *[The author would have used primary sources when writing this book, but the book itself is secondary. Try again to determine which is primary.]*

C. The Facebook privacy policy *[Yes, you are right. Facebook wrote their own privacy policy (it is worth taking a look at), so it would be primary]*

D. A reporter's article about an event that happened yesterday, written from information gathered from bystanders *[The reporter's article itself is secondary. He used primary sources (the bystanders) as background material for the article. Try again to determine which is primary.]*

[Key] Exercise 4C – Quiz on Identifying Citations

1. Joshi, Madhav. "Inclusive Institutions and Stability of Transition toward Democracy in Post-Civil War States." *Democratization*, vol. 20, no. 4, 2013, pp. 743–770, <https://doi.org/10.1080/13510347.2012.666067>.

A. Journal Article *[Correct!]*

B. Book *[You will notice there is a volume number and page numbers. Therefore, it isn't a book.]*

C. Book Chapter *[Did you see the name of a publisher? Books always have that as a part of the citation.]*

2. Janney, Caroline E. *Remembering the Civil War: Reunion and The Limits of Reconciliation*. The University of North Carolina Press, 2016.

A. Journal Article *[Did you see a volume number? Or page numbers? Try again.]*

B. Book *[Exactly right]*

C. Book Chapter *[If it were a book chapter, there would be a chapter title, and page numbers. Knowing this, what would you select now?]*

3. Blattman, Christopher, and Edward Miguel. "Civil War." *Journal of Economic Literature*, vol. 48, no. 4, 2010, pp. 1185–1190, <https://doi.org/10.1257/jel.48.4.1185>.

A. Journal Article i

B. Book *[You will notice there is a volume number and page numbers. Therefore, it isn't a book.]*

C. Book Chapter *[Did you see the name of a publisher? Books always have that as a part of the citation.]*

4. Cook, Robert J., et al. "Rush to Disaster: Secession and the Slaves' Revenge." *Secession Winter: When the Union Fell Apart.*, Johns Hopkins University Press, Baltimore, 2013, pp. 77–96.

A. Journal Article *[While there are page numbers, there is also a publisher, which is not an element of journal article citations. Choose again.]*

B. Book *[Secession Winter is a book, but what is being cited here is "Rush to Disaster." Select again.]*

C. Book Chapter *[You are right.]*

5. Cooper, William J. *We Have the War upon Us: The Onset of the Civil War, November 1860-April 1861.* Vintage Books, 2013.

- A. Journal Article *[Did you see a volume number? Or page numbers? Try again.]*
 - B. Book *[Exactly right]*
 - C. Book Chapter *[If it were a book chapter, there would be a chapter title, and page numbers. Knowing this, what would you select now?]*
6. Cockrell, T. "Patriots or Traitors: Unionists in Civil War Mississippi." *Of Times and Race: Essays Inspired by John F. Marzalek*, edited by M Ballard, University Press of Mississippi, 2013, pp. 23–35.
- A. Journal Article *[While there are page numbers as many articles have, there is also a publisher, which is not an element of journal article citations. Choose again.]*
 - B. Book *[Of Times and Race is a book, but what is being cited here is "Patriots or Traitors." Select again.]*
 - C. Book Chapter *[You are right.]*
-

[Key]: Exercise 6A – Avoiding Plagiarism

The following paragraph is from an article titled, “Hydraulic Fracturing Overview: Growth of the Process and Safe Drinking Water Concerns” in the March 1, 2012 issue of *Congressional Digest*.

The use of hydraulic fracturing continues to increase significantly, as more easily accessible oil and gas reservoirs have declined and companies move to develop unconventional oil and gas formations. Hydraulic fracturing is used for oil and/or gas production in all 33 U.S. states where oil and natural gas production takes place. According to industry estimates, hydraulic fracturing has been applied to more than 1 million wells nationwide.

Which of the following sentences would avoid plagiarism in a paper on the topic of hydraulic fracturing?

A. As of March 2012, hydraulic fracturing has been applied to more than 1 million wells nationwide. *[The underlined sentence is directly quoted from the article, but is that is not indicated by quotation marks. Omitting indication that this is*

a direct quote would be considered plagiarism—even if it was accidental. Not only does it need quotation marks, but an in-text citation is needed to tell the reader the source of the quotation.]

B. According to the Congressional Digest, more than one million wells in the United States use hydraulic fracturing (71). *[Correct. The sentence includes the name of the source and at the end of the sentence the page number where the source information can be found is shown in parentheses. The corresponding Work Cited entry should include the date and name of the article.]*

C. Hydraulic fracturing has become more prevalent nationwide. More than one million wells have been created. *[Is it common knowledge that one million wells have been fracked? No. Cite the source to avoid plagiarism AND to build credibility in your paper. A good rule of thumb is to always cite the source when reporting numbers.]*

D. In 2012, thirty-three U.S. states had a total of more than one million wells to which hydraulic fracturing has been applied. (Congressional Digest, 71) *[Correct. The information in the sentence includes knowledge that is not commonly known – year, number of states and number of wells—so the citation should list the source and page number in that source where the information was found.]*

E. None of the sentences contain plagiarism. *[Read the above comments.]*

[Download PDF of What is a Scholarly Article](#)

What is a Scholarly Article?

Many instructors at the college level require that you use scholarly articles as sources when writing a research paper. Scholarly or peer-reviewed articles are written by experts in academic or professional fields. They are excellent sources for finding out what has been studied or researched on a topic as well as to find bibliographies that point to other relevant sources of information.

How can you determine if your article is scholarly and/or peer reviewed?

1. **Consult the chart.** The chart on the next page lists the general criteria for determining what type of periodical article you have. Keep in mind that some articles do not meet all the criteria. When in doubt, consult a Reference Librarian or your instructor.
2. **Limit your database search to academic, scholarly, or peer reviewed journals.** Many databases allow you to limit

your search to academic, scholarly, or peer reviewed journals (terminology varies between databases). Although limiting provides a preliminary filter, not all articles within a scholarly journal are scholarly, so you will need to evaluate each article individually against the criteria in the chart.

3. **Ask a Librarian.** A librarian at Legacy Library can help you find a scholarly article or determine whether an article you have is scholarly. Get help in person at the Reference Desk on the 1st floor of the library.

4. **Are “peer reviewed” and “scholarly” the same thing?** Peer reviewed journals require that articles are read and evaluated by experts in the field before they are accepted for publication. Although most scholarly articles are refereed or peer reviewed, some are not. Generally, instructors are happy with either peer reviewed or scholarly articles, but if your article HAS to be peer-reviewed, you will need to find that information in the front of the journal or in the online reference for the journal. If you need help with how to find that information, ask a librarian.

[Download a PDF of Criteria for distinguishing scholarly articles](#)

GENERAL CRITERIA FOR DISTINGUISHING SCHOLARLY ARTICLES

TYPE {examples}	SCHOLARLY*	TRADE	NEWS OR OPINION	POPULAR
	<ul style="list-style-type: none"> • <i>Journal of Communication</i> • <i>Educational Theory</i> • <i>American Economic Review</i> 	<ul style="list-style-type: none"> • <i>Advertising Age</i> • <i>Industry Week</i> • <i>Progressive Grocer</i> 	<ul style="list-style-type: none"> • <i>News Republic</i> • <i>Scientific American</i> • <i>U.S. News & World Report</i> 	<ul style="list-style-type: none"> • <i>People</i> • <i>Glamour</i> • <i>Shape</i>
Purpose	To inform and report on original research or experimentation to the rest of the scholarly world	To provide news and information to people in a particular industry of profession	To provide general information to an educated lay audience	To entertain or persuade· A not so hidden agenda is to sell products or services

Cited Sources	Has substantial footnotes and/or bibliographies	Occasionally include brief footnotes and/or bibliographies	Occasionally include brief bibliographies	Rarely include bibliographies
Authors	Scholars or researchers in the field, discipline, or specialty	Practitioners or educators within the industry or profession	Magazine staff writers or freelance writers	Magazine staff writers or freelance writers
Language	Technical terminology appropriate to the discipline· Reader is assumed to have a similar scholarly background	Jargon of the industry or profession· Reader is assumed to have background in the field	Language geared to educated layperson· Does not emphasize a specialty but does assume a certain level of education	Simple language in order to meet a minimum education level

Article Appearance	<p>Graphs charts, and photographs that support the research.</p> <p>Articles are lengthy and often structured into these sections: abstract literature review methodology, results, conclusion, bibliography</p>	<p>Photographs and illustrations used to support the articles but also for aesthetic purposes to draw in readers.</p> <p>Brief articles with no structure</p>	<p>Photographs and illustrations used to support the article but also for aesthetic purposes to draw in readers.</p> <p>Usually brief articles but can be longer and sometimes structured</p>	<p>Photographs and illustrations used for aesthetic purposes to draw in readers.</p> <p>Brief articles with no structure</p>
Journal Appearance (if applicable)	<p>Plain format, usually black and white.</p> <p>Little or no advertising</p>	<p>Attractive glossy format, lots of color.</p> <p>Extensive advertising aimed at people in the field</p>	<p>Attractive glossy format, lots of color.</p> <p>Extensive advertising aimed at the general public</p>	<p>Attractive glossy format, lots of color.</p> <p>Extensive advertising aimed at the general public</p>

* Scholarly articles are sometimes referred to as refereed or peer reviewed. Articles appearing in refereed or peer reviewed journals are read and evaluated by experts in the field before they are accepted for publication.

“What Is a Scholarly Article? – CSU Chico.” Meriam Library, <https://library.csuchico.edu/sites/default/files/scholarly.pdf>. Accessed 8 June 2023.

[Download PDF of How to Read a Scholarly Paper](#)

How to Read a Scholarly Paper

Cavendish McKay | Marietta College
| December 4, 2017

General Notes

Academic (and in particular, scientific) writing is not like other types of writing you may have encountered in the past. This is due in part to the fact that when scholars write for an academic audience, they can assume a different level of preparation on the part of their readers than

someone who is writing a book or article for more general consumption. Part of your goal when approaching a piece of academic writing is to ask yourself, “Am I prepared to read this?”

Academic writing tends to be information-dense, and therefore effective academic reading is hard work. Two tools make the job a little easier: taking notes while you read, and making multiple, focused passes through the material. This document is intended to help you focus your reading so that you can get the most out of a piece of writing with as little frustration and pain as possible.

PASS 0: “Getting Acquainted”

Primary questions

- What is this piece of writing I have in front of me?
- Is it reputable?
- (Perhaps most importantly) How long is it going to take me to read this?

Notes

Your zeroth pass through the material is purely to become acquainted with it. To do so, you should make note of

- The title

- The author(s), including affiliation(s)
- The source (journal, preprint server, etc.)
- Length
- Are there figures/pictures? If so, what kind, and how many?
- What kind and how many (roughly) references are there? If an article doesn't have references, it isn't a piece of academic writing.

You should complete this pass by making an outline of the structure of the document. In most cases, this will look like a list of sections. For many journal articles, this will actually tell you surprisingly little about the content of the article, but we're not yet to the point of trying to understand content, so that's okay.

After this pass

Let's get quantitative. Make a guess (at this point, it's still very much a guess) at how long it is going to take you to read this paper. Write your guess down. Then time each subsequent pass through the material to evaluate the quality of your guess. As you practice this, your guesses will get better. This is an extremely valuable skill for managing your study time, especially if and when you get to the point of doing independent research.

PASS 1: Abstract

Just as references are basically a universal feature

of academic writing, so too is the abstract. Longer form writing (such as books) won't usually have an abstract per se, but the same idea could be applied to a preface (and this document isn't really directed at book length documents, anyway). The abstract is supposed to tell you what the paper is about, and why you should care.

Primary questions

- Why should I care about this?
- Is it likely to be relevant to what I'm trying to learn/do?

Notes

Read the abstract. When you're done reading, rewrite the abstract in your own words, using the simplest possible language. Focus on these two questions:

- What specific question or questions does this paper answer?
- What specific claim or claims does this paper make?

Additionally, this is the time to start building a list of jargon used in the paper. For our purposes, jargon is any word you don't understand, either in meaning or usage. Most fields use at least some seemingly simple words in very specific (and sometimes nonintuitive) ways. The ability to correctly understand and use jargon is one trait

that marks you as an insider within a particular field. Jargon is useful because it serves as a kind of shorthand — it packs a great deal of meaning into not a lot of space. If you are going to extract meaning from this article, you will need to be able to parse the jargon it uses. Make a list of all of the terms in the abstract that you don't understand. Include words whose meanings you think you know, but which are being used in a way that seems odd to you. Don't bother hunting for definitions at this point; the abstract doesn't usually define terms. You will use this list in your next passes through the material.

After this pass

Record how long it took you to read the abstract. Note that all of the above note-taking should be included in your reading time! Compare this time to both the length of the abstract and your reading time estimate from pass 0. Revise your estimate (if necessary). Assess: Is this article going to be useful to me? If it is something that was specifically assigned for you to read as part of a class, the answer is "yes." If it was given to you by your advisor as introductory material, the answer is also "yes." See if you can figure out why you ought to be interested. If this is an article that came to you as a part of your own research, this question takes a little more thought.

PASS 2: Introduction

Almost every paper has an introduction. Its purpose is to let you know what you need to know to be able to successfully read the paper. It obviously can't cover everything (recall Carl Sagan's statement that to bake an apple pie from scratch, you must first create the universe), but in general, jargon is defined and a basic set of premises for the current work is laid out.

Primary questions

- Do I already know enough to read this paper and make sense of it?
- What is the world view that underlies this paper?

Notes

As you read the introduction, you should be maintaining two distinct lists. The first is a continuation of the jargon list you started in the abstract. It contains all terms that are unfamiliar to you. Now, however, you should be able to either give a definition to each term in your list or at least connect it with a reference to another paper. The second list contains specific claims made in the introduction, and the specific references that are tied to them.

After this pass

Again, record the amount of time you spent reading the introduction, compare with your estimates, and adjust as necessary.

Assess: Am I prepared to get what I need from this article? If there is a lot in the introduction that you didn't understand, then you probably need some more background work for this paper to be as useful to you as it could be. If you have the time and opportunity, you can use the list of claims and references you made in this pass to generate (or add to) a reading list. If your reading list gets long enough that you know you won't have time to get through it, you can use the topics to find another resource (such as a textbook, for example) that may be more accessible. If this paper is assigned reading for a course or research project, and you feel that you won't be able to make sense of it, your notes from the introduction can serve as the basis for a conversation with the person who made the assignment. You might start the conversation by saying something like: "In reading the introduction for this paper, I felt like I will need to understand (x, y, z from your list). What is the best way for me to get from my current level of understanding to where I need to be so that I can get what I need from this paper?"

PASS 3: Conclusion/Discussion

After you have read the introduction and have the context, you should skip to the end and read the

conclusions (if there are any) and discussion. The purpose of these sections is to concisely but completely lay out the claims that were referenced in the abstract. This is the heart of the paper—what is original and important in the work being reported.

Primary questions

- What's the point? (i.e., what are the author's trying to prove?)
- What did they do to prove it?
- Did they succeed?

Notes

Continue your list of jargon. If the paper is reasonably well written and you have been thorough in your earlier passes, there should be relatively little new jargon in this section. It is likely, however, that you will need to refer to your jargon list to understand the claims being made.

As you did in both the abstract and the introduction, make a list of specific claims being made in this section, as well. These claims should be supported not by external references (as they were in the introduction), but by data from earlier in the paper. Make notes of what you expect to see in the data, and what the authors say the data shows.

If there are a number of claims in this section, try to figure out which one(s) the authors think are most important.

After this pass

Write, in your own words, what the authors think they proved in this paper.

Assess: Does this seem believable? You might categorize the conclusions on a five-step scale:

1. Totally obvious
2. Feels right, but nice to have proof
3. I hadn't thought about it, but don't see any reason to believe otherwise
4. Counterintuitive
5. Seems impossible

PASS 4: Results/Data

How closely you examine the data will depend at least in part by how much you need to be convinced to accept the claims. In an ideal world, we might be just as skeptical of claims made in support of things we already believe as we are of claims that contradict our beliefs, but humans don't seem to work like that. As a consequence, if you found the conclusions compelling before looking at the data, you should force yourself to exercise extra attention in

this pass.

Primary questions

- Are the conclusions supported by data?
- What are the sources of uncertainty or error?

Notes

In most cases, data will be reported in tables or graphs. It doesn't make sense for you to reproduce these in your notes (especially true of tables; drawing a sketch of a graph might be useful in certain circumstances), but you should try to interpret them in your notes.

For each figure/table:

- Make a note of its label (e.g. "Figure 3" or "Table 1.1")
- Summarize the caption
- In your own words, tell the story encountered in the data
- Check the author's version of the story for this data. Does it match your version?
- Are uncertainties reported?
- How big are the uncertainties? How do they affect the story?
- If the data sets are statistical in nature, how big are the sample sizes? What standard is used for significance?
- To which of the claims (from the previous pass) does this data apply?

After this pass

Assess: did the data adequately support the claims made? Pay special attention to claims unsupported by data, or data that isn't tied to a specific claim.

PASS 5: Methodology

Generally speaking, the methodology section is most useful if you are trying to run an experiment of your own that can be directly compared with the results of the paper. One could argue that the methodology section should expose flaws in experimental design or execution, and while I agree in principle, my personal belief is that in practice there's too much uncertainty

about how closely the procedure as written down matches the procedure as carried out for this to work well. A better way of checking for methodological problems is to actually try to replicate the study.

That said, reading methodologies in published work can give a newcomer to a particular field a window on what is accepted or standard practice within that field. This is true of both experimental procedures and data analysis methods.

Primary questions

- Could I reproduce this research given the

- description?
- What methods/standards were used (in general terms)

Notes

If you are not already an expert in the field, it is going to be difficult for you to find any errors in methodology, so don't focus on that. Instead, pretend you want to replicate the study. Write out in brief terms what you would have to do to reproduce the research presented in the paper. Make special note of anything that seems to be missing. Don't worry if you can't immediately find anything; missing information is hard to find until you actually start trying to reproduce someone else's experiment.

After this pass

You're essentially done, unless you want to try to reproduce the author's results.

Assess: Do I want to try to reproduce the author's results? How would I go about doing so?

Conclusion

Reading academic writing is difficult and time consuming, but necessary and ultimately rewarding. Your effectiveness will be greatly enhanced by

- taking multiple, focused passes through the

- material
- taking notes while you read

Hopefully the guidelines in this document will be useful to you as you continue in your academic efforts.

[Download PDF of the Worksheet for How to Read a Paper](#)

Worksheet: How to Read a Scholarly Paper

PASS 0: Identify the following for this paper

Title:

Author(s):

Author Affiliations:

Source (journal, etc.):

Length (pages):
pictures or figures? YES NO

Are there

If so, what kind and how many?

How many references are there?

How long do you estimate it will take to read this paper?

PASS 1: Abstract

Read the abstract and answer the following:

How long did it take you to read the abstract?

Is this relevant to what I'm trying to learn or do?

What "jargon" is used in the abstract? (meaning any words you don't understand)

Now, rewrite the abstract in your own words in the simplest possible language, making sure to include:

1. what questions does this paper answer, and
2. what claim or claims does the paper make?

Based on the abstract, is the article going to be useful to you?

PASS 2: Introduction

Read the introduction. How long did it take to read?

What additional “jargon” is used in the introduction? (meaning any words you don’t understand)

Are you prepared to get what you need from this article? Can you understand enough about it?

Pass 3: Conclusion/Discussion

Read the conclusion/discussion. How long does it take to read?

What was the author trying to prove in this paper?

What did they do to prove it?

Did they prove it?

What additional “jargon” is used in the conclusion? (meaning any words you don’t understand)

Write in your own words what the author(s) thinks they proved in this paper.

Does the author’s conclusion seem believable?
Rate it as:

1. Totally obvious

2. Feels right, but nice to have proof
3. I hadn't thought about it, but don't see any reason to believe otherwise
4. Counterintuitive
5. Seems impossible

Overall, how long did it take to read all sections of the paper?

How close is that to your estimate?

This worksheet supplements "How to Read a Scholarly Paper."

[Download PDF of the CRAAP Test Evaluation Rubric](#)

CRAAP Test Evaluation Rubric

Use this guide to help determine a source's CRAAP score using the rubric point system. point system.

Rubric Score Instructions

1. Enter information about the source at the top of the page, i.e. title, url, author, dates
2. For each line, starting with Currency, read each box from left to right and choose the one that matches your source the best
3. In the right-hand column, enter the column number, 1-4, that corresponds to the description that best matches your source
4. After every line has a score, tally the numbers in the right-hand column and write the total at the bottom of the page
5. The total score is out of 24 total points. A “good” score for a source to be used in a college research paper is between 20 and 24. You must determine the lowest score you will accept.

CURRENCY

- When was the information published or posted?
- Has the information been revised or updated?
- Does your topic require current information, or will older sources work as well?
- WEB SOURCE: Are the links functional?

RELEVANCE

- Does the information relate to your topic or answer your question?
- Who is the intended audience?
- Is the information at an appropriate level (i.e.

not too elementary or advanced for your needs)?

- Have you looked at a variety of sources before determining if this is one you will use?
- Would you be comfortable citing this source in your research paper?

AUTHORITY

- Who is the author / publisher / source / sponsor?
- What are the author's credentials or organizational affiliations?
- What qualifies the author to write about this topic?
- What affiliations does the author or organizational affiliate have? Could these affiliations affect their position?
- What organization or body published the information? Is it authoritative? Does it have an explicit position or bias?
- WEB SOURCE: Does the URL reveal anything about the author or source? examples: .com .edu .gov .org .net

ACCURACY

- Where does the information come from?
- Is the information supported by evidence? Is the source well-documented? Does it include footnotes, citations or a bibliography?
- Can you verify any of the information from

- another source or from personal knowledge?
- Has the information been reviewed or refereed?
- Does the language or tone seem unbiased and free of emotion?
- Is the information written clearly and free of typographical and grammatical mistakes? Does the source look to be edited before publication?
- WEB SOURCE: Is the information crowd sourced or vulnerable to changes by other authors, i.e. Wikipedia or other public wiki?

PURPOSE

- What is the author's purpose? Is it to inform, teach, sell, persuade, or entertain?
- Do the authors / sponsors make their intentions or purpose clear?
- Is the information fact, opinion, or propaganda?
- Is the article presented from multiple points of view?
- Are there political, ideological, cultural, religious, institutional or personal biases?
- Is the information clearly supported by evidence?

The C.R.A.A.P. Test was created by University of California at Chico, Meriam Library; this rubric is based on that content with some modification.

CRAAP Test Evaluation Rubric Worksheet

Author(s): _____ Publish _____
Date/Last Update: _____
Title: _____
Volume & Issue# (for periodicals): _____

Publisher Name/Organization: _____
Publisher Location (for print & ebooks): _____
URL/Permalink (for electronic resources): _____
Retrieval Date (for electronic resources): _____

CRITERIA	1 POINTS	2 POINTS	3 POINTS	4 POINTS	SCORE
Currency: Assessing currency means understanding the importance of timely information.	No published date listed WEB: No date or no revisions in the last 18 months	— WEB: No update in past year WEB: some links do not work	— WEB: Updated in the last 6 months WEB: links work	Published date is included WEB: Updated in the last 3 months WEB: links work	
Relevance: The importance of the information for your specific needs.	Content is unrelated to your topic and / or level is too simple / too advanced	Content is either related and incorrect level; OR unrelated and correct level	Content is related AND at correct level, but you are not comfortable using the source in your research	Content is related — AND at correct level and you are comfortable using the source in your research	

Authority: Authority is the source of the information—the author's purpose and what their credentials and/or affiliations are	No author is listed and no contact info is provided	No author is listed, but contact information is included	Author is listed without credentials ;You are unsure if the author is the creator of the material	Author is listed with credentials; author is the originator of the information; contact information is provided	
Accuracy: Accuracy is the reliability, truthfulness, and correctness of the content	Information cannot be verified; Resources are not documented.	Some resources are not documented	Most resources are documented	Well organized source; Resources are documented	

Purpose: The reason the information exists—whether it has clear intentions or purpose and if the information is fact, opinion, or propaganda.	A lot of advertising makes the content unclear	Purpose is to sell, entertain, or persuade; Source contains a lot of advertising and bias	Purpose is to inform and teach; Contains some advertising; Minimal bias	Purpose is to inform and teach; Contains little advertising; Bias free	
TOTAL SCORE					

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